Annual Activity Report 2015

In accordance with Article 17 of the Statutes of the IMI2 JU annexed to Council Regulation (EU) No 557/2014 of 6 May 2014 and with Article 20 of the Financial Rules of the IMI2 JU.

The Annual Activity Report will be made publicly available following approval by the Governing Board.

Annex 1 to the Decision of the IMI2 Governing Board no. IMI2 GB-DEC-2016-19

Approved by the Governing Board of the Innovative Medicines Initiative 2 Joint Undertaking on 28.06.2016

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Contents

FACTSHEET

Name	**Innovative Medicines Initiative 2 Joint Undertaking (IMI2 JU)**
Objectives	Article 2 (a) and (b) of the founding legal act a) to support the development and implementation of pre-competitive research and of innovation activities of strategic importance to the Union's competitiveness and industrial leadership or to address specific societal challenges and in particular the challenge to improve European citizens' health and wellbeing; b) to contribute to the objectives of the Joint Technology Initiative on Innovative Medicines, in particular to: i. increase the success rate in clinical trials of priority medicines identified by the World Health Organisation; ii. where possible, reduce the time to reach clinical proof of concept in medicine development, such as for cancer, immunological, respiratory, neurological and neurodegenerative diseases; iii. develop new therapies for diseases for which there is a high unmet need, such as Alzheimer's disease and limited market incentives, such as antimicrobial resistance; iv. develop diagnostic and treatment biomarkers for diseases clearly linked to clinical relevance and approved by regulators; v. reduce the failure rate of vaccine candidates in phase III clinical trials through new biomarkers for initial efficacy and safety checks; vi. improve the current drug development process by providing support for the development of tools, standards and approaches to assess efficacy, safety and quality of regulated health products.
Founding Legal Act	Council Regulation (EU) No 557/2014 of 6 May 2014
Executive Director	Pierre Meulien
Governing Board	Representatives of the European Commission (EC)

Rudolf Strohmeier (Chair on 31/12/2015)	Deputy Director-General responsible for research programmes within the Directorate-General for Research and Innovation (DG RTD)
Ruxandra Draghia-Akli	Director responsible for health within DG RTD
Irene Norstedt	Head of Unit responsible for innovative and personalised medicine within DG RTD
Carlo Pettinelli	Director responsible for consumer, environmental and health technologies within the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Andrzej Jan Rys	Director responsible for health systems, medical products and innovation within the Directorate-General for Health and Food Safety

	Representatives of the European Federation of Pharmaceutical Industries and Associations (EFPIA) Marc de Garidel (Deputy Chair on 31/12/2015): Chief Executive Officer of Ipsen Group, member of the EFPIA Board and Vice-President of EFPIA Carlo Incerti: Head of Global Medical Affairs at Genzyme, member of the EFPIA Board, member of the EFPIA Research Directors Group (ex-officio EBE - European Biopharmaceutical Enterprises) Salah-Dine Chibout: Global Head Discovery and Investigational Safety at Novartis, Chairman of the EFPIA Research Directors Group Richard Bergström: Director General of EFPIA Paul Stoffels: Chief Scientific Officer at Johnson & Johnson, Worldwide Chairman of Janssen Pharmaceutical Companies of Johnson & Johnson
Other bodies	▪ States Representatives Group (28 European Union Member States and 12 Associated Countries to Horizon 2020 Framework Programme) ▪ Scientific Committee (14 members including the ad hoc members) ▪ Stakeholder Forum (over 300 registrations for the 2015 Stakeholder Forum)
Staff	Total posts: 44 (35 TA, 9 CA) Posts filled: 35 (31 TA, 4 CA)
Total 2015 budget	Commitment appropriations: EUR 315 269 million Payment appropriation EUR: 195 411 million
Total budget implementation	Commitment appropriations EUR 287 029 million (91.04 %) Payment appropriation EUR 142 028 million (72.68 %)
Grants	IMI1: 5 grants signed in 2015 for a total value of EUR 62 423 109 IMI2: 11 grants signed in 2015 for a total value of EUR 140 930 808
Strategic Research Agenda	The focus of the Strategic Research Agenda (SRA) of IMI2 JU is on '**delivering 'the right prevention and treatment for the right patient at the right time**'. It was developed on the basis of extensive consultations with a wide range of stakeholders. http://www.imi.europa.eu/content/research-agenda No amendment in 2015.
Call implementation	▪ Number of calls launched in 2015: 4 ▪ Number of short proposals submitted in 2015: 66 ▪ Number of eligible proposals in 2015: 57 ▪ Number of full proposals submitted in 2015: 9 ▪ Number of proposals funded (including full proposals submitted in December 2014): 11 ▪ Global project portfolio: 70 projects (59 under IMI1; 11 under IMI2)
Participation, including SMEs	The beneficiaries receiving funds in IMI1 and IMI2 projects include various types of organisations, of which academia, research organisations, SMEs and patient organisations. SMEs account for 15,6 % of the total beneficiaries and receive 14% of IMI budget.

FOREWORD

2015 was a productive year of transition for the Innovative Medicines Initiative 2 Joint Undertaking (IMI2 JU).

Building on the success of IMI1 JU, the IMI2 JU programme aims to provide European citizens with more effective and affordable medicines and treatments. Our unique model has created a neutral platform where pharmaceutical companies, academia, patients, SMEs, regulators, and all other stakeholders involved in the complex process of innovative medicines development, come together in a public-private partnership (PPP) to address major challenges of public health interest. Sharing knowledge at an unprecedented level amongst all players will ensure the most efficient path forward and will create both a vibrant innovation ecosystem in Europe and bring important new interventions to patients in need of them.

IMI2 JU was swiftly implemented with the launch of four Calls for proposals in key areas such as diabetes, neurodegeneration, and infection control including vaccines. By the year end, IMI2 JU had a portfolio of 70 projects, with many of them producing impressive results, as shown in this report.

I would like to highlight the efficient collaboration between the European Commission services and EFPIA, with the essential support of the IMI2 JU Scientific Committee (SC) and the IMI2 JU States Representatives Group (SRG). I would also like to thank in particular Irene Norstedt from DG RTD who played a crucial role as Acting Executive Director of IMI and assured a seamless transition when I took over in September.

Furthermore, tribute should be paid to the group of more than 9 000 scientists who contribute every day to IMI2 JU's reputation as a European flagship for innovative medicines. With its efficient and highly motivated staff, the IMI2 JU Programme Office remains fully committed to implementing this ambitious project, across the public and private sectors with the goal of accelerating the development of affordable health innovation in Europe.

Pierre Meulien
Executive Director

EXECUTIVE SUMMARY

- 2015 was a challenging year for IMI Joint Undertaking[1]. Whilst IMI1 JU programme activities under the Seventh Framework Programme (FP7) had reached cruising speed, in 2015 there was a significant growth in activities under the Horizon 2020 (H2020) programme. As of 31 December 2015, IMI was managing a portfolio of 70 projects; 59 from IMI1 (including 5 whose Grant Agreements – GAs - were signed in 2015) and 11 from IMI2. In 2015, IMI launched four new Calls for proposals under H2020, (IMI2 Calls 5, 6, 7, and 8), representing further commitments of EUR 210 779 000 in EU funding and EUR 187 445 666 of in-kind contributions from EFPIA companies and Associated Partners, thereby advancing the implementation of key strategic objectives of IMI2 JU's Scientific Research Agenda.

- IMI1 JU project deliverables indicate solid scientific performance, as shown in the initial findings of the socio-economic impact study carried out by high level independent experts. Their report demonstrates that IMI projects are delivering tools to speed up drug development, particularly in challenging areas such as brain disorders, diabetes, and translational safety. They are also helping to reduce the use of animals in medical research and establishing new research resources, networks and infrastructures.

- IMI continued fostering cross-project collaborations in various areas that include drug discovery platforms, taxonomy of diseases, Alzheimer's disease, autism, antimicrobial resistance, Ebola disease, stem cell research and vaccines.

- IMI is catalysing unprecedented levels of collaboration between the private and public sectors in Europe and globally. By the end of 2015, IMI projects had filed 21 patents and produced 1678 publications in peer reviewed journals, 30 % of which were published in 2015. The latest bibliometric analysis demonstrates that the citation impact of papers associated with IMI projects remains at almost twice the world average between 2010 and 2015, and higher than the world and EU's average, which is a key indicator of the scientific excellence of IMI projects.

- By the end of 2015, SMEs accounted for 15.6 % of all IMI2 beneficiaries and they received 14 % of the IMI2 JU funding.

- Communication activities focused on continuing to raise awareness of IMI2 JU, promoting new IMI2 JU Calls for proposals and increasing IMI's outreach to policymakers.

- In close liaison with European Commission services, preparatory work towards the transition to the H2020 IT tools was initiated, with a target date for implementation in Q3 2016.

- The implementation of the ex-post financial audits progressed well, with 59 audits concluded in 2015. The cumulative residual error rate from the finalised audits was 1.50 %, down from 1.98 % in 2014, and well below the materiality threshold of 2 %. In addition, by the end of 2015, 6 ex-post reviews and financial audits on the declared in-kind contributions of EFPIA companies participating in IMI projects had been finalised, and a further 7 reviews and financial audits were ongoing, altogether covering 92 % of total in-kind contributions.

- On 16 September, Pierre Meulien took up his duties as Executive Director, taking over from Irene Norstedt who had been seconded from the European Commission and had been Acting Executive Director since 16 December 2014.

- Overall nine new staff members joined IMI2 JU in 2015, with the staffing level remaining an issue given the rapidly-growing workload.

[1] Note: For the purposes of this report, the terms 'Innovative Medicines Initiative' and 'Innovative Medicines Initiative Joint Undertaking' refer to IMI has a whole. The terms Innovative Medicines Initiative 1 (IMI1) and Innovative Medicines Initiative 2 (IMI2) refer specifically to the relevant European Union Council regulations (73/2008 for IMI1 and 557/2014 for IMI2) and the Calls for proposals and projects/actions arising from them.

1 IMPLEMENTATION OF THE ANNUAL WORK PLAN 2015

1.1 Key objectives 2015 and associated risks

2015 was the first full year of implementation of IMI2 JU after the transition to H2020 and the replacement of the previous programme ('IMI1'), which was based on FP7. However, FP7 rules continue to be applicable for the projects and actions arising from Calls for proposals provided for in the annual implementation plans adopted under Regulation (EC) No 73/2008 and launched prior to the start of H2020.

Even though the executive structure of the former JU continued without changes in staff and operational structure, the new legal framework and H2020 modus operandi has required a considerable effort for full implementation throughout the JU. All governing bodies of IMI2 JU were renewed, more efficient financial rules adopted and new agreements with the European Commission and EFPIA were concluded. Furthermore, the Governing Board established Strategic Governing Groups (SGGs) to improve the development of topics for future Calls in key research areas. SGGs are composed of industry representatives, Scientific Committee members, and European Commission staff, and IMI2 JU Programme Office representatives. They have an overview of the science and priorities in their respective areas. Work has continued on facilitating the transition from the IMI2 JU electronic submission and evaluation tool SOFIA to the H2020 tools. This is by no means a trivial task and has thrown up many challenges in attempting to align IMI2 JU requirements with H2020 approaches.

Another relevant innovation in IMI2 JU was the inclusion of Associated Partners, which are legal entities supporting the objectives of the JU in their specific area of research, in a Member State or in a country associated with H2020. By the end of 2015, three associated partners had joined the IMI programme – the Helmsley Trust, the Juvenile Diabetes Research Foundation and the Bill and Melinda Gates Foundation.

Regarding programme implementation, in 2015 IMI2 JU continued working to improve health by speeding up the development of, and patient access to, innovative medicines, particularly in areas where there is an unmet medical or social need, as exemplified by IMI antimicrobial resistance programme New Drugs 4 Bad Bugs (ND4BB), comprising 7 projects with a total budget of EUR 700 million.

Antibiotic-resistant bacteria kill 25 000 people in the EU every year, and cost the economy EUR 1.5 billion. IMI's ND4BB represents an unprecedented partnership between industry, academia and biotech organisations to combat antibiotic resistance by tackling the scientific, regulatory, and business challenges that are hampering the development of new antibiotics. The latest outputs of IMI ND4BB projects include:

- The COMBACTE project has started the ASPIRE epidemiological study of healthcare-associated infections caused by Staphylococcus aureus and Pseudomonas aeruginosa. The study aims to determine the incidence of infection in different patient populations and the association between factors such as co-morbidities, colonisation status, relevant biomarkers and infection risk. ASPIRE-ICU will be conducted in about 30 sites across between 10 to 12 countries.

- The first patients have been enrolled into a clinical trial of a medicine called MEDI4893, which is designed to prevent *Staphylococcus aureus* pneumonia in intensive care patients who need a machine to help them breathe. *S. aureus* is a common cause of hospital-associated infections and drug-resistant strains of the bacteria have been identified.

In addition, within the ENABLE project, scientists from the University of Oxford filed a patent in 2015, to protect compounds identified with the help of the IMI project the European Lead Factory. The patent addresses multidrug resistance in bacterial infections. This important milestone, reached less than three years into the project, reflects the European Lead Factory's potential of a shared innovation approach to drug discovery.

As described in the following sections, in 2015 IMI2 JU launched four new Calls for proposals with 18 topics, while also running evaluations of topics launched in 2014. These topics covered many IMI2 scientific priorities including data and knowledge management; diabetes/metabolic disorders; infection control including vaccines, particularly Ebola; neurodegeneration; translational safety and also other priority areas such as paediatrics.

Through its projects, IMI2 JU has continued to facilitate collaboration between the key players involved in healthcare research, including universities, the pharmaceutical and other industries, SMEs, patient organisations, and medicines regulators. The latest Thomson Reuters bibliometric analysis of ongoing IMI projects shows that the higher output and citation impact of IMI projects papers that are co-authored between different sectors, institutions and countries has been maintained in 2015.

It is precisely by bringing the different stakeholders together that IMI2 JU projects are able to make such rapid progress in areas of research that are often difficult such as brain disorders. For instance, in 2015, under the EU-AIMS (European Autism Interventions – A Multicentre Study for Developing New Medications) project, academics from seven study centres, the pharmaceutical industry, and the European Medicines Agency (EMA) arrived at a shared understanding of criteria and methodologies for the identification of biomarkers. This alignment will be key for future clinical trials in Autism Spectrum Disorder (ASD), given the complexity of the area and the extreme heterogeneity of the ASD population.

In fact, one of the benefits of IMI's collaborative model is that it allows for the development of standards and common protocols that are highly trusted by all stakeholders. In 2015 alone, IMI projects delivered 46 new standards and best practices, including research protocols, clinical trial standards and the validation of models using the same protocols by multiple companies.

During 2015, IMI2 JU continued to monitor the progress of projects, the use of public funds and the in-kind contributions from industry partners via regular reporting of all projects in the form of periodic reports. In addition, 12 interim reviews of projects were held for those projects reaching their midway stage. These reviews, assisted by project-independent reviewers, help ensure that projects are on track. If any issues are identified, scientific approaches can be adjusted as required. During 2015, the first 10 IMI projects reached the end of their IMI funding cycle. As part of the evaluation of the final project outputs, IMI commissioned an external evaluation of the actual and potential socio-economic benefits and impacts of these projects.

Operational risks, mitigation and prevention

As one major element of its Internal Control Framework, IMI2 JU assesses and manages, with a dedicated process, potential risks which may be detrimental for achieving its objectives. An overview of the JU risk management methodology and performance is provided below as part of the assessment of the internal control framework (see section 4 and in particular sub-section 4.6).

A risk register is maintained by the JU; this provides information on the description of the risk, the risk type (financial, operational and reputational), the related business process and the required mitigating action. In particular:

- At operational level, each functional area produces an **operating risk register (ORR)** that identifies and ranks the risks it might have to face when implementing the Annual Work Plan (AWP). For each risk, mitigating actions are proposed to reduce the probability of the risk or its impact.
- At corporate level, management makes a strategic, cross-sectional assessment of the JU's objectives and of the risks reported in each ORR. Cross-cutting and policy risks scored above a critical threshold are considered as representing a threat at corporate level. These risks are included in the **strategic risk register (SRR**), which is directly monitored at senior level and complemented by an appropriate risk mitigation plan.

In particular, challenges linked with the transition to IMI2 were appropriately managed throughout 2015 and could be considered fully addressed at the end of the year.

The comprehensive list of the risks identified both at operational and strategic level demonstrates an increased awareness among staff that this exercise is an important tool for detecting, documenting and managing the challenges that they might face in delivering their assigned objectives.

Brainstorming exercises conducted at operational levels have also contributed to a deeper analysis and understanding of risks by individuals and have thus enhanced the establishment of an organisation-wide risk framework.

Strategic risk register 2015 - Ranking of key corporate risks

R1	Matching between EU and in-kind contribution might not be achieved
R2	AWP might be delayed with the risk of ineffective management of annual planning
R3	Alignment with and implementation of H2020 procedures for Call / GA might be delayed
R4	Cancellation or delay of topics and projects may impact IMI reputation
R5	There might be a cash flow shortage impacting regular payment execution
R6	Concentration of periodic report deadlines instead of being staggered throughout the year can negatively impact the efficiency and effectiveness of the Programme Office
R7	Error rate might remain higher than 2 % in 2015 leading to a qualified opinion of the European Court of Auditors (ECA) with impacts on discharge from the European Parliament (EP)
R8	Implementation of the staff establishment plan and recruitment procedures might be delayed with an impact on resources available
R9	The current organisational structure of the Programme Office might be insufficient for addressing the evolving objectives and expectations of IMI stakeholders
R10	IT management might not be able to fully exploit opportunities to develop and align IT systems and applications to respond to new strategic and operational priorities
R11	Communication activities might have a limited impact
R12	Internal policies and procedures might not be adequately documented in certain fields

Strategic risks, such as the implementation of H2020 procedures and *modus operandi*, the execution of the 2015 budget and the high error rate detected by ex-post audits in IMI1 JU projects have been respectively controlled through an articulated set of tools and actions taken by the Governing Board and the Programme Office.

In particular, the backlog in managing the ex-post audit engagements was cleared and the error rate progressively decreased to below 2 %. By the end of the year, a total of 142 audits of beneficiaries (out of 166 launched) were finalised. Furthermore, seven new EFPIA companies were subject to an ex-post control (see section 1.8).

Preventive measures are also in place to reduce the risk of errors from occurring, particularly through training and guidance for participants as well as through ex-ante procedures.

At the end of year, only the risks related to the organisational structure of the JU Programme Office were carried over, although these were controlled through a number of actions and measures. This was mainly due to the postponement of the recruitment of the new Executive Director who took up duties in September 2015.

In addition, new operational activities and understaffing, particularly during Quarters 1 to 3, further increased the workload (in particular in the finance sector). At the same time the management of the scientific programme needed to be reviewed and enhanced (e.g. in topic development, alignment with the H2020 framework, and project management and monitoring).

For that reason this risk was assessed as critical, threatening the accomplishment of the IMI2 JU mission and objectives. It will continue to be monitored in view of the reorganisation of the operational structure of the JU planned during the first half 2016.

1.2 Research & innovation activities

When describing IMI research and innovation activities it is worth keeping in mind that IMI projects are not designed to directly bring new medicines to market. Rather their objective is to impact on new product development by acting on the medicines development process itself, usually in particular disease areas, delivering future cost savings and time savings, and reducing risk, attrition rate and the need for animal testing. Within this framework, the advances highlighted within this report have a great potential to improve global healthcare and provide novel, more effective treatments to patients faster.

Reported outputs are in line with the goals of IMI1, and reflect the collaboration between all stakeholders such as industry, public authorities (including regulators), patient organisations, academia and clinical centres that is facilitated by IMI. Whether it be in facilitating unique drug discovery partnerships such as those facilitated by the European Lead Factory or ENABLE, or the better integration of patients into the drug discovery and development process as observed in projects such as EUPATI or PROactive, IMI is fulfilling its role as a neutral platform to bring all stakeholders together. As an example, French SME Nosopharm joined IMI's antimicrobial resistance project ENABLE during 2015. Thanks to this move, Nosopharm will be able to advance the development of a novel antibiotic it has created called NOSO-95179, which is designed to treat multidrug-resistant hospital-acquired infections. Specifically, Nosopharm will be able to access significant technical expertise and financial support to complete further studies. Nosopharm will also participate in collaborative research with ENABLE's expert partners across Europe. Finally, the project will strengthen the company's intellectual property as all NOSO-95179 results will be owned by Nosopharm.

During 2015 the pattern of collaboration was further extended by U-BIOPRED and eTRIKS IMI projects working together. Severe asthma is often difficult to manage and many patients are unresponsive to treatment. IMI's U-BIOPRED project aims to make severe asthma diagnosis and treatment more personalised by creating 'handprints' that identify sub-phenotypes of asthma. Working jointly, the projects have created a world-leading Knowledge Portal in which the data from U-BIOPRED can be brought together, tracked and analysed. With the ground breaking patient engagement model developed by U-BIOPRED, the analyses can be further shared with patient organisations to guide patient recruitment and dissemination of the results

Collaboration fostered in IMI projects enables identified research bottlenecks in the drug development process to be overcome, as exemplified in many projects including SUMMIT, ULTRA-DD, EUROPAIN and CHEM21. It also supports pre-competitive pharmaceutical research and development (R&D), in order to accelerate the development of safe and more effective medicines for patients.

There are an estimated 250 million people worldwide suffering from diabetes, and many of them develop devastating chronic complications including coronary heart disease, stroke and peripheral vascular disease, as well as microvascular disorders, leading to damage of the kidneys and eyes. These complications impose an immense burden on the quality of life of patients and account for more than 10 % of the healthcare costs in Europe. The scientists of the SUMMIT project are working to identify biological clues (biomarkers) that indicate in advance if a patient is likely to develop vascular complications. In doing so it will be possible to better predict, monitor and treat patients at risk, thereby improving patients' lives and reducing healthcare costs. Along 2015, researchers from SUMMIT developed a method for the standardisation of retinal macular thickness measurements from different optical coherence tomography (OCT) devices, allowing for standardisation in multi-centre trials and use in clinical practice. In addition, they have produced a new knock-out mouse model for diabetic atherosclerosis and transferred it to an industrial partner, Sanofi, for selection of drug development candidates.

IMI also facilitates the support of research activities by pooling resources from the public and private sectors. This is particularly apparent in projects where big data has an important role such as EMIF, EU-AIMS and DD-MoRe, in which companies and public entities are collaborating closely and sharing previously unavailable data with each other. Information systems are playing an ever increasing role in IMI projects. The EMIF project aims to develop a common information framework of patient-level data that will link up and facilitate access to diverse medical and research data sources, opening up new avenues of research for scientists. The two areas that EMIF focuses on, obesity and dementia, are two of the greatest healthcare challenges of our time. EMIF's work will pave the way for new diagnostic tools and treatments to help patients with these

conditions. One of first results of the work within the EMIF project, a potential new therapeutic target for non-alcoholic Fatty Liver Disease / Non Alcoholic SteatoHepatitis (NAFLD/NASH), is under investigation. Thanks to a large biomarker discovery programme, molecules related to insulin secretion capacity, insulin resistance and NAFLD have been identified in 2015. The initial data was obtained from 6 000 individuals, showing the power of pooling data and resources to help advance our understanding of disease and provide potential avenues for treatment.

The sections below draw a more detailed picture of the new developments that have taken place in 2015, and how they relate to IMI's objectives .The majority of the outputs highlighted in this section are from IMI1 projects. . Although IMI2 Calls were launched in 2014, the first projects under IMI2 had not reported by the end of 2015. Nevertheless, several important results were published during this period relating to the work of projects under the Ebola+ programme, and these are included in section 1.2.2.

1.2.1 Collaborative research and development related outputs from IMI1 projects

IMI has a multi-annual Research Agenda[2], which sets out IMI's priority areas in more detail. The first version of the agenda, from 2008, was based on a broad consultation with stakeholders. It was updated in 2011 to take account of new developments in biomedical research and innovation.

The IMI1 Research Agenda, which was published in 2011, set out IMI's priorities for its first phase, which ended in 2013. During this period, and on the basis of the research agenda, IMI launched 11 Calls for proposals. Some of these focused on specific health issues such as neurological conditions (Alzheimer's disease, schizophrenia, depression, chronic pain, and autism), diabetes, lung disease, oncology, inflammation & infection, tuberculosis, and obesity. Others focused on broader challenges in drug development like drug and vaccine safety, knowledge management, the sustainability of chemical drug production, the use of stem cells for drug discovery, drug behaviour in the body, the creation of a European platform to discover novel medicines, and antimicrobial resistance. In addition to research projects, IMI launched a number of education and training projects

In line with the regulation under which IMI[3] was established, the present context of 'pre-competitive pharmaceutical research and development' should be understood as research on the tools and methodologies used in the drug development process. The outputs highlighted demonstrate that IMI projects are delivering new approaches, methods and technologies, improving knowledge management of research results and data, and supporting the training of professionals.

The research and innovation-related outputs resulting from ongoing projects have been classified according to the following nine categories elaborated based on the Council regulation setting up IMI1:

- identification and validation of new drug targets and novel hit and lead discovery;
- establishment of robust, validated tools for preclinical drug development;
- development of biomarkers and tools predictive of clinical outcomes (efficacy and safety);
- clinical trials - improved design and process;
- 'big data' solutions to leverage knowledge;
- implementation of data standards;
- impact on regulatory framework;
- implementation of project results inside industry;
- education and training for a new generation of R&D scientists.

[2] http://www.imi.europa.eu/content/research-agenda

[3] See Chapter 2.2 Legal and financial framework.

1.2.1.1 Identification and validation of new drug targets and novel hit and lead discovery

A better understanding of disease biology can lead to the identification of new drug targets and provide accelerated pathways towards new or improved treatments for various diseases in areas of unmet medical need. The goal of identifying and validating new drug targets as well as novel hit and lead discovery is facilitated by pooling information and resources. IMI projects continue to demonstrate great success in this area with some notable examples described below. Furthermore, discovery programs that assemble and screen large, unique compound collections can enable the identification of new potent molecules that might lead to novel medicines for rare or neglected diseases.

A key tool in the earlier stages of drug development is a technique called High Throughput Screening (HTS), which allows researchers to screen large collections of chemical compounds in the hunt for molecules that could be potential drugs or be used in drug development in other ways. Although pharmaceutical companies have built up large libraries of compounds over the years, access to these collections has been tightly restricted to in-house use by the owners. Meanwhile, the academic community is becoming increasingly interested in HTS, but public compound collections tend to be rather small and expertise in the area is scattered across many institutions. As a result, few public drug targets have been screened against large, high-quality compound libraries. This has hampered efforts to generate promising leads for the development of innovative drugs.

The **European Lead Factory** (ELF) project is addressing this issue by providing researchers in universities, small businesses and patient organisations with access to an industry-like platform for the identification of 'hits'. The core compound library used by the ELF project has been provided by 7 pharmaceutical companies and is composed of over 326 486 compounds. In addition to screening this shared compound collection, 182 publicly sourced chemical library ideas were validated resulting in 89 407 new compounds to date. These new compounds complement the compounds from the industry partners. Together, the industry and public compounds form the Joint European Compound Library (JECL).

To date 147 different drug targets have been accepted for screening within the project, including 82 industry target programmes and 65 publicly sourced drug targets with 3 247 new 'hit' chemical compounds identified. Several hit-to-lead programmes are ongoing within the companies based upon the results obtained through the ELF. One of the EFPIA partners has identified a first novel lead structure from within the JECL. Although public compounds have only recently been added to the JECL, two public compounds have appeared on a hit list for an EFPIA target; these would not have been found in the company's own compound collection. Overall, the results from 55 programmes (21 public screening programmes, 34 EFPIA) have been generated and shared with target owners.

The first results are promising for public and private partners with both benefiting from the **ELF**. Programmes at UCB and the Netherlands Cancer Institute (NKI) is progressing to follow-up work, designed ultimately to generate drug candidates. In addition, scientists from the University of Oxford have filed a patent to protect compounds identified with the help of the **ELF**. The patent addresses multidrug resistance in bacterial infections.

Information systems are playing an ever increasing role in IMI projects. Examples of IMI project achievements are highlighted below.

Project	Area	Results description
EU-AIMS	Autism	Demonstrated that both synaptic and behavioural deficits relevant to autism spectrum disorder (ASD) can be rescued by pharmacological intervention (compounds acting at Group I mGluRs).
		Identified, using genetic mapping in mice, the involvement of the autism-related gene Pcdh9 in long-term social and object recognition and sensorimotor development.
NEWMEDS	Schizophrenia, depression	Gained novel insights into the biology of schizophrenia and depression. In particular, developed better understanding of the thalamo-cortical and prefrontal cortex-hippocampal circuits in animal models.
		Defined the cognitive and brain effects of autism and schizophrenia related DNA copy number variations (CNVs) in healthy carriers.
ENABLE	Antibiotics	More than 10 early discovery programmes from academia and SMEs have been accepted into the project, of which 5 have been terminated on scientific grounds, and 5 are still active and being further progressed toward the clinic.
ULTRA-DD	Drug discovery	Identification and testing of bromodomain inhibitors as suitable druggable targets and definition of their applicable therapeutic area.
		Performed target definition and validation in inflammatory disease.

1.2.1.2 Establishment of robust validated models and tools for drug discovery & development

If we are to speed up the development of new medicines, reduce the costs of their development and improve their safety, there is the need to provide improved tools that more precisely predict whether a given candidate molecule will be effective and safe in patients before they are progressed into clinical development. IMI project results are contributing to speeding up the development of new medicines by providing these improved tools. The tools include unique *in vitro* or animal models that more closely reproduce the patient reality, non-invasive imaging techniques, and computer models that allow efficacy prediction without the need to expose patients or even animals to test compounds.

The **U-BIOPRED** project aims to speed up the development of better treatments for patients with severe asthma. The project has developed several animal models and the design and set up of these experimental animal models has been implemented by industry partners. These are based on harmonising animal models between academics and multiple industries and facilitating the rapid translation of academic and industrial research.

Around 1 % of children are diagnosed with Autism Spectrum Disorder (ASD), yet there are currently no drugs designed specifically to treat their main symptoms. Working to change this is the IMI-funded project **EU-AIMS**. The goal of **EU-AIMS** is to generate tools that will enhance our understanding of ASD, and ultimately pave the way for the development of new, safe and effective treatments for use in both children and adults. Dutch IT company Noldus Information Technology has developed a new set of tools to make it easier to study and analyse the behaviour of rodent 'models' of autism. The tools, which are now commercially available, were developed and validated through the EU-AIMS project. Mice and rats that display ASD-like symptoms are used in research to study the causes of autism, how it progresses, and how it is affected by potential drugs. The 12 partners, who come from academia and industry, defined the requirements for the tools. In addition, partners from academia and industry gave feedback to Noldus throughout the design process and tested and validated those tools. The creation of such tools is very important to advance research methods in the field in order to accelerate drug discovery and development.

Many new medicines are based on biological molecules such as proteins, peptides or nucleic acids. The goal of the **COMPACT** project is to shed new light on the obstacles these drugs (which are known as biopharmaceuticals) need to overcome to get to where they are needed in the body. The project team is using this information to develop and validate biopharmaceutical formulations to deliver these novel drugs to their targets. The research performed by **COMPACT** has taken a step forward with the generation of a drug delivery system based on peptidomimetics with anionic liposomes, which show high silencing efficiency with negligible cytotoxicity and immunogenicity *in vitro*. In addition, the pharmaceutical partners in the project have used *in vitro* transcytosis assays and targeting ligands developed by **COMPACT** to test delivery of specific monoclonal antibodies against antibodies across the blood-brain barrier. These are key steps in having new formulations that will facilitate the treatment of diseases that are currently difficult to treat.

The **OncoTrack** project is attempting to identify biological markers that will help our understanding of the variable composition of tumours and the relationship between biological heterogeneity and tumour variation in response to treatment. In particular, they are analysing potential biomarkers for cancer of the colon through the development and application of research techniques with unprecedented high sensitivity levels. Several xenograft tumour models established by the project partner EPO GmbH are being used in drug screening activities by one or more of the EFPIA partners of **OncoTrack,** facilitating the search for new treatments for colon cancer.

The **EUROPAIN** project aims to improve the treatment of patients with chronic pain by understanding how changes in the nervous system contribute to pain, and elucidating the mechanisms of pain using novel experimental models, human volunteers and clinical data from pain patients. Recently, based on project results, the burrowing rat model has been adopted by several partners as a valid model in preclinical development, included in go/no go drug development decisions.

Also, zucker fatty rats are now used as a replacement of the previously standard streptozotocin (STZ) diabetic model in several partner companies, and microneurography has been used by several companies to facilitate preclinical/ translational and clinical outcome and prediction and support of go/no go decisions in drug development. In addition, quantitative sensory testing (QST) as a stratification tool and inclusion biomarker in clinical trials has been used in clinical development inside and outside of **EUROPAIN**, and is currently in use for a Phase II/III programme in neuropathic pain (NeuP) outside of the **EUROPAIN** project.

In addition to these important project outputs further examples of IMI project achievements are highlighted below.

Project	Area	Results description
K4DD	Kinetics for drug discovery	Developed 35 assays for membrane protein targets and 28 assays for soluble proteins. These assays involve 24 drug targets.
EU-AIMS	Autism	Developed cortical neurons with a glutamatergic phenotype using conditionally immortalised human neural progenitor cells (hNPCs) These represent an ideal platform with which to investigate neurodevelopmental mechanisms in native human cells in health and disease.
		Achieved consensus across centres on utility of stem cell-based phenotypic assay for autism spectrum disorder.
		Performed full phenotypic validation of a suite of autism spectrum disorder animal models, including the development and implementation of new rodent touch-screen tests and combined behavioural analysis and electroencephalogram (EEG) monitoring as new translational read-outs.
		Developed successfully a novel methodology for the use of multimodal neuroimaging techniques - magnetic resonance imaging (MRI), amperometry, positron emission tomography (PET), magnetic resonance spectroscopy (MRS) - as powerful translational tools to provide structural, functional and neurochemical information at the brain system level in both rodents and patients, and to test compound effects.
NEWMEDS	Schizophrenia depression	Developed methodology for PET measurement of changes in endogenous gamma-aminobutyric acid (GABA) levels (a key parameter for drug development and monitoring of drug efficacy of novel psychiatric treatments) using novel radioligands.
		Performed successfully the pharmacological validation of a cross-species imaging battery for use in drug discovery.
		Completed full phenotypic characterisation, comparison and pharmacological validation of three mice strains that are carriers of the same autism/schizophrenia related CNVs studied in healthy human carriers.

		Validated the utility of pattern recognition techniques in the clinical pharmacology context via a new classifier algorithm implemented in a distributed toolbox- the Matlab pharmacological imaging and pattern recognition toolbox (PIPR).
PHARMA-COG	Alzheimer's	Characterised EEG activity in lemurs for the first time, demonstrating that EEG profiles of lemurs are very close to those observed in humans.
PreDiCT-TB	Tuberculosis	Established and optimised a high throughput set-up in zebra fish to study *Staphylococcus epidermidis* and *Mycobacterium marinum* infection as a model for drug discovery. One of the consortium members, an SME, then completed adaptation of their *M. marinum* / zebra fish system to *Mycobacterium tuberculosis.*
		Completed the 1st round regimen of non-human primate experiments using a novel pharmacokinetics 'zipper' and cross-over experimental design, reducing significantly the number of animals used compared to the previously described design.
		Developed culture-free assays to obtain transcriptomic signatures of *M. tuberculosis* after exposure to a single drug or combination of drugs to help define the target pathways affected and to be used as biomarkers to monitor treatment efficacy during TB chemotherapy.
		M. tuberculosis reporter strains were successfully created and made available for use.
PRECISESADS	Systemic autoimmune diseases	Established a protocol for optimisation and standardisation of immunostaining, including calibration of standards for 11 different flow cytometer instruments.
PREDECT	Cancer	Established tissue slice culture methods for material derived from orthotopic and intraductal xenograft models, genetically-engineered mouse models (GEMMs) and syngrafts. Supported via the development of a standardised workflow for the preparation and maintenance of tissue culture slices from three solid tumour pathologies (lung, prostate and breast).
		In the area of molecular pathology, built an infrastructure for web microscope and preparation of a tissue microarray (TMA) archive of material, 3D models and tissue slices.
		Developed a standardised workflow and standard operating procedures (SOPs) for the preparation and analysis of 3D models of varying complexity: tumour spheroid, aggregate cultures, including those from bioreactors.
		Established a new scientific consensus via the characterisation of representative tumour models that has resulted in the better understanding of polyclonal tumour heterogeneity.

DIRECT	Diabetes	Assay validation for GLP-1 (active and total) and glucagon assays are now in routine use within the consortium.
StemBANCC	Stem cells	Advanced differentiation protocols and optimisation methods for higher throughput cellular assays. SOPs were produced and transferred between partners, several trainings have been organised, and many collaborations have started.
EBiSC	Stem cells	The central processing facility has successfully distributed a number of processed lines amongst project partners. Routine SOPs for all stages towards banking and distributing lines have been deployed. Reference induced pluripotent stem cells (iPSCs) from within the consortium have been used to test and validate protocols for the whole workflow, including distribution, tracking and transport to end users.

1.2.1.3 Development of biomarkers and tools predictive of clinical outcomes (efficacy and safety)

To help reduce the current rate of attrition and to speed up the development process, we need biomarkers and tools that are more predictive of clinical outcomes. These tools include markers that could be detected by a simple blood test, imaging technique or patient reported outcomes (PROs). Ultimately these more reliable measures or tools will help eliminate ineffective or unsafe compounds early in the development process and therefore avoid unnecessary patient exposure or investments in unnecessary development programmes.

The project **NEWMEDS** was set up to find new methods to improve the development of drugs for schizophrenia and depression. The project has focussed on developing new animal models which use brain recording and behavioural tests to identify innovative and effective drugs for schizophrenia. **NEWMEDS** has developed standardised paradigms, acquisition and analysis techniques to apply brain imaging, especially functional MRI (fMRI) and PET imaging to drug development. It has examined how new genetic findings (duplication and deletion or changes in genes) influence the response to various drugs and whether this information can be used to choose the right drug for the right patient. Importantly, results from the project disproved the hypothesis that single genetic mutations, polygenic scores or CNVs can be used to stratify depression patients, and in turn demonstrated the necessity and value of clinical and demographic predictors for inclusion in any stratification strategy. Finally, it has developed new approaches for shorter and more efficient trials of new medication – trials that may require fewer patients and give faster results.

As mentioned previously the **IMIDIA** project sets out to understand the mechanisms by which pancreatic beta cell dysfunction underlies the development of, respectively, type 1 and type 2 diabetes. Project results have identified a candidate biomarker (lipid signature in plasma) that was predictive of type 2 diabetes (T2D) development in preclinical studies and has been verified independently in two different human cohorts. In addition, project researchers have also identified gene signatures underlying beta cell adaptation or resistance to metabolic stress. They have characterised the association of these gene sets with specific phenotypes or dysfunctions of glucose homeostasis. When fully validated, these biomarkers will provide an important tool for type 2 diabetes taxonomy and the evaluation of treatments.

The **MARCAR** project focuses on non-genotoxic carcinogenesis, which is tumour formation that is not directly caused by 'writing errors' in the DNA 'text' (mutations), but by other changes in the structure of the genetic material that can alter the 'readability' of the DNA. The project has developed MRI protocols which allow detection of tumour lesions at a size of 1 mm. This allows for non-invasive tracking of tumour progression and therapeutic responses in small animal models. Thus, these newly-established methods are extremely valuable for the **MARCAR** consortium to assess tumour burden and could be applied in other areas of research. The project is also developing new biomarkers for non-invasive imaging of liver tumours using PET in combination with MRI.

In addition to these important project outputs further examples of IMI project achievements are highlighted below.

Project	Area	Results description
ULTRA-DD	Drug discovery	Established collaborations with hospitals to obtain patient-derived cell assays for target validation in relevant diseased tissues.
PROactive	Chronic obstructive pulmonary disease (COPD)	Finalised several clinical trials led by academic or industry partners using the PROactive PRO tools (either the PRO for daily use and/or the PRO for clinical visits) including pharmacological interventions (e.g. the Physacto study, which involved 300 patients) as well as physical activity coaching interventions (e. g. the telecoaching study, which involved **over 350 patients**). The data gathered show the validity and responsiveness of the PRO tools that capture physical activity as experienced by patients with COPD using a combination of classic questionnaire items and activity monitor output. An application has been submitted to the European Medicines Agency (EMA) for a qualification opinion on the acceptability of the use of the PROactive tools in clinical trials.
RAPP-ID	infectious diseases	Delivered further improvement, simplification and integration of three point-of-care test platforms under development: influenza platform, a bacterial community-acquired-lower respiratory tract infections (CA-LRTI) platform, and a ventilator acquired pneumonia nucleic acid testing platform (VAP NA test). Developed a very rapid (5 min.) fully automated sample preparation for endotracheal aspirates and sputa.
QUIC-CONCEPT	Cancer	Developed multicentre protocols for standardisation, quality assurance, and implementation of the FLT (fluoro-3'-deoxy-3'-L: -fluorothymidine) and apparent diffusion coefficient (ADC) imaging biomarkers. This was done partly in collaboration with US partner (QIBA PDF) under a memorandum of understanding (MoU). Developed an imaging biomarker roadmap and a risk-management framework for imaging biomarker driven clinical trials in oncology that allows identification of risks at trial initiation so that resources can be better allocated and key tasks prioritised.
EU-AIMS	Autism	Demonstrated in a randomised clinical trial, using eye tracking biomarker developed by the project, that oxytocin increases eye contact during a real-time, naturalistic social interaction in males with and without autism.
EUROPAIN	Chronic pain	Validated new tools for improved diagnosis and outcome measures in neuropathic pain.

Project	Area	Results description
PreDiCT-TB	Tuberculosis	Pharmacokinetic/pharmacodynamic (PK/PD) modelling was used to make recommendations for dosing regimens where a tuberculosis (TB) drug has to be associated with anti-retroviral treatment in HIV patients with TB, a particularly relevant and challenging-to-treat patient population.
EMIF	Knowledge management, Alzheimer's disease	A genomics, proteomics and metabolomics study in 600 participants from the EMIF500 and EMIF100 cohorts (including mild cognitive impairment converters and non-converters, normal and disease controls) has been completed and promising predictive signals for disease development identified.
EBiSC	Stem cells	Established a new scientific consensus for the expansion and pre-qualification of human stem cell lines for research.
eTOX	Knowledge management, safety	The OntoBrowser tool produced in the framework of the project was launched as open source in early 2015. Within the project, this tool has allowed the mapping of over 70 000 terms from the project reports to 6 400 unique preferred terms.
		The eTOXlab modelling framework has been adopted by most of the modelling partners for implementing their models. It has also been released to the public. Over 80 *in silico* models are implemented in eTOXsys.

1.2.1.4 Clinical trials - improved design & process

Improving clinical trial design and processes will contribute to speeding up the development of new medicines by better reflecting real life situations, relevant to the disease and its progression. Proposed new paradigms should require fewer patients and less time but at the same time generate more robust information/evidence. In addition, various IMI projects have made efforts to improve patient recruitment, for example by utilising healthcare records or creating well characterised patient registries, to focus clinical trials on more precisely characterised patient populations.

Electronic Health Record (EHR) data offer large opportunities for the advancement of medical research, the improvement of healthcare, and the enhancement of patient safety. The **EHR4CR** project is one of the largest PPPs aiming at providing adaptable, reusable and scalable solutions (tools and services) for reusing data from EHR systems for clinical research. The project has developed a platform that can be used by a trial sponsor, such as a pharmaceutical company, to estimate in close to real time the patient numbers corresponding to the inclusion and exclusion criteria of a candidate clinical trial protocol. This will aid trial feasibility assessment and identify the most relevant sites. Such tools will help those running trials to efficiently identify and contact the relevant patients and speed up recruitment. This platform and services are ready for Europe-wide deployment and use and are now being launched by the first commercial service provider, Custodix,

The project also provides new business opportunities to many stakeholders, including service providers and contract research organisations (CROs) who will be able to expand their business portfolios from respectively providing and adopting **EHR4CR** value-added solutions.

The goal of the **BioVacSafe** project is to develop cutting edge tools to speed up and improve the testing and monitoring of vaccine safety, both before and after release to the market. The project has completed two clinical trials and in doing so verified the results of three previous training trials. A new software tool was developed to allow smart analysis of results and prioritise selection of clinical samples for biomarker analysis, thereby saving costs and time.

In addition to these important project outputs further examples of IMI project achievements are highlighted below.

Project	Area	Results description
ND4BB COMBACTE	Antibiotics	Continuation of the set-up of the European networks: c) CLIN-Net: the hospitals/investigators network prepared for and experienced in performing high-quality clinical studies - over 500 hospitals in 39 countries in Europe; d) LAB-Net: the diagnostic laboratories, research laboratories and a central microbiology laboratory network - over 400 laboratories in 39 countries; Training and communication programme organised including CLIN-Net good clinical practice (GCP) online training (96 investigators completed it in 2015), face to face GCP courses (55 investigators completed it in 2015), CLIN-Net Coordinators meeting**,** LAB-Net workshops held in Balkan countries as well as training of the investigators/labs participating in the clinical studies. Full operationalisation of the network management system, which is the COMBACTE database of clinical sites including data from baseline and trial feasibility questionnaires.

		Survey conducted among pharmaceutical industry identifying hurdles and challenges for the conduct of efficient phase 2 and 3 randomised clinical trials of antimicrobial agents. Challenges were reported primarily as financial and regulatory. For multidrug-resistant organisms, there is a need for rapid diagnostic tests, new regulatory guidance, and adaptation of endpoints/trial designs.
		Activation of sites and enrolment of patients in ASPIRE-ICU study, a prospective observational study to describe the epidemiology of bacterial infections, especially *Staphylococcus aureus* and *Pseudomonas aeruginosa* infections, among patients in the intensive care unit (ICU).
		Increased site activation (> 50 sites) and enrolment of patients (>40 patients) in the SAATELLITE trial, a phase II randomised trial with MEDI4893, an anti-bacterial monoclonal antibody for the prevention of nosocomial pneumonia caused by the bacterium *S. aureus*.
		Completed the open call procedure to identify potential EFPIA clinical trial programmes or studies to join the COMBACTE project.
ND4BB COMBACTE-CARE	Antibiotics	Preparatory activities to execute the EURECA study, a prospective observational cohort study to assess the clinical management and outcomes of patients with multi-drug resistant Gram-negative bacterial infections, almost completed (enrolment of patients planned in early 2016). These include holding the first investigator meeting.
		Preparatory activities to execute the REJUVENATE study, a phase II prospective multicentre study, with the compound aztreonam-avibactam, almost completed (enrolment of patients planned 1st quarter 2016). These include submission of the first national regulatory application to the German competent authority.

ND4BB COMBACTE-MAGNET	Antibiotics	Preparatory activities to execute the RESCUING study, a retrospective observational study to assess the clinical management and outcomes of hospitalised patients with complicated urinary tract infection in countries with a high prevalence of multidrug resistant Gram-negative bacteria almost completed (sites opened early 2016). These include finalisation of the protocol, data set and monitoring plan and database for collecting the data.
		Preparatory activities to execute the EVADE study, a phase 2 study of MEDI3902, an antibacterial monoclonal antibody for the treatment of *P. aeruginosa* infections, especially pulmonary infections, in ICU patients almost completed (enrolment of patients planned in 2016).
GetReal	Real world evidence	Workshops held with stakeholders to engage and share new ideas around the use of real-world evidence for demonstrating the effectiveness of new drugs: > 40 participants from patients and patient organisations, clinicians, academic specialists, clinical trialists, in addition to representation from pharmaceutical companies, regulators, health technology assessment (HTA) bodies, and payers. One or two workshops conducted as part of case studies in the following disease areas: multiple sclerosis, non-small cell lung cancer, rheumatoid arthritis, COPD, metastatic melanoma. Learnings from these case studies will inform guidance on the use of real world evidence in medicine development and approval. A decision framework is under development. Conceptual and research framework finalised and case studies for identification of the drivers of effectiveness and simulation studies conducted. Matrix tool designed, following a mind mapping approach, identifying and addressing the various operational aspects of conducting pragmatic clinical trials earlier in the drug development process.
PRECISESADS	Systemic autoimmune diseases	1 000 patients recruited in the 1st year of a new cross-sectional cohort providing full molecular profiles.

1.2.1.5 ‘Big data’ solutions to leverage knowledge

The goal of IMI’s ‘big data’ projects is to speed up the development of new medicines by providing solutions to best take advantage of existing or newly-generated data. By pooling, linking and then analysing vast collections of varied data, one can make important discoveries that will further improve our understanding of disease, predict how test compounds will behave once administered to patients, or help best design clinical trials.

To reduce the barriers to drug discovery in industry, academia and for small businesses, the **Open PHACTS** consortium has built the **Open PHACTS** Discovery Platform. This freely available platform integrates pharmacological data from a variety of information resources and provides tools and services to question this integrated data to support pharmacological research. The platform is already being widely used. The usage statistics of the platform amount to 6.2 million hits per week with an average of approximately 40 million hits per month across the application interface. The platform is used by research groups, universities, biotech companies, pharmaceutical companies and SMEs. A virtual machine-hosted version of the tool allows organisations to run it internally and combine the data with their own proprietary content. Moreover the security approaches were audited to confirm the suitability of **Open PHACTS** workflows for use by commercial organisations.

The **eTOX** project set out to develop a drug safety database from the pharmaceutical industry legacy toxicology reports and public toxicology data; as well as innovative *in silico* strategies and novel software tools, to better predict the toxicological profiles of small molecules in the early stages of the drug development pipeline. The unique toxicology information database developed by the project has continued to grow. The database contains over 5 500 preclinical reports from the participating pharmaceutical companies. In addition, the data compiled from public sources covers about 230 000 compounds annotated to over 400 targets extracted from approximately 13 000 publications. Full utilisation of **eTOX** databases by *in silico* toxicology groups on research projects as well as regulatory questions from development projects have already assisted in the decision-making of drug development programmes. For example, one development of a drug candidate was stopped mainly as consequences of **eTOX** liver findings.

In addition to these important project outputs, further examples of IMI project achievements are highlighted below.

Project	Area	Results description
EMIF	Knowledge management, Alzheimer's disease	Developed tools to determine data suitability for research via a cohort selection tool and a patient select tool, enabling matching of cohort/patient profiles to research queries. Establishing sample sets for biomarker discovery in Alzheimer's disease (AD) via the EMIF500 and EMIF1000 cohorts: EMIF500: 500 patient profiles with pre-established cerebro-spinal fluid (CSF) biomarker data with proteomics analyses completed; EMIF1000: 1 000 patient profiles with AD, mild cognitive impairment and controls also with AD pathology data.
EMIF	Knowledge management, metabolic disease	Identified process for accessing EFPIA partner clinical trial data on placebo treatment and analysed the data.
EMIF	Knowledge management	Developed a key tool – EMIF Catalogue (https://emif-catalogue.eu) as data 'shop window' to support wider use of the platform. The EMIF Catalogue is also being utilised by other initiatives (Dementias Platform UK, IMI-EPAD). Workflow, data extraction, harmonisation and aggregation software developed and being used to support several studies as use cases for research process.
		Performed a pilot with three data sources to map to the Observational Medical Outcomes Partnership (OMOP http://omop.org/) common data model and integration of Observational Health Data Sciences and Informatics (OHDSI http://www.ohdsi.org/ tools suite with planned feasibility evaluation, prior to developing an EMIF data harmonisation layer for EHR-derived population data.
		Raw cohort data integration and analysis via tranSMART (http://transmartfoundation.org/developers/) and allied bioinformatics tooling development to support biomarker discovery in Alzheimer's disease and metabolic disorders
EU-AIMS	Autism	17 sites in the project clinical network have already shared phenotypic, behavioural and cognitive data collection on a range of outcome measures. A data inventory has been set up to document, annotate and describe this data so that information is useable by all participating members. Following a range of quality assurance checks, detailed descriptions of variables and records will be made available through a common data dictionary.

PreDiCT-TB	Tuberculosis	Individual patient level data was received from data custodians and uploaded to tranSMART.
AETIONOMY	Neuro-degeneration, knowledge management	Completed the curation of all major omics data available in mouse and man. These were included in the database to feed the development of new disease hypotheses
		The AETIONOMY knowledge base is live and publicly available at http://aetionomy.scai.fhg.de/
OrBiTo	Drug delivery	A unique gap analysis of oral drug absorption predictions by three different physiologically based pharmacokinetic (PBPK) tools has been successfully completed. The modelling effort was distributed amongst 15 partners (both public and private). 43 active pharmaceutical ingredients (APIs) were chosen for the simulation, representing over 165 human studies and 600 human study arms. Results will be published in five papers in international biopharmaceutics journals.
IMIDIA	Diabetes	Established an extensive and complete tissue and knowledge platform for human beta cells from healthy individuals and type 2 diabetes patients including corresponding samples, data and results from six different mice strains to bridge human and animal physiology. This includes all the data generated during IMIDIA, annotated in a manner that ensures integrated analysis of all datasets as well as further integration of this database in a federated database to serve as a basis for further EU or worldwide collaboration on diabetes research and development projects. A sustainability model to enable further use of the integrated IMIDIA beta cell platform in forthcoming consortia was developed and is on track to be formally established.
U-BIOPRED	Asthma	Further to the completion of the paediatric and adult cohorts with the planned number of recruited subjects (n=1 025), all clinical data sets - cross-sectional baseline data and the longitudinal and exacerbation visits – were curated and uploaded into tranSMART (eTRIKS). All bronchoscopy work was completed and the sputum and biopsy material quality controlled and immunocytochemistry / immunohistochemistry performed. No other cohort study of this size has had this level of quality control implemented.

eTRIKS	Knowledge management	Assisted over 25 translational research projects with their data management and analytical needs. In addition to providing comprehensive data services to six projects, many additional projects are using eTRIKS's training and consulting products and services with a growing number using the (tranSMART-based) fully open source translation research software platform that eTRIKS created.
		Enhanced the capabilities of the core platform including federated information sharing capabilities across eTRIKS platform instances. Strategic software and analytical development efforts focused on automated application of data standards, high performance analytics, and visual analytics (SmartR). Disease map storage and analysis have been pursued aggressively. eTRIKS launched the 'eTRIKS Labs' campaign that showcases these and other eTRIKS initiatives with information and example applications made available for review and trial on the eTRIKS Labs site (click 'eTRIKS Labs' on www.etriks.org). The 'eTRIKS Public Server' now hosts over 60 public domain studies (see https://portal.etriks.org/Portal/ or click 'Services Portal' on www.etriks.org).
DDMoRe	Knowledge management	The Drug Disease Model Resources model repository (http://repository.ddmore.eu/) was created to enable access to curated and shared knowledge for the benefit of model-informed drug discovery, development and usage. The number of models included in the library has increased five-fold to 64 in the last year. A beta release of the interoperability framework is available for download (http://www.ddmore.eu/product/interoperability-framework). It is an integrated infrastructure to enable efficient exchange and integration of models across modelling languages. It is built on the machine readable standard pharmacometrics markup language (PharmML), facilitating the re-use of models from the model repository. Conducted training courses on model-based drug development to support adoption of repository and framework.
PROTECT	Pharmaco-epidemiology	Overcame challenges surrounding the privacy of data by implementing six common protocols across the different databases as a method to leverage big data. Harmonised and linked existing data from many different sources enabling more powerful analyses. Produced an inventory of drug consumption databases in Europe covering 35 countries.

1.2.1.6 Implementation of data standards

In an era of increased transparency and data sharing as well as large-scale pooling and analyses of data from multiple origins, data standards are essential to ensure accuracy, reproducibility and scientific integrity. In order to ensure that different datasets can be brought together from different sources, there is the need to harmonise the approaches and standards used. In so doing, the quality of data that are used for analyses can be ensured and this is an essential prerequisite for implementation of new research and regulatory paradigms. Examples of data standards implementation in IMI projects are highlighted below.

Project	Area	Results description
COMBACTE	Antibiotics	Clinical Data Interchange Standards Consortium (CDISC) standards are implemented in SATTELITE study.
GetReal	Real world evidence	Preparation and public consultation on: **e)** glossary of key terms in the area of relative effectiveness and real world data; f) report on current policies and perspectives containing output from interviews with key stakeholders and a review of published policies relating to the use of real world data.
eTRIKS	Knowledge management	A first periodic revision of the 'standards starter pack' was published. The document provides baseline data standards to assist projects with curating and mapping their datasets to the eTRIKS platform. A public training course was held in conjunction with CDISC through a webinar attracting over 100 attendees from the IMI projects. eTRIKS also released the 'Code of practice on secondary use of data in scientific research projects' to better ensure protection of patient data. eTRIKS provided data privacy training based on "the code" which is a base set of data protection guidelines (www.etriks.org).
EMIF	Alzheimer's disease	In the tranSMART implementation for EMIF-AD, CDISC standards are followed as much as possible in the naming conventions and taxonomy used. In addition the project is also mapping information contained in population databases to the OMOP Common Data Model (CDM), which also has led to an extension of the OMOP CDM.
EHR4CR	Knowledge management	The semantic interoperability components within the EHR4CR platform incorporate multiple standards, clinical information models and terminologies/ontologies.
Open PHACTS	Knowledge management	Established standards for the resource description framework (RDF) format. Furthermore taxonomies for transporters, receptors and absorption, distribution, metabolism, and excretion (ADME) have been developed and will be made publicly available.

DDMoRe	Knowledge management	Annotations of the models stored in the DDMoRe model repository will use CDISC-controlled terminology. The models themselves are expressed in a human readable standard Model Description Language (MDL) and a machine-readable standard (PharmML) facilitating the re-use of the models for model informed drug development.
EUROPAIN	Chronic pain	The NEURO-QUAST© database format (QUAST© is acronym for 'Qualitätssicherung in der Schmerztherapie', i.e. 'Quality assurance in pain therapy') developed by the German Society for the Study of Pain (DGSS - Deutsche Gesellschaft zum Studium des Schmerzes) and has been aligned with CDISC.
SUMMIT	Diabetes	The project is applying standard formats for all genotypic, sequencing and gene expression work. For the modelling work with SUMMIT's observational cohorts with follow-up through electronic health records, data models from OMOP (Observational Medical Outcomes Partnership), i2b2 (Informatics for Integrating Biology & the Bedside) and HSCIC (Health and Social Care Information Centre) are used.
AETIONOMY	Alzheimer's disease	Aligned with CDISC, e.g. in the area of NDD-CTO (the clinical trial ontology for neurodegenerative disease trials); which comprises CDISC concepts and links to CDISC and to the Code of Practice on Secondary Use of Medical Data in Scientific Research Projects.
OncoTrack	Oncology	CDISC standards are used in collaboration with eTRIKS.

1.2.1.7 Impact on regulatory framework

Most IMI projects address questions in areas of emerging and innovative sciences and are intended to result in novel tools, methodologies and standards that can impact medicines development efficiency as well as regulatory standards, guidance and practice for the benefit of public health. A number of projects have already taken steps to obtain advice from regulators on qualifying the tools, methodologies or standards resulting from their work.

The **EU-AIMS** consortium submitted to the EMA follow-up qualification advices, on the basis of which the Agency issued Letters of Support[1] on the exploring methodologies and clinical outcomes developed by the project for stratifying populations of people with ASD, in particular the eye-tracking tools.

The **PROTECT** consortium has worked on recommendations for good signal detection practices that are being implemented in routine pharmacovigilance and regulatory practice. In particular, this has resulted in the revision of the European Network of Centres for Pharmacoepidemiology and Pharmacovigilance (**ENCePP**) Guide on Methodological Standards in Pharmacoepidemiology and Pharmacovigilance. Similarly, the project has produced recommendations for pharmacoepidemiology studies which are are being integrated into regulatory guidance.

Further examples of impact on regulatory framework of IMI projects are highlighted below.

Project	Area	Results description
EU2P	Education and training	Members of the EMA and the Food and Drug Administration (FDA) participated in course delivery. ANSM (French National Security Agency of Medicines and Health Products) is hosting internships of master trainees. The EMA has adopted the EU2P programme for education and training purposes.
OrBiTo	Drug delivery	Meeting co-organised with Association de Pharmacie Galénique Industrielle (APGI). This meeting had a focus on future regulatory use of the new tools developed in OrBiTo and was attended by several leading representatives from the US FDA and European regulatory agencies. The OrBito global regulatory stakeholder group led by the regulatory agency partner in OrBiTo, the Swedish Medical Product Agency has obtained a specially-designed annual progress report on the project. This favoured communication and discussion on the scientific research within OrBito.
DDMoRe	Knowledge management	DDMoRe provided comments on EMA Policy 0070 'Publication and access to clinical-trial data', identifying key aspects of data that will allow relevant and proper modelling analyses to benefit patients.

[1] http://www.ema.europa.eu/docs/en_GB/document_library/Other/2015/12/WC500198351.pdf

		DDMoRe is engaged with regulatory authorities to assess the potential for repositories, holding model-based analyses relevant to submission and approval. They were also engaged on scientific advice potential for model qualification procedure.
MIP-DILI	Safety	The consortium has continued informal dialogues with regulators to discuss the overall MIP-DILI project strategy and obtain guidance on regulatory acceptance of testing strategies and use for human risk assessment of liver injury. Project strategy and progress has been presented during meetings organised by regulatory agencies such as AGES - Austrian Agency for Health and Food Safety.
PROactive	COPD	Submission to the EMA of an application for qualification opinion on the acceptability of the use of the PROactive tools in clinical trials based on the data generated so far. Data also shared with FDA.
EUROPAIN	Chronic pain	Scientific Advice procedure completed on quantitative sensory testing, microneurography and confocal corneal microscopy readouts for patient enrichment and stratification in chronic pain completed at the EMA.
COMBACTE	Antibiotics	Review by STAT-Net of different methodological aspects of trial design and endpoints and interactions with regulators with a view to supporting recommendations for optimised clinical development of new antibacterial drugs.
OncoTrack	Cancer	Alacris, an SME involved in the project, is now registered with the EMA and discussions are ongoing regarding regulatory issues surrounding Alacris's technology.
WEB-RADR	Safety	Vernacular-to-regulatory dictionaries for Spanish and French languages have been developed to map from social media post language to Medical Dictionary for Regulatory Activities (MedDRA), thus enabling comparison with other sources of regulatory data.

1.2.1.8 Implementation of project results inside industry

IMI project results are already being implemented and applied in the internal processes and decision-making of pharmaceutical companies. This is a key achievement for IMI projects and should result in improving the development of new medicines in a number of disease areas.

The **ELF** has demonstrated the benefits of pooling resources and expertise not only for public partners but also now the pharmaceutical companies participating in the project. One of the EFPIA partners has identified a first novel lead structure within the **ELF** JECL, which would not have been found in the company's own compound collection. This offers the company the opportunity to explore new chemical space for their target of interest and may lead to a future drug discovery programme. This would not have been possible without the JECL. By the end of 2015, the JECL had been screened with 82 targets coming from 7 companies with 34 qualified hit lists (QHLs) delivered. In addition, several hit-to-lead programmes are ongoing within the companies based on the results obtained. Although public compounds were only added to the JECL at the end of 2015, two public compounds have already appeared on a hit list for an EFPIA target.

In the area of green chemistry the **CHEM21** project is exploring how to reduce waste from and the costs of chemical synthesis in medicinal chemistry. The project has delivered many different tools including a panel of molecular reagents for us in biosynthesis. Several EFPIA members are actively evaluating methodology for cleaner reduction of nitrogroups in the presence of other sensitive functional groups, with the aim of implementing it in their manufacturing processes. In addition, translation of many technologies developed within the project into industrial research and development is ongoing; including green fluorination at scale at Sanofi based on methodology developed by publicly-funded partners.

The ethical use of animals is an important component of the process for discovering new drugs and treatments. An important aspect for IMI projects is the ability to share information on these different models and allow partners to select the most appropriate one based upon their common experience and shared data. For example, based on the results of the **SUMMIT** project, a knock-out mouse model for diabetic atherosclerosis has been transferred to Sanofi for in-house use in drug discovery activities leading to selection of development candidates. Zucker fatty rats are now used as a replacement of the standard STZ diabetic model in in-house drug discovery activities at several partner companies.

The **U-BIOPRED** animal models and design/set up of experimental animal models are being used in industry partners. The models selected are based on harmonising the experience and results obtained from the different models used previously by academic partners and multiple industries. In the area of pain, based on the **EUROPAIN** project results, burrowing has been adapted with several partners as a valid model in preclinical development, included in go/no go decisions.

In addition to these important project outputs further examples of IMI project achievements are highlighted below.

Project	Area	Results description
OncoTrack	Cancer	Companies are taking advantage of novel modelling approaches developed within the project with potential value for indications beyond colon cancer. Utilised new animal models for profiling of development compounds.
EBiSC	Stem cells	Access to innovative technologies from the project is saving about two years of time in comparison to independent in-house development.

OrBiTo	Drug delivery	Continued access of all EFPIA partners to updated project databases aids internal drug development decisions.
ULTRA-DD	Drug discovery	Many of the project results have been implemented within industry as new drug discovery programmes.
PROactive	COPD	PRO developed in the project was used in several EFPIA trials and formed the basis of four MoUs in negotiation (three in the US, one in Europe) for studies by third parties that will use PROactive tools.
IMIDIA	Diabetes	Two out of three different cell lines developed within the project are being implemented for screening and functional validation of compounds within companies. New beta cell targets (e.g. TMEM37) were identified from global biorepository of human pancreatic islet specimens. The knowledge platform is used for the validation of targets and biomarkers and the selection of *in vivo* models.
NEWMEDS	Schizophrenia and depression	Application of machine learning methods to critical questions in drug development (response stratification, penetration of drug into brain and localisation of effects, sensitive estimation of magnitude and location of drug effects). Established the application of standardised touchscreen methodology and of standardised cognitive models across several industrial partners. They have all internally implemented this methodology. It is being used in a proprietary fashion.
DDMoRe	Knowledge management	Prototypes of the Modelling Description Language - Integrated Development Environment (MDL-IDE) were tested with EFPIA partners, and a beta release rolled-out among EFPIA partners and made publicly available.
PROTECT	Pharmaco-epidemiology	Implementation of novel benefit-risk methods and visualisation techniques by industry.
eTOX	Knowledge management, safety	Full utilisation of eTOX databases by *in silico* toxicology group on research projects as well as regulatory questions from development projects. Already one development of a drug candidate was stopped mainly as consequences of eTOX liver findings.

EHR4CR	Knowledge management	The project provides new business opportunities to many stakeholders, including service providers CROs, who will be able to expand their business portfolios from respectively providing and adopting EHR4CR value-added solutions.
EUROPAIN	Chronic pain	Knowledge on how to construct and SOPs and conduct multi-source raw data meta-analyses for clinical and preclinical data has improved and been used in house by industry partners.
		Microneurography has been used in house in several companies as a preclinical/ translational and clinical outcome tool for drug efficacy prediction and support of go/no go decisions.
		Quantitative Sensory Testing (QST) has been used as a stratification tool and inclusion biomarker in clinical trials inside and outside of EUROPAIN, and is currently in use for a phase II/III programme in neuropathic pain outside of EUROPAIN.
PreDiCT-TB	Tuberculosis	GSK's TB Discovery Performance Unit (DPU) has installed a mini computed tomography (CT) scanner (to obtain real time disease information from e.g. mice) and microfluidics exchange chamber that were developed by SMEs and academic partners of the consortium.
COMPACT	Drug delivery	Utilisation of the *in vitro* transcytosis assays and targeting ligands developed by COMPACT to test delivery of specific mAb against Ab across the blood-brain barrier.
PREDECT	Cancer	Precision-cut slices and complex 3D models developed by the project are now used in EFPIA members' laboratories.
OncoTrack	Cancer	Xenograft tumour models established by the partner EPO GmbH are being used in drug screening activities by one or more of the EFPIA partners of OncoTrack.
StemBANCC	Stem cells	After establishing the gene editing programme in StemBANCC, AstraZeneca have now started their pipeline for generating engineered lines.

1.2.1.9 Education and training for new generation R&D scientists

IMI education and training (E&T) programmes address gaps in the required biomedical research and development expertise of those involved in drug development and decision-making associated with this process. By training a new generation of highly-qualified individuals, the position of the European scientific community in the global drug research arena will be strengthened. Several projects are dedicated to education and training but many IMI projects contain training elements specific to certain fields of research such as green chemistry or drug safety testing.

Project	Area	Results description
EMTRAIN	E&T, networking	The on-course® database continues to grow and now has 6 917 courses with 3 449 Master programmes, 2 823 continuing professional development (CPD) courses and 1 095 PhD programmes.
		The LifeTrain framework has continued to develop and the website was continuously updated: http://www.lifetrain.eu/ A series of workshops has been held, the most recent focused on translational medicine. In total 107 students from 17 companies and 56 universities and 22 different countries have attended the 4 workshops held to date.
		The importance of the online course portal 'on-course' to the research community is reflected in the fact that it has been included in three new projects: the H2020 InfraSupp3 project RItrain, the InfraDev4 project CORBEL and the Erasmus+ Strategic Partnership C-COMEND.
SafeSciMET	E&T in safety sciences	A third cycle of the SafeSciMET curriculum is to be launched. The project also launched a 'blended learning' pilot course to reduce the length of the face-to-face part and accommodate the request of partners using the EU2P eLearning platform.
EU2P	E&T in pharmaco-vigilance and pharmaco-epidemiology	Developed a flexible and personalised fully online e-learning programme at certificate-, master- and PhD-level through PPP of 7 European Universities, the EMA and French health authorities (HA), and 15 pharmaceutical companies. Covering medicines risk identification and quantification, medicines and public health, medicines risk communication, medicines benefit assessment, and regulatory processes. 58 participants enrolled in courses, including 41 students currently following the 2 year programme. Doubling of student enrolment in the second operational year. To date 160 training areas are offered. The number of EU2P Master trainees has more than doubled in two years.
PharmaTrain	E&T	156 courses conducted. 715 trainees have completed CPD training programmes. 497 students, including 294 from industry, graduated from the different training programmes.

		The PharmaTrain shared standards and cross-project quality criteria have now been implemented by 13 universities; 11 are partners in PharmaTrain and 2 universities joined the network as affiliates (University of Aveiro in Portugal and Stellenbosch University, Cape Town, South Africa). These 13 universities achieved the award of 'Centre of Excellence' and also started to mutually recognise European Credit Transfer and Accumulation System (ECTS) credits and trainees.
IMI-TRAIN	E&T in pharmaceutical medicine	IMI's education and training projects launched their new pan-European framework for continuing professional development in the biomedical sciences. The LifeTrain framework will enable biomedical professionals to work collaboratively across disciplines and national boundaries. Furthermore, LifeTrain's unique collaborative approach aims to provide the critical mass to make a major contribution to strengthen the skills and competencies of European biomedical professionals in a rapidly changing environment. http://www.lifetrain.eu/
CHEM21	Chemistry	Further developed a green chemistry metrics tool for evaluating chemical reagents used in manufacturing in terms of cost, impact on environment, safety of use, and scarcity. This tool is already used for education and training of chemists.
DDMoRe	Knowledge management	Model development environment from the project was used to deliver a set of training courses on model-informed anti-diabetic drug development thus enabling the adoption of model library and platform.
EU-AIMS	Autism	In partnership with the Neuroscience School of Advanced Studies (NSAS), hosted a one-week workshop from 3-10 October 2015. Young researchers ('the next generation') discussed with experts on translational neurodevelopmental perspectives on autism spectrum disorders.
EUPATI	E&T, patients	EUPATI National Platforms (ENPs) launched events in Ireland, Luxemburg, Spain, Switzerland, and the UK.
		Developed educational material through the collaboration of different stakeholder groups.
		EUPATI training programme launched, modules 1, 2, 3 and 4 online.
		Deployment of the Moodle e-learning platform for use by the trainees of the first EUPATI Patient Expert Training Course.
		Developed Quality Assurance (QA) plan for all three audiences: Audience 1: patient experts, EUPATI patient ambassadors, and patient journalists; Audience 2: advocacy leaders from patient organisations; Audience 3: patients at large, including QA indicators.

1.2.2 Collaborative research and development related outputs from IMI2 projects

The first Calls to be launched under IMI2 were launched in 2014, therefore the projects resulting from these calls will only begin reporting in early 2016. As a result no project reports for IMI2 projects were received in 2015. However, even though IMI2 projects were only in their first year of activity, several of them have made excellent progress against their objectives and produced some key outputs that are highlighted below.

According to the IMI2 Council Regulation[4], the objectives of the IMI2 Joint Undertaking are:

a. to support, in accordance with Article 25 of Regulation (EU) No 1291/2013, the development and implementation of pre-competitive research and of innovation activities of strategic importance to the Union's competitiveness and industrial leadership or to address specific societal challenges in particular as described in parts II and III of Annex I to Decision 2013/743/EU, and in particular the challenge to improve European citizens' health and well-being;
b. to contribute to the objectives of the Joint Technology Initiative on Innovative Medicines, in particular to:
    i. increase the success rate in clinical trials of priority medicines identified by the World Health Organisation;
    ii. where possible, reduce the time to reach clinical proof of concept in medicine development, such as for cancer, immunological, respiratory, neurological and neurodegenerative diseases;
    iii. develop new therapies for diseases for which there is a high unmet need, such as Alzheimer's disease and limited market incentives, such as antimicrobial resistance;
    iv. develop diagnostic and treatment biomarkers for diseases clearly linked to clinical relevance and approved by regulators;
    v. reduce the failure rate of vaccine candidates in phase III clinical trials through new biomarkers for initial efficacy and safety checks;
    vi. improve the current drug development process by providing support for the development of tools, standards and approaches to assess efficacy, safety and quality of regulated health products.

The current SRA[5] was adopted by the IMI2 Governing Board in 2014 following consultation with stakeholders and is explicitly aligned with the 2013 World Health Organisation (WHO) report on Priority Medicines for Europe and the World. The focus of IMI's **SRA** for the period 2014-2024 is on delivering 'the right prevention and treatment for the right patient at the right time'. The document maintains a strong focus on the development of new medicines, and also places a heavy emphasis on tools and methods to speed up patient access to new medicines. It was developed on the basis of extensive consultations with a wide range of stakeholders.

These first outputs of IMI2 projects contribute to the following three IMI2 objectives.

(i) Increase the success rate in clinical trials of priority medicines

A key aim of many IMI2 projects is to generate the tools or the information required to increase the success rate in clinical trials for priority medicines. They do this by investigating novel clinical trial designs that better reflect real life situations, relevant to the disease and its progression. Proposed new paradigms require fewer patients and less time to perform the studies but at the same time generate more robust information/evidence upon which to base decisions.

Two projects launched under the IMI2 Ebola+ programme, **EBOVAC1** and **EBODAC** with the goal of rapidly testing new Ebola vaccines have been perfecting their trial designs in response to the highly fluid situation regarding the number of Ebola cases reported. The clinical trial designs of Phase 2/3 efficacy trials were constantly adapted from the start of the project in December 2014 at the height of the Ebola epidemic to the end of 2015 when the epidemic had declined to almost zero. Many lessons were learned about possibilities in trial designs and regulatory pathways during an outbreak situation that will contribute to increased readiness in future outbreaks of haemorrhagic fevers or related diseases.

[4] http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014R0557&from=EN
[5] http://www.imi.europa.eu/sites/default/files/uploads/documents/IMI2_SRA_March2014.pdf

(ii) Reduce the time to reach clinical proof of concept in medicine development

Often in research and development the focus is on understanding disease biology so that we can identify new druggable targets. The faster we can identify good druggable targets and suitable chemical entities with which to modulate these targets, the faster we can reach the clinical proof of concept stage. But a very important part of the process is to be able to manufacture sufficient quantities of material for testing. This requires highly robust methods that allow the repeated manufacture of the same substance to good manufacturing practice (GMP) standard while ensuring the safety and integrity of the substance between manufacturing campaigns. The **EBOMAN** project, again launched as part of the IMI2 Ebola+ programme, has manufactured and released sufficient vaccine for the clinical programme covered under **EBOVAC 1** and **2**, including any health authority submission packages. Vialed product has been manufactured in excess (>1 million vials of both types of vaccine used in the project) that can be rapidly accessed for any emergency needs. Meanwhile capacity is being made available for further manufacturing.

The **EBOMAN** project covers the development of a manufacturing process for a vaccine candidate with the priority of accelerating vaccine development and GMP manufacturing processes. From this aspect, the project has excelled by performing within two years a development process that normally takes about eight years.

(iv) Develop diagnostic and treatment biomarkers for diseases clearly linked to clinical relevance and approved by regulators

Several projects aiming to improve the diagnosis of Ebola virus infection were launched as part of the IMI2 response to the Ebola outbreak of 2014. The **EbolaMoDRAD** project has developed rapid bedside inactivation vacuum tubes, which make it possible to inactivate Ebola virus directly during collection of samples from the patients. This can lead to safer handling of samples and safe transportation of samples from outbreak sites to, for example, reference labs in Europe.

Another Ebola project, **FILODIAG,**has been able to advance the Laser polymerase chain reaction (PCR) assay developed by one of the partners, GNA, and successfully tested it with ribonucleic acids (RNA) isolated from an Ebola virus culture in European Biological Safety Level 4 (BSL4) labs. In addition, one of the project partners, Mendel University, has developed surface-modified, magnetic particles for the extraction of virus particles, using whole influenza virions as a model organism. In addition a key piece of diagnostic equipment, the Pharos instrument, was equipped with a new detection module, rendering the system now much more robust and easy to handle in the field, thereby facilitating the rapid diagnosis of Ebola virus infection.

A third project team focusing on improving the diagnosis of Ebola, MOFINA, has successfully transferred the altona RealStar® Filovirus Screen reverse transcription (RT)-PCR assay to a cartridge format to fit the Alere Q instrument and testing in European BSL4 labs in Italy, Germany and UK. These adaptations should facilitate the wider use of the equipment in the field and the diagnostic test has now been transferred to West Africa for continued testing.

1.2.3 Collaboration among consortia and with external bodies

Collaboration between IMI projects and with external bodies is strongly encouraged to develop synergies and avoid redundancy and duplication of effort wherever possible. Several IMI projects have initiated collaboration with other consortia and a number of these efforts have resulted in signatures of formal agreements. Key collaborative activity areas include: IMI's drug discovery platforms, taxonomy of diseases, Alzheimer's disease, autism, antimicrobial resistance via the New Drugs for Bad Bugs (ND4BB) platform, Ebola+, stem cell research, and vaccines.

The IMI Alzheimer's Research Platform

In March 2015, the IMI Alzheimer's Research Platform was launched at a symposium at the AD/PD Congress 2015 (http://www.imi.europa.eu/content/press-release-imi-ad-platform).

The three IMI Alzheimer's projects have been working together throughout 2015 to develop joint actions that will enhance the impact of their activities. These have been mainly focused on the re-use of the EMIF AD catalogue for the development of the EPAD cohorts, and the alignment of the EPAD and AETIONOMY clinical studies.

EBOLA+ (IMI2 – Call 2)

In January 2015, a cross-project meeting brought together the eight IMI projects funded under the Ebola+ programme and the five Ebola projects funded by the EC, to inform each other about ongoing activities and objectives and to explore opportunities for collaboration.

StemBANCC and EBiSC

StemBANCC is partnering with the International Society for Stem Cell Research (ISSCR) and the Basel Stem Cell Network that will result in a joint regional stem cell meeting in Basel in 2017 as one of the key outputs of the collaboration.

A successful pilot study was undertaken by EBiSC in collaboration with StemBANCC that demonstrated the ability to cooperate and synergise. The project has developed material transfer agreements (MTA) in place with project StemBANCC, as a foundation for a broader collaboration.

IMI2 JU sponsored, together with the German stem cells network, a successful workshop on stem cells entitled 'Paving the path to application' at the World Health Summit in Berlin. Coordinators of StemBANCC and EBISC presented their results. During the workshop, it became clear that while the use of stem cells, particularly in drug testing and manufacturing, has seen enormous progress and promise, there is a need for further testing and standard setting in quality control, and acute attention to efficacy and patient safety.

ADVANCE

The project is setting out novel ways of working in collaboration between vaccine manufacturers and public organisations including the European Centre for Disease Prevention and Control (ECDC), national public health institutes, the EMA, and regulatory bodies on vaccination benefit-risk assessment. In the autumn of 2015, the project conducted a public consultation for a draft code of conduct for the planning, initiation, design, conduct and reporting of observational studies in the field of vaccines. This is an important output from the project that will be of value to other projects and initiatives.

DRIVE-AB

In February 2015, a stakeholder meeting was held bringing together chief executive officers (CEOs) and their representatives from 30 SMEs with antibacterial R&D programmes. At the meeting, a discussion started on the modalities of forming a European antibacterial SME interest group, later leading to the creation of the BEAM alliance ('Biopharmaceutial companies from Europe innovating in Anti-Microbial resistance research').

Open PHACTS

The successor organisation of the Open PHACTs project, the Open PHACTS Foundation, is participating in two Horizon 2020 projects: BigDataEurope & EU-ToxRisk.

Critical Path (C-Path) Institute

As part of the collaboration in Alzheimer's, Coalition Against Major Diseases (CAMD) representatives were invited to an alignment meeting with the IMI EPAD project on 19 March 2015 during the AD/PD Congress in Nice. The outcome of the meeting was that CAMD should join the Global Alzheimer's Platform of which EPAD represents the European arm.

In 2015, IMI project PreDiCT TB and the Critical Path to TB Drug Regimens (CPTR) consortium had several interactions at project level to plan the strategy for cross validation of models and databasing of PreDiCT TB clinical data via the CPTR/WHO (World Health Organization) new TB clinical trial data sharing platform. In December 2015, PreDiCT-TB co-hosted a session with CPTR at the 46th Union World Conference on Lung Health entitled: 'Beyond accelerated drug development: building successful partnerships and platforms as a critical path to TB drug regimens and PreDiCT-TB'.

Foundation for the National Institutes of Health (FNIH) Biomarker Consortium

Collaboration has continued throughout 2015 between the IMI EU-AIMS project and FNIH Autism Biomarkers Consortium for Clinical Trials (ABC-CT), where the IMI project has contributed critical input for biomarker development as well as coordination among public and private sector partners.

In July 2015 at the Alzheimer's Association International Conference in Washington DC, the leadership of the IMI SGG Neurodegeneration met with the leadership of the FNIH Accelerating Medicines Partnership (AMP) to kick-start discussion for an alignment of strategy for the launching of new initiatives and synergy of ongoing projects.

The Global CEO initiative for Alzheimer's disease

In March 2015 an MoU was signed between IMI and the Global CEO initiative for Alzheimer's disease to facilitate the joint efforts of the IMI projects in Alzheimer's (the IMI Alzheimer's Research Platform) and the CEO Global Alzheimer's Platform (GAP).

The MoU was announced during the IMI Symposium for the launch of the IMI Alzheimer's Platform at the AD/PD congress in Nice (March 2015).

The GAP and EPAD projects are actively working on the development of aligned clinical trials protocols.

1.3 Stakeholder engagement

1.3.1 SME involvement

Throughout 2015, IMI JU continued to promote the participation of SMEs in IMI projects and offer support to SMEs interested in applying. This has been primarily through an SME-dedicated contact person, via the SME webpage, and through interactions with Europe-wide umbrella organisations. By the end of 2015 SMEs accounted for 15.6 % of all beneficiaries and received 14.0 % of the total IMI JU budget. The IMI Programme Office has also been exploring other means to provide support to SMEs.

1.3.2 Patient involvement

IMI recognises that patients can make a vital contribution to shaping research, make it more effective and more oriented to patient needs. Therefore, IMI2 JU's goal is to champion a patient-centric approach, encouraging all the projects that it funds to work in partnership with patients wherever possible.

Patients play an essential role when designing and implementing the IMI SRA, sitting alongside researchers from public and private sectors, including the pharmaceutical industry, biotech companies, academia and regulators. This is why we wish to embed patients and their advocates at all levels; agenda setting for research in medical innovation, project planning, implementation, evaluation processes and content. Therefore the Programme Office continuously engages with patients and promotes patient involvement in its projects and activities. In particular our goal is to facilitate patient involvement thought the programme as well as to deliver a number of projects designed to develop and improve the processes and tools for patient/healthcare consumer engagement in research, development and healthcare.

Thus far patients are involved and/or represented in 86 % of patient orientated IMI projects as consortium partners, members of advisory boards, ethical advisory boards, or on a consultancy basis for topics of relevance.

Projects with a particular emphasis on patients and their involvement in medicines R&D are:

- **EUPATI** – a project delivering scientifically reliable, objective, comprehensive information to patients on medicines research and development. In the past year the project has organised a workshop focused on 'Meaningful patient involvement in industry-led medicines R&D'; produced a publication entitled 'What the public knows and wants to know about medicines research and development: a survey of the general public in six European countries'; developed educational materials, and launched their training programme. The project creates a toolkit and training resources to enable meaningful patient involvement in R&D and decision-making processes. A result will be a cohort of patients ready to engage (http://www.patientsacademy.eu/index.php/en/).
- **ADAPT-SMART** is a coordination and support action (CSA) that sets up an enabling platform for the coordination of Medicines Adaptive Pathways to Patients (MAPPs) activities. It involves all relevant key stakeholders, including patient organisations (Eurordis and European Patients Forum) providing the patients' perspective on a flexible development and access pathway within the current regulatory framework for beneficial treatments for the right patient groups at the earliest appropriate time in the product life-span. In addition to engaging in a dialogue with relevant stakeholders, the consortium will contribute to aligning understanding of the impact of MAPPs, to sharing learnings between all stakeholders, and to allowing the field to actively work towards MAPPs implementation (http://adaptsmart.eu/).
- **Big Data for Better Outcomes, Radar and WEB-RADR** address the use of digital tools for proactive reporting of real world evidence (http://web-radr.eu/).
- **U-BIOPRED**, a project dedicated to severe asthma, which set up a Patients Input Platform to successfully integrate patients' input into this research project via advice on research protocols, input into informed consent forms and patient information sheets, as well as facilitation of patient recruitment to enable successful recruitment of more than 1 000 patients (http://www.europeanlung.org/en/projects-and-research/projects/u-biopred/home). The project has also published its experience on meaningful patient involvement: From tokenism to meaningful engagement: best practices in patient involvement in an EU project.

- **PROactive** is developing methods to incorporate into drug development the impact of COPD on patients' daily lives. Patients have been contributing to the development of the PRO tools. Further to the completion of one of the clinical studies for the validation of the PROactive tools, a webinar was organised with patients from six participating sites to provide feedback and comments (http://www.proactivecopd.com/).
- **EU-AIMS** is developing a fully translatable platform to support drug discovery and development for ASD. The US autism charity and patient organisation Autism Speaks is a full partner of the consortium and it is fully involved in the development of the clinical work of the project which includes two large clinical studies and the development of a repository of biosamples and of patient derived iPS cells. The EU-AIMS ethical committee includes a patient and a relative of a patient and is very active in the communication and debate around the project and its objectives with lay people including patients and their families (http://www.imi.europa.eu/content/eu-aims).
- **GetReal** is developing new ways of incorporating real life clinical data into drug development with the goal of helping pharmaceutical companies take better decisions during drug development, and aiding healthcare decision makers when deciding how best to grant patients access to a new treatment. Patients are represented and involved there as one of the key stakeholders (https://www.imi-getreal.eu/).
- **EPAD** is a major European initiative to create a novel environment for testing numerous interventions targeted at the prevention of Alzheimer's dementia. The project established a research participant panel via which patients provide feedback on the project activities by representing the views of people with dementia, contributing to ethical discussions and clinical trial protocols, support dissemination of project results, as well as contributing to raising awareness of dementia (http://ep-ad.org/).

1.4 Interactions and involvement with regulatory authorities/health technology assessment bodies

As many IMI projects focus on building new science-based evidence that is needed to support informed decisions by regulatory agencies, early engagement with regulators remains paramount. The effective collaboration between IMI and the regulatory agencies, particularly the EMA and FDA, continued in 2015 particularly through:

- EMA input to the definition of IMI priorities, proposed Call topics and project outputs through its membership in the IMI2 JU Scientific Committee.
- EMA involvement in the activities of several consortia either as full partner, or as member of their advisory boards. Several IMI projects have also FDA representatives on their advisory boards.
- Use by IMI consortia of the existing regulatory process/procedures such as the EMA 'qualification advice of novel methodologies for drug development' and briefing meetings for input to the project plan. In this respect, IMI continuously encourages consortia to take advantage of possible ways to engage in early dialogue with regulators.

To further raise awareness of the various opportunities to interact with regulators in the framework of research on regulatory sciences with a potential impact on public health, IMI released a succinct guidance tool that provides a high-level overview of the existing services offered by regulators. This guidance is intended for use by researchers who wish to have a better understanding of these opportunities.

With the strong emphasis on looking at enablers for the implementation of MAPPs in IMI2, the ADAPT-SMART project establishes an enabling platform with relevant stakeholders for the coordination of MAPPs-related activities within IMI2. Through this platform, effective collaboration with regulatory agencies, HTA bodies and payers will further expand.

Finally, regular teleconferences are held with the EMA and FDA in order to share information and follow on the progress of the actions agreed at the IMI regulatory science summit held at the end of 2014.

1.5 Calls for proposals and grant information

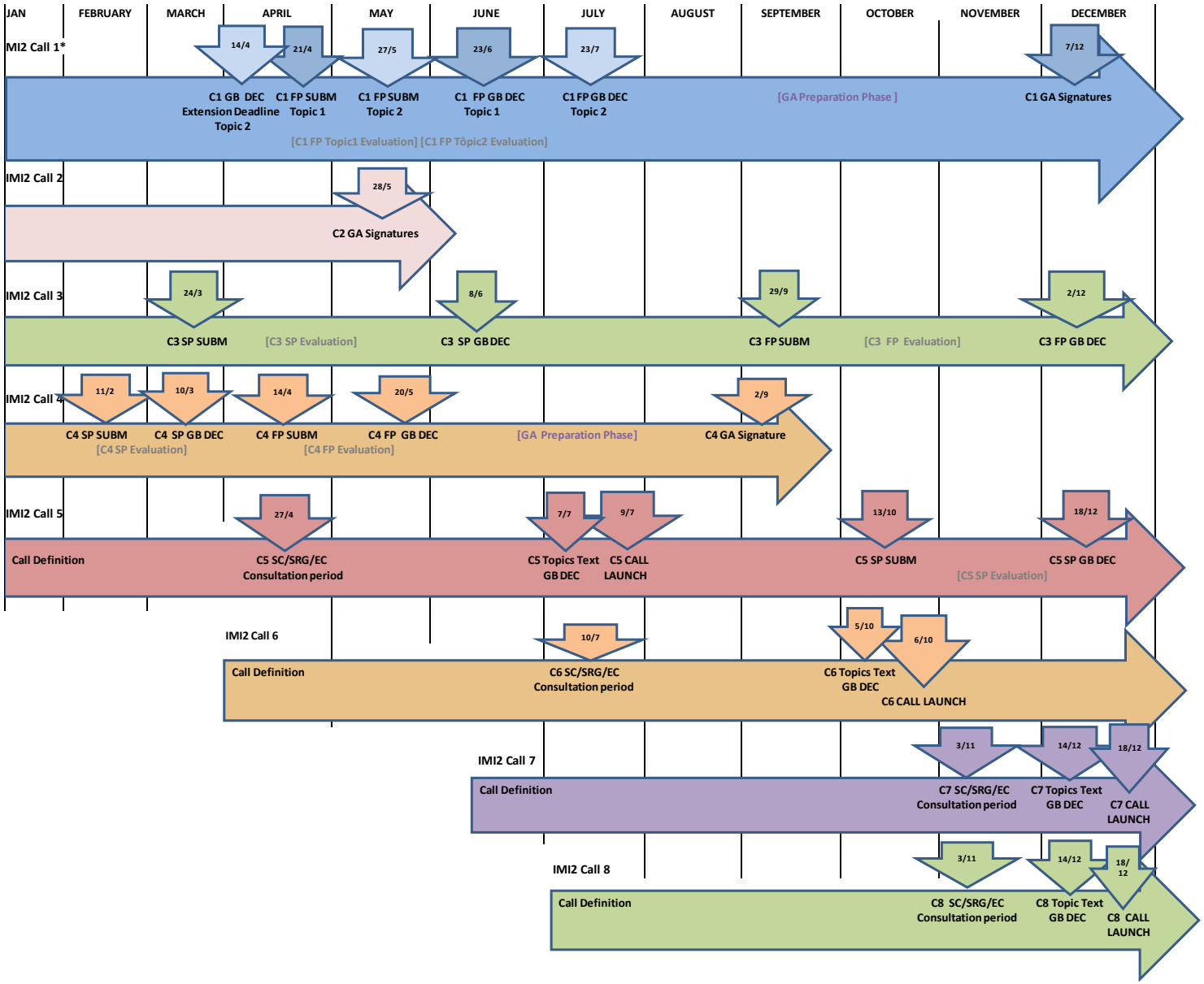
1.5.1 Launch and management of IMI2 JU Calls in 2015

In 2015, four Calls for proposals were launched (IMI2 Calls 5, 6, 7 and 8) and five Calls were at various stages of the evaluation and granting process (IMI2 - Calls 1, 2, 3, 4 and 5). The evaluation stages of IMI2 - Call 2 had been completed in 2014 but grant preparation and Grant Agreement signature were completed in 2015. An overview of these activities is displayed below along with a mapping of how the scientific priorities identified in the Annual Work Plan 2015 (AWP2015) were addressed through Calls launched in 2015.

The key points in the submission and evaluation process are highlighted as following:

- GA – Grant Agreement
- SP Evaluation – Short Proposal Evaluation
- FP Evaluation – Full Proposal Evaluation
- SP GB DEC – Short Proposal Governing Board Decision
- FP GB DEC – Full Proposal Governing Board Decision
- SP SUBM – Short Proposal Submission deadline
- FP SUBM – Full Proposal Submission deadline
- Cx Topics Text GB DEC – Call x Topics Text Governing Board Decision
- Cx Call Launch

The chart also provides information on the consultation period of the IMI2 JU advisory bodies (the States Representatives Group – the SRG-, and the Scientific Committee – the SC), as well as of the European Commission (EC).



**IMI2 Call 1: due to split of Full Proposal submission and evaluation timelines, the topics are divided by Topic 1 and Topic 2.*

Table summarising key information related to IMI Call launches, submission deadlines and grant agreements signed in 2015

Call	Topic title	Call process	Launch date	Deadline for submission of short proposals	Number of short proposals received	Number of participants in eligible short proposals, full proposals	Number of short proposals selected to prepare a full proposal	Number of full proposals selected for funding	Number of Grant Agreements signed in 2015
IMI2 Call 1	▪ Translational approaches to disease modifying therapy of type 1 diabetes mellitus (T1DM) (RIA); ▪ Discovery and validation of novel endpoints in dry age-related macular degeneration and diabetic retinopathy (RIA).	two-stage	9/07/2014	12/11/2014	14	163	2	1	1
IMI2 Call 2	Infection control (Ebola) (one-stage Call) ▪ Vaccine development Phase I, II, and III (RIA); ▪ Manufacturing capability (RIA); ▪ Stability of vaccines during transport and storage (RIA); ▪ Deployment and compliance of vaccination regimens (RIA); ▪ Rapid diagnostic tests (RIA).	single-stage	6/11/2015	1/12/2014	19	81	8		8
IMI2 Call 3	▪ Remote assessment of disease and relapse-CNS (RIA) ▪ Assessing risk and progression of prediabetes and type 2 diabetes to enable disease modification (RIA) ▪ Linking clinical neuropsychiatry and quantitative neurobiology ▪ The consistency approach to quality control in vaccine manufacture (RIA) ▪ Pertussis vaccination research (RIA)	two-stage	17/12/2014	24/03/2015	38	470	6	6	1

Call	Topic title	Call process	Launch date	Deadline for submission of short proposals	Number of short proposals received	Number of participants in eligible short proposals, full proposals	Number of short proposals selected to prepare a full proposal	Number of full proposals selected for funding	Number of Grant Agreements signed in 2015
	▪ Patient advocacy knowledge repository to enable patient focused medicine development (RIA).								
IMI2 Call 4	▪ Medicines adaptive pathways to patients (CSA)	two-stage	17/12/2014	11/02/2015	3	33	1	1	1
IMI2 Call 5	▪ Patient perspective elicitation on benefits and risks of medicinal products, from development through the entire life cycle, to inform the decision-making process by regulators and health technology assessment bodies (RIA) ▪ Diabetic kidney disease biomarkers (DKD-BM) (RIA) ▪ Inflammation and AD: modulating microglia function – focussing on TREM2 and CD33 (RIA) ▪ Understanding the role of amyloid biomarkers in the current and future diagnosis and management of patients across the spectrum of cognitive impairment (from pre-dementia to dementia) (RIA) ▪ Evolving models of patient engagement and access for earlier identification of Alzheimer's disease: Phased	two-stage	9/07/2015	13/10/2015	25	279	6	6	open

Call	Topic title	Call process	Launch date	Deadline for submission of short proposals	Number of short proposals received	Number of participants in eligible short proposals, full proposals	Number of short proposals selected to prepare a full proposal	Number of full proposals selected for funding	Number of Grant Agreements signed in 2015
	expansion study (RIA) ▪ ApoE biology to validated Alzheimer's disease targets (RIA)								
IMI2 Call 6	▪ Development of quantitative system toxicology (QST) approaches to improve the understanding of the safety of new medicines (RIA) ▪ Establishing impact of RSV infection, resultant disease and public health approach to reducing the consequences (RIA) ▪ Real world outcomes across the AD spectrum (ROADS) to better care (RIA) ▪ Development of an outcomes-focused data platform to empower policy makers and clinicians to optimize care for patients with hematologic malignancies (RIA)	two-stage	6/10/2015	12/01/2016	open	open	open	open	open
IMI2 Call 7	▪ Validation of translational imaging methods in drug safety assessment (TRISTAN) (RIA) ▪ Identification of druggable targets modulating misfolded proteins in Alzheimer's and Parkinson's diseases (RIA) ▪ Pathological neuron-glia interactions in neuropathic pain	two-stage	18/12/2015	17/03/2016	open	open	open	open	open

Call	Topic title	Call process	Launch date	Deadline for submission of short proposals	Number of short proposals received	Number of participants in eligible short proposals, full proposals	Number of short proposals selected to prepare a full proposal	Number of full proposals selected for funding	Number of Grant Agreements signed in 2015
	(RIA) ▪ Dry age-related macular degeneration: development of novel clinical end points for clinical trials with a regulatory and patient access intention (RIA) ▪ A comprehensive 'paediatric preclinical POC Platform' to enable clinical molecule development for children with cancer (RIA) Topics under the Big Data for Better Outcomes programme: ▪ Coordination and Support Action (CSA) for the Big Data for Better Outcomes programme ▪ Increase access and use of high quality data to improve clinical outcomes in heart failure (HF), atrial fibrillation (AF), and acute coronary syndrome (ACS) patients (RIA)								
IMI2 Call 8 Ebola +	▪ Ebola and other filoviral haemorrhagic fevers (Ebola+) programme: future outbreaks (two year Call with multiple cut-off dates) (RIA)	single-stage	18/12/2015	First cut-off date: 16/03/2016	open	open	open		open

Table summarising IMI2 Calls for proposals launched (but not concluded) in 2015 highlighting the priorities of Annual Work Plan 2015 implemented, the date of call launch and budgets available per call

Call number	Call type	Number of topics	Annual Work Plan 2015 Priorities implemented	Launch date	Budget	
					EU (in EUR)	EFPIA (in EUR)
IMI2 Call 5	Two stage	6	Diabetes/metabolic disorders Neurodegeneration	9 July 2015	47 477 000	47 477 000
IMI2 Call 6	Two stage	4	Translational safety Data and knowledge management Infection control including vaccines	6 Oct 2015	46 500 000	46 500 000
IMI2 Call 7	Two stage	7	Neurodegeneration Translational safety Data and knowledge management Other areas of priority (paediatrics)	18 Dec 2015	46 802 000	46 802 000
IMI2 Call 8	One stage	1	Infection control including vaccines	18 Dec 2015	70 000 000	70 000 000

Evaluation experts

Most of the experts (89.1 % involved in the review of proposals submitted in response to IMI2 JU Calls 1, 3, 4 and 5) came from EU and H2020 associated countries. For each Call in 2015, the breakdown of evaluators is as follows:

Call	Total number of experts	Number of experts acting as independent observers	Number of experts for ethical issues	Gender
IMI2 Call 1 stage 2 Topic 1	8	1	2	3 Female (F) and 6 Male (M)
IMI2 Call 1 stage 2 Topic 2	9	1	2	5 F and 5 M
IMI2 Call 3 stage 1	46	2		26 F and 22 M
IMI2 Call 3 stage 2	42	2	2	24 F and 20 M
IMI2 Call 4 stage 1	8	1		4 F and 5 M
IMI2 Call 4 stage 2	7	1	2	3 F and 5 M
IMI2 Call 5 stage 1	34	2		14 F and 22 M

Further details are available in Annex 5 "Scoreboard of H2020 common KPIs".

Implementation of IMI2 JU Call 1 (H2020-JTI-IMI2-2014-01-two-stage)

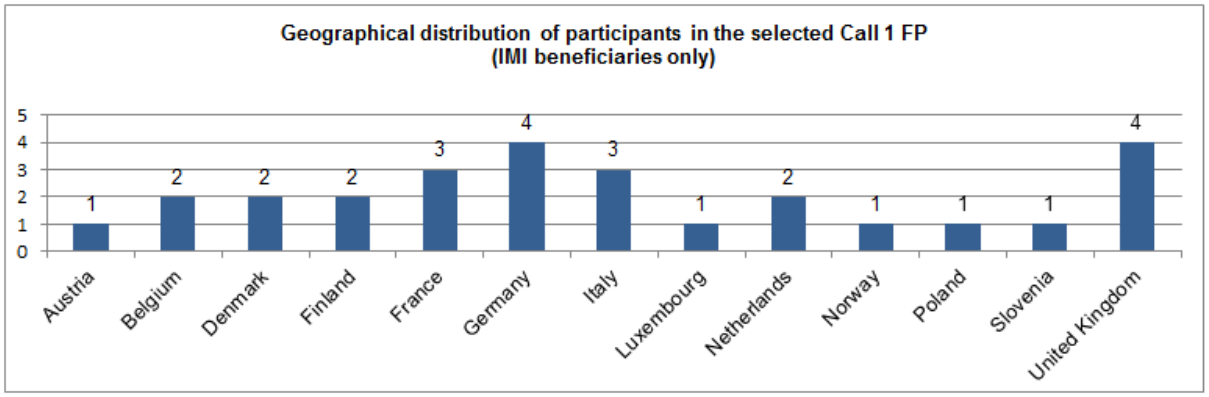
Launched in 2014, the evaluation process followed the defined timelines. A single proposal was selected to go forward to the full proposal (FP) stage for each topic with a deadline for submission of FPs of 21 April 2015.

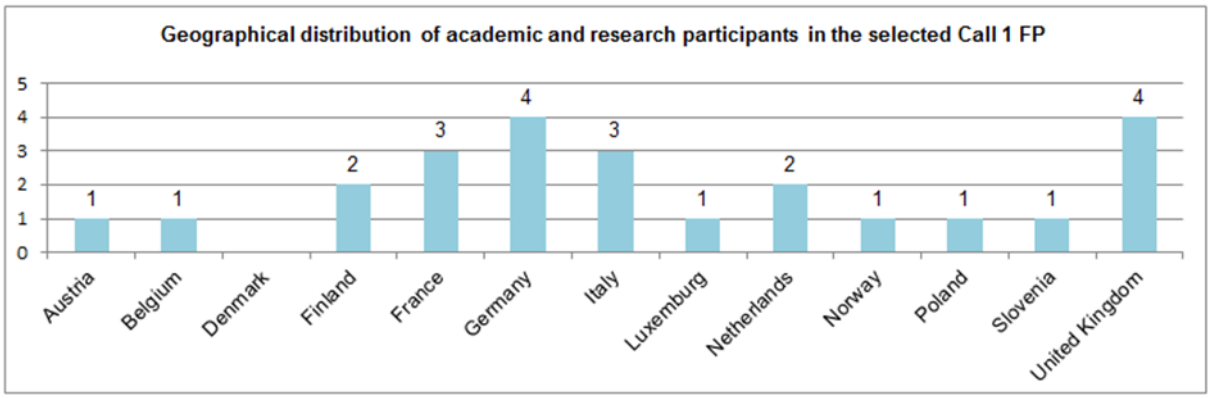
Before the submission deadline, the consortium submitting an FP for Topic 2 requested an extension of the submission period and, following an IMI2 JU Governing Board decision on 14 April 2015, the submission deadline for Topic 2 was extended to 27 May 2015.

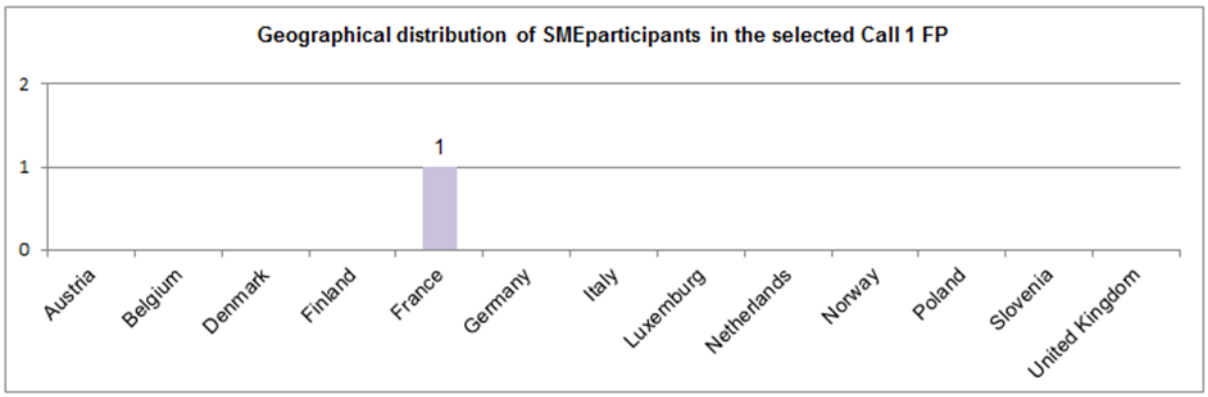
The stage 2 in-house evaluation of the Topic 1 FP was successfully concluded according to IMI's rules and procedures and the grant agreement which was signed on 7 December 2015.

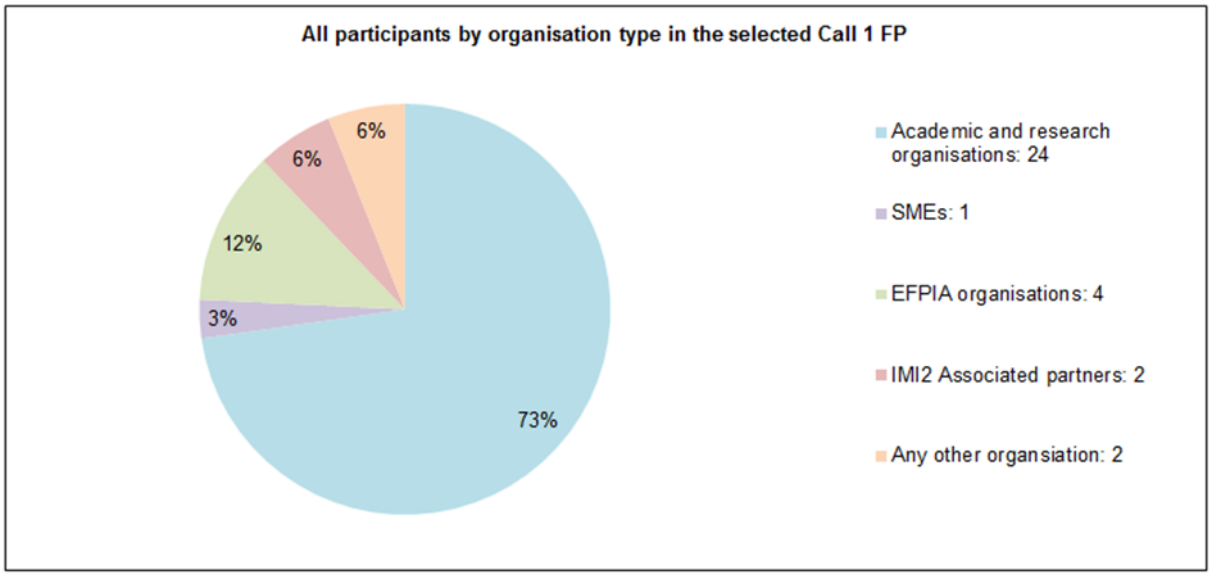
However, during the stage 2 in-house evaluation of the Topic 2 FP the expert panel found the proposal was of insufficient quality to be retained for funding, and was therefore rejected by the experts. The outcome submitted to the IMI2 JU Governing Board stated: the proposal was 'not retained, having failed one or more thresholds'. The IMI2 JU Governing Board adopted the results of the evaluation on 23 July 2015.

The key figures of the participants in the IMI2 Call 1 FP are presented below:









Implementation of IMI2 JU Call 2 on Ebola and other filoviral haemorrhagic fevers (H2020-JTI-IMI2-2014-02-single-stage)

The IMI2 Call 2 was also launched in 2014 under an accelerated procedure that resulted in 8 proposals being recommended for funding. IMI2 JU Governing Board adopted the outcome on 19 December 2014[6] and the 8 consortia were invited to prepare the grant agreement which were all concluded in Q1 2015.

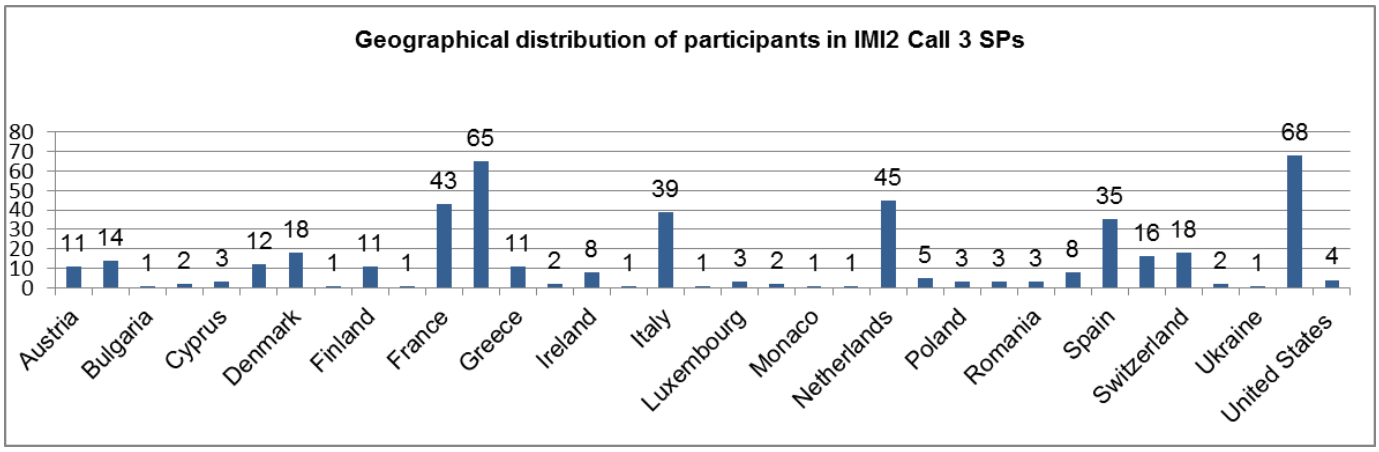
Implementation of IMI2 JU Call 3 (H2020-JTI-IMI2-2015-03-two-stage)

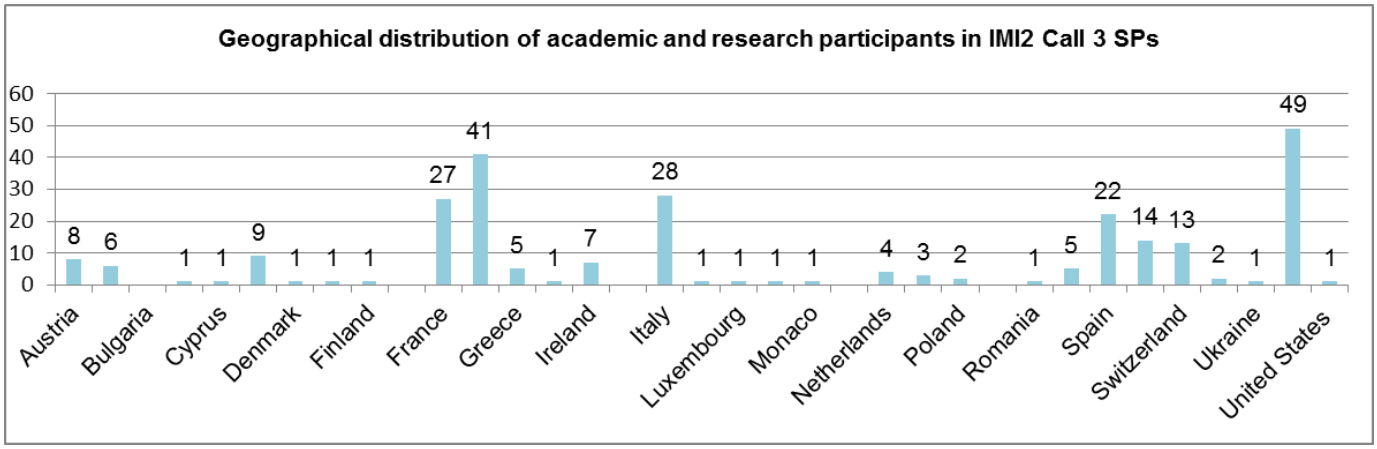
Launched on 17 December 2014, the submission of SPs and the stage 1 evaluation was completed successfully according to IMI rules and procedures. The six first-ranked SPs were invited to prepare FPs together with the pre-established EFPIA consortia with a deadline for submission of FPs of 29 September 2015.

Five of the FPs successfully completed the stage 2 in-house evaluation, however, one FP was found to be of insufficient quality to be retained for funding, and therefore the experts recommended that it should not be funded. The IMI2 JU Governing Board adopted the outcome on 2 December 2015 and one consortium, PRISM, signed its grant agreement on 18 December 2015 and the grant agreements of the four other projects will be concluded in early 2016.

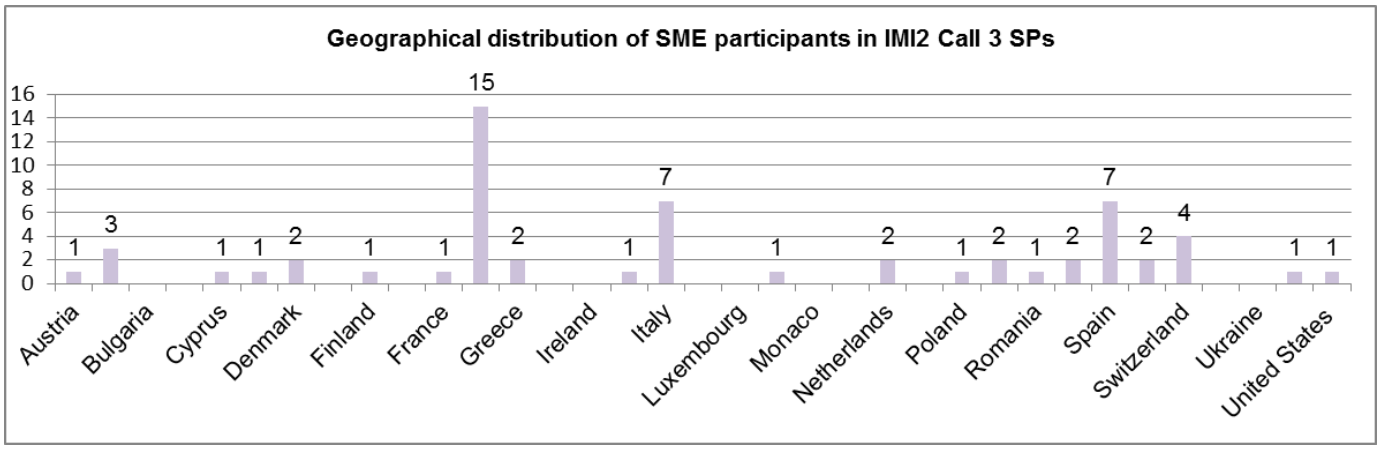
IMI2 JU Call 3 Short Proposal Participant Details

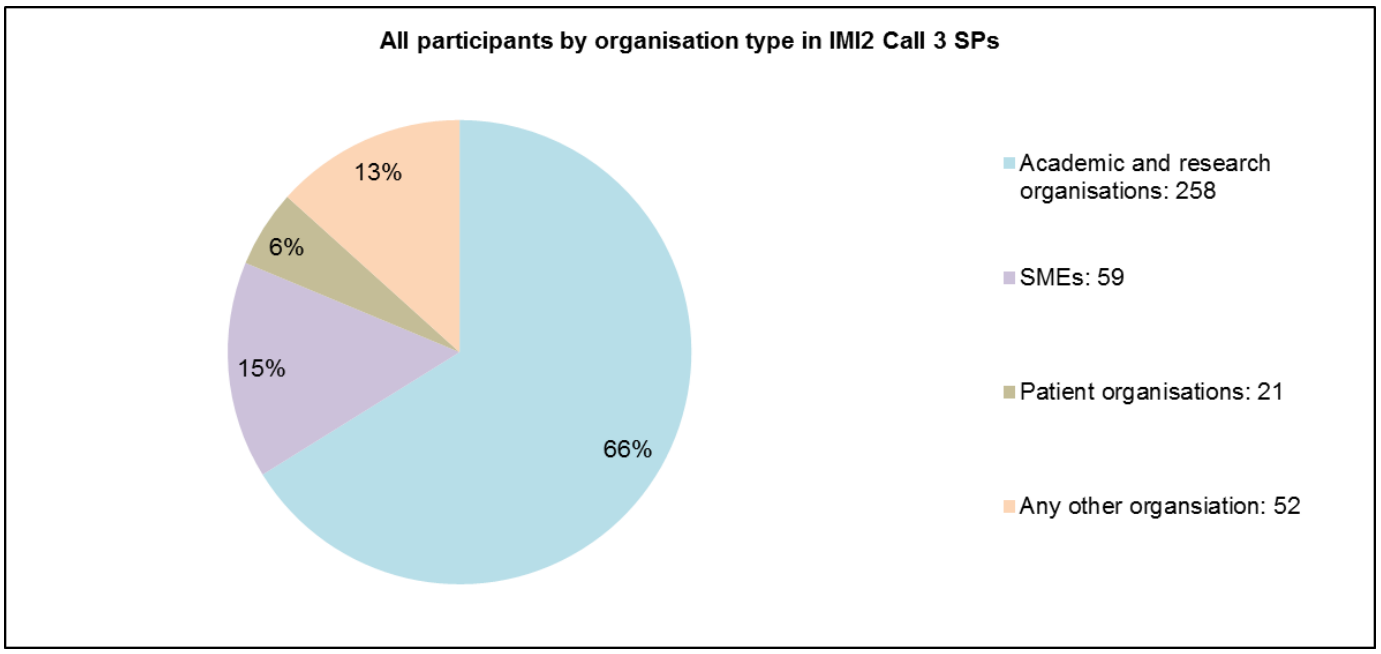
The key figures of the participants in the IMI2 Call 3 SPs are presented below:



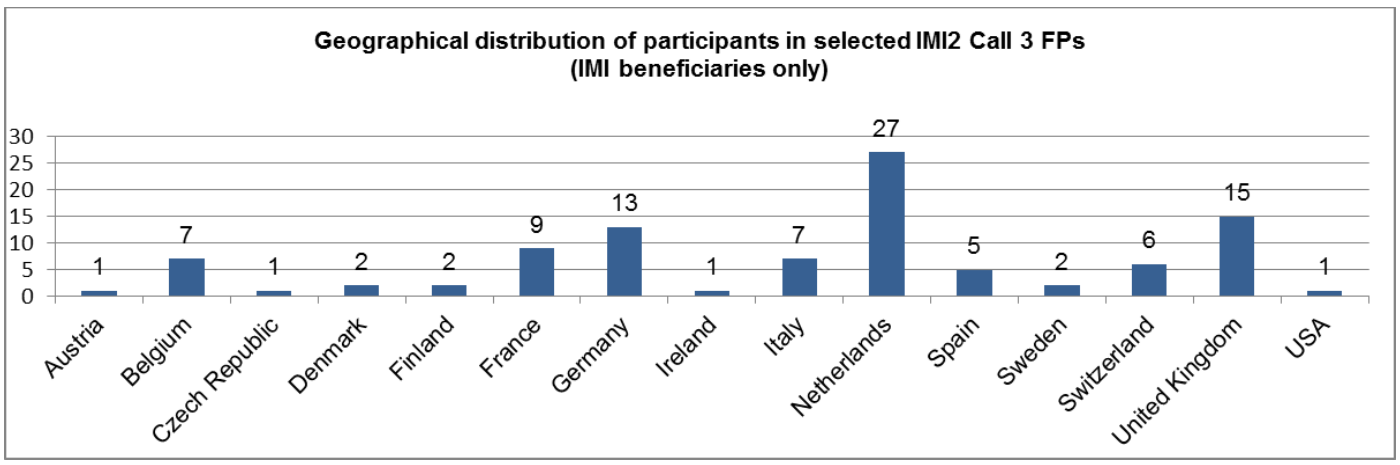


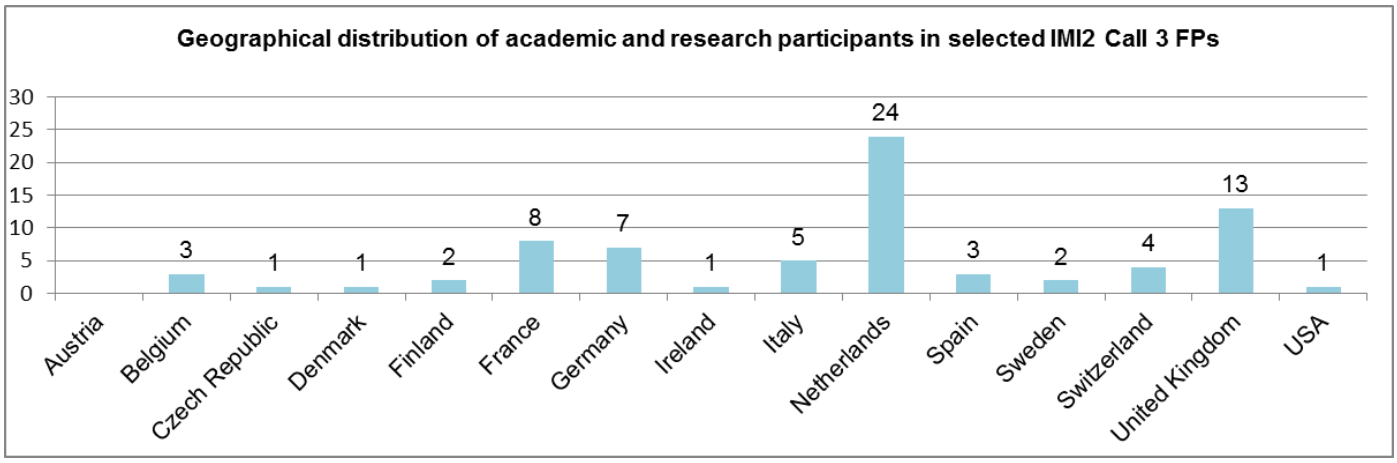
[6] For further information, see IMI2 JU Annual Activity Report 2014.

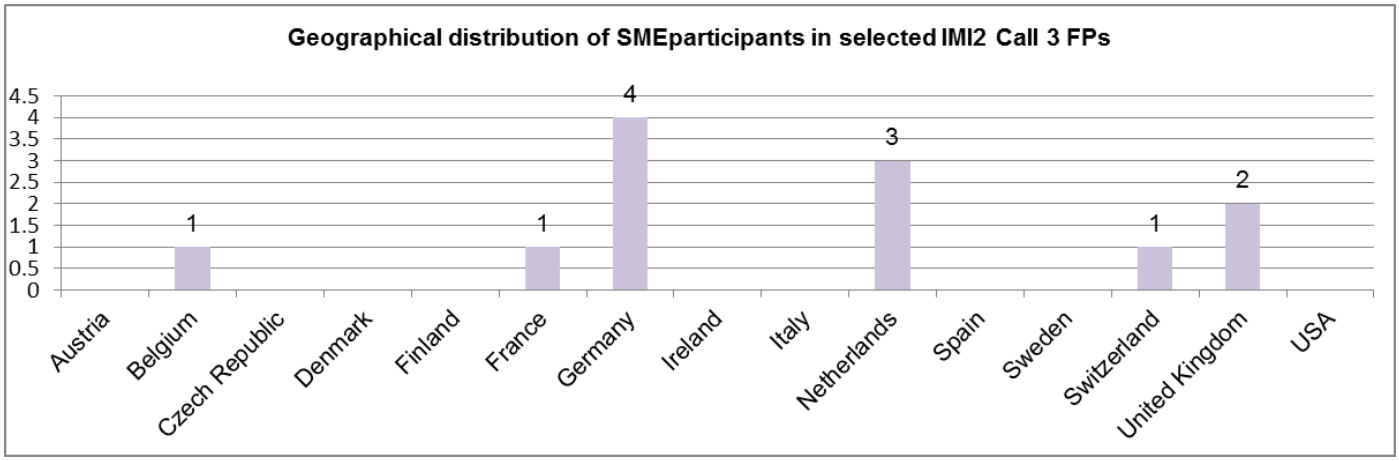


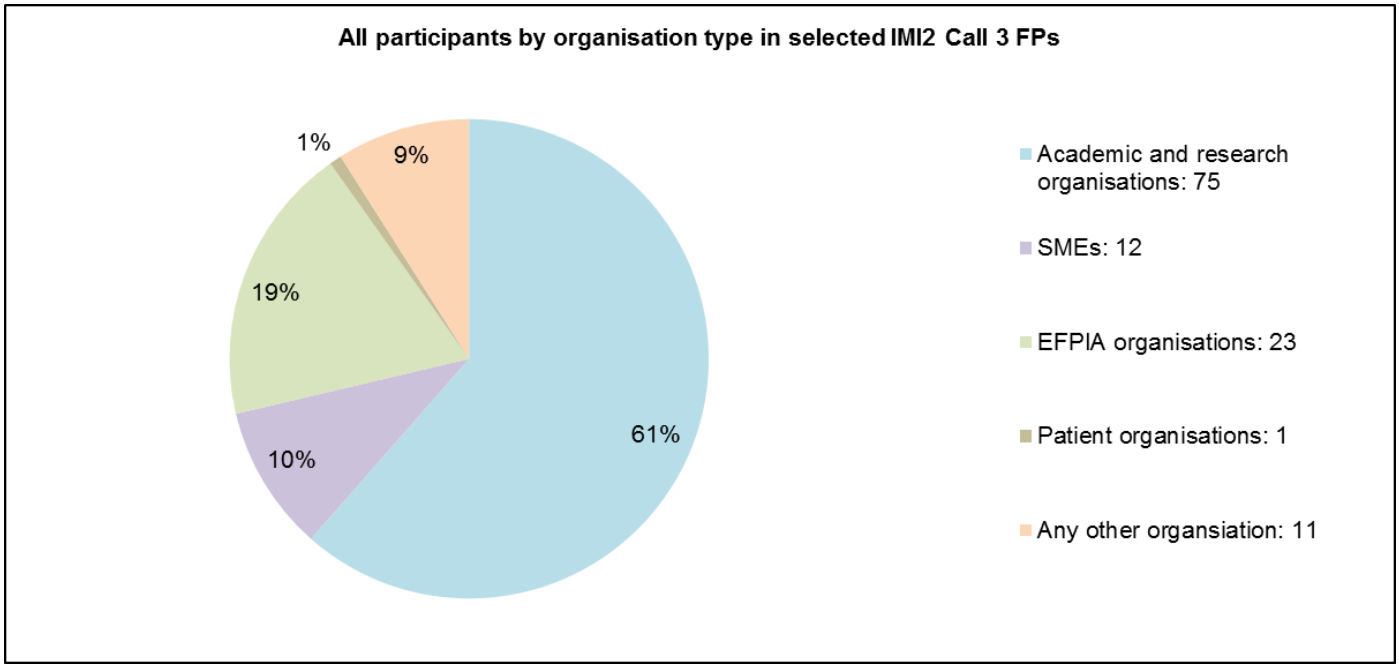


IMI2 JU Call 3 Full Proposal Participant Details




Geographical distribution of academic and research participants in selected IMI2 Call 3 FPs
30
25
20
15
10
5
0
3
1
1
2
8
7
1
5
24
3
2
4
13
1
Austria
Belgium
Czech Republic
Denmark
Finland
France
Germany
Ireland
Italy
Netherlands
Spain
Sweden
Switzerland
United Kingdom
USA


Geographical distribution of SMEparticipants in selected IMI2 Call 3 FPs
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1
1
4
3
1
2
Austria
Belgium
Czech Republic
Denmark
Finland
France
Germany
Ireland
Italy
Netherlands
Spain
Sweden
Switzerland
United Kingdom
USA

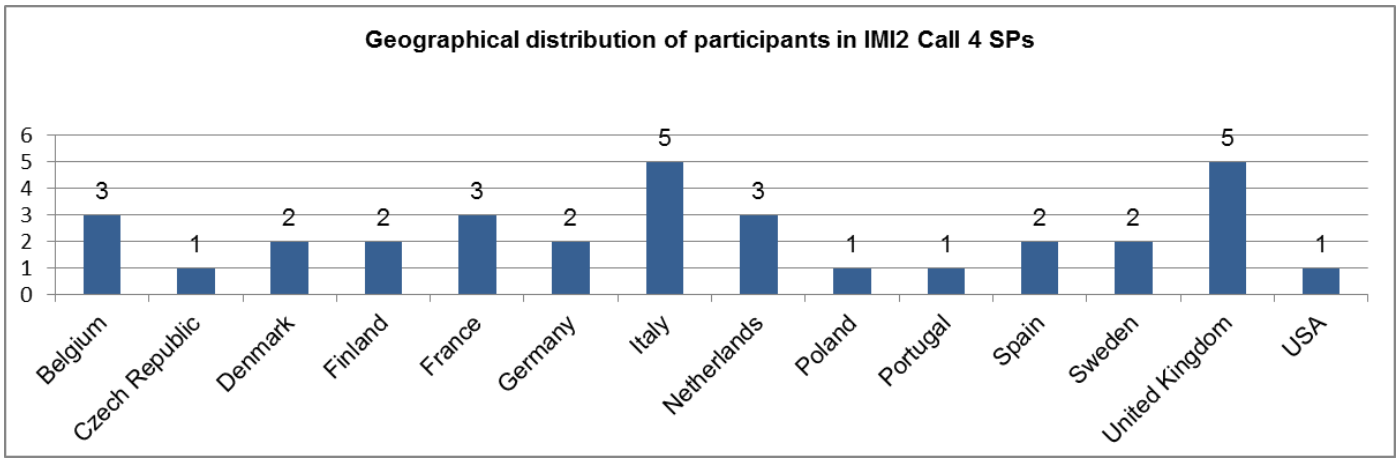

All participants by organisation type in selected IMI2 Call 3 FPs
1%
9%
19%
10%
61%
Academic and research organisations: 75
SMEs: 12
EFPIA organisations: 23
Patient organisations: 1
Any other organsiation: 11

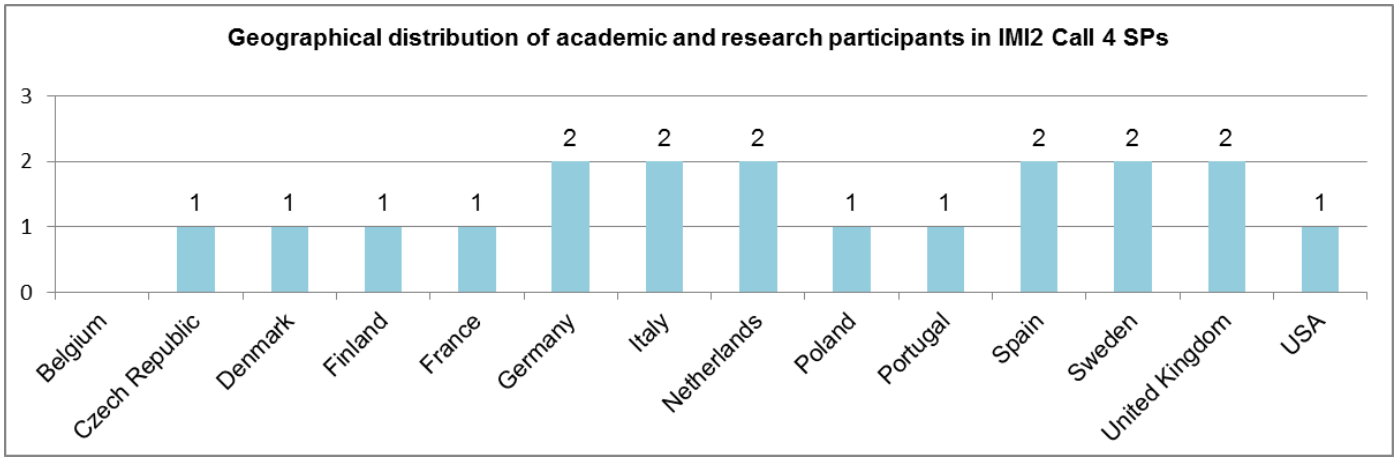
Implementation of IMI2 JU Call 4 (H2020-JTI-IMI2-2015-04-two-stage)

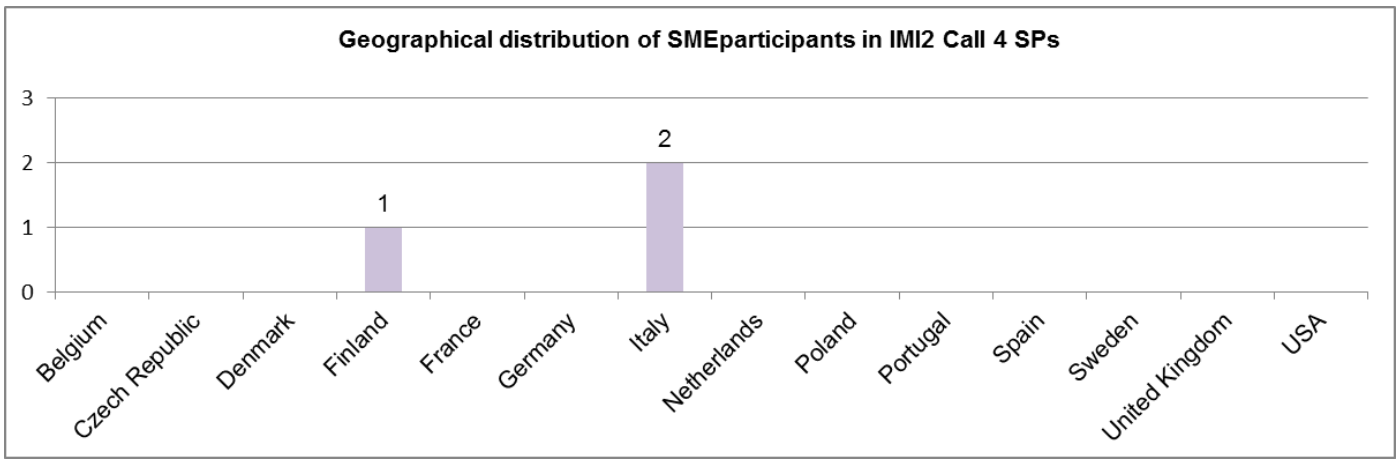
Launched on 17 December 2014, both stages of the evaluation process were concluded successfully. The IMI2 JU Governing Board adopted the results of the FP evaluation on 20 May 2015 and the consortium was invited to prepare the GA, which was concluded on 2 September 2015.

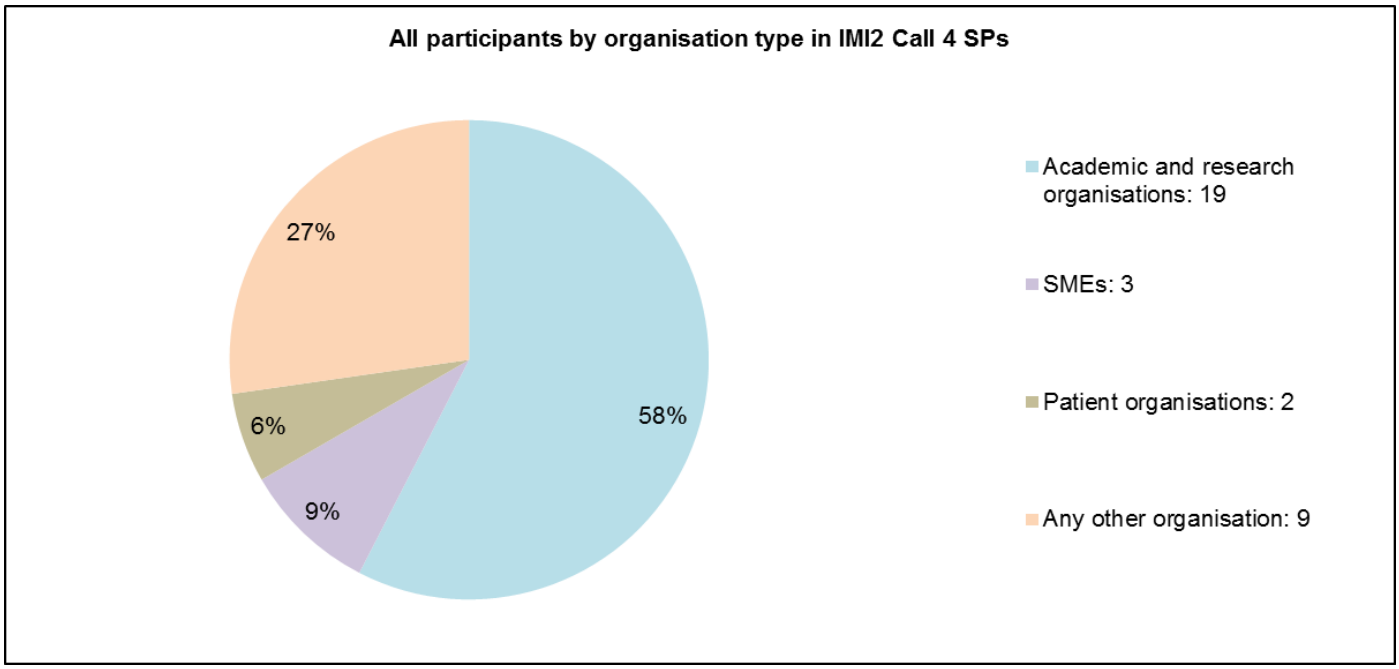
IMI2 JU Call 4 Short Proposal Participant Details

The key figures of the participants in SPs submitted in response to the IMI2 Call 4 are presented below:



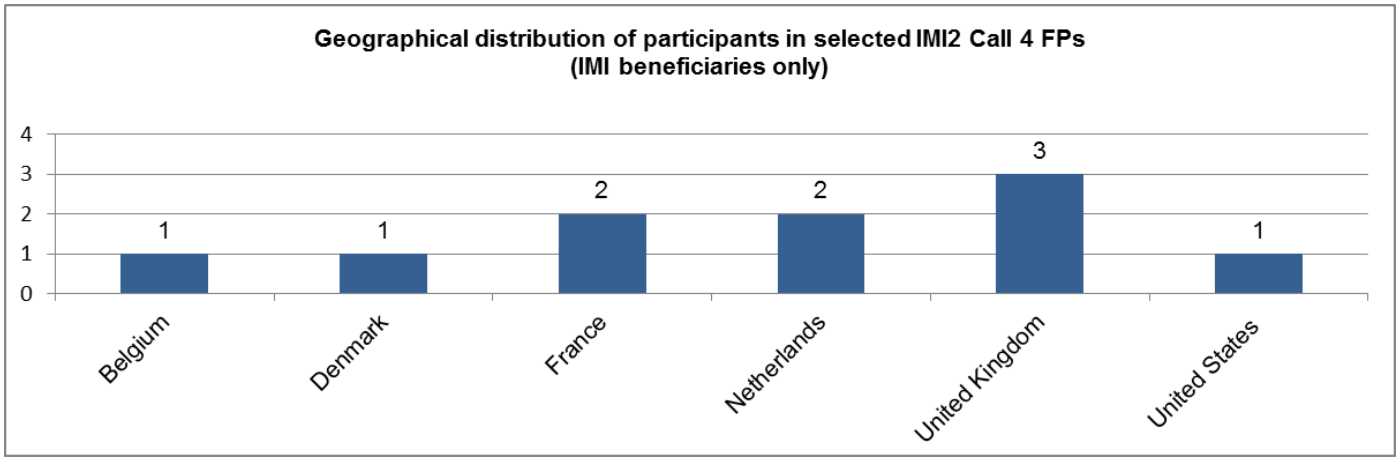


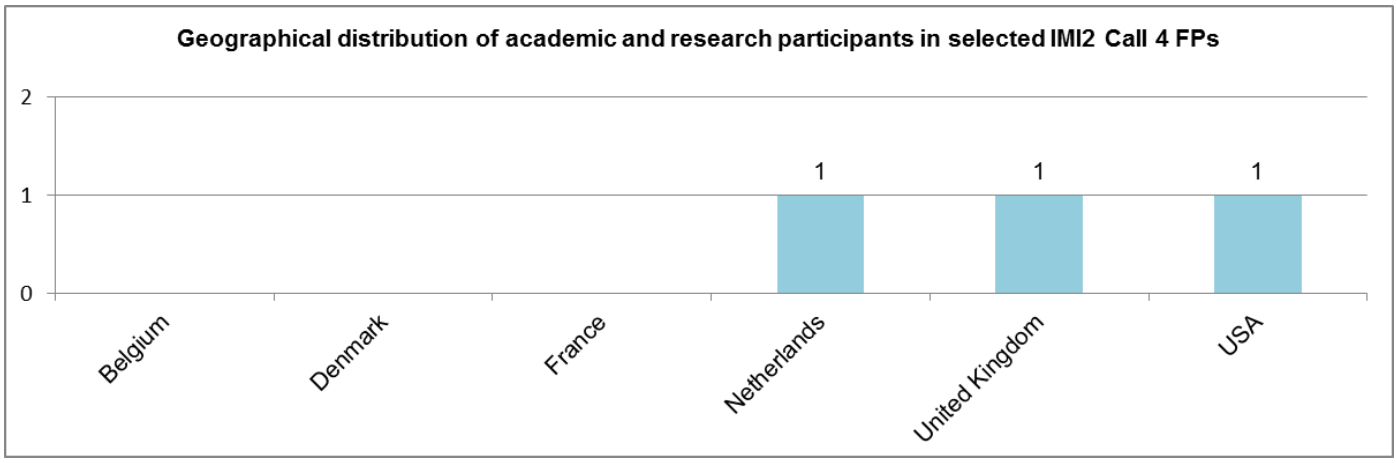


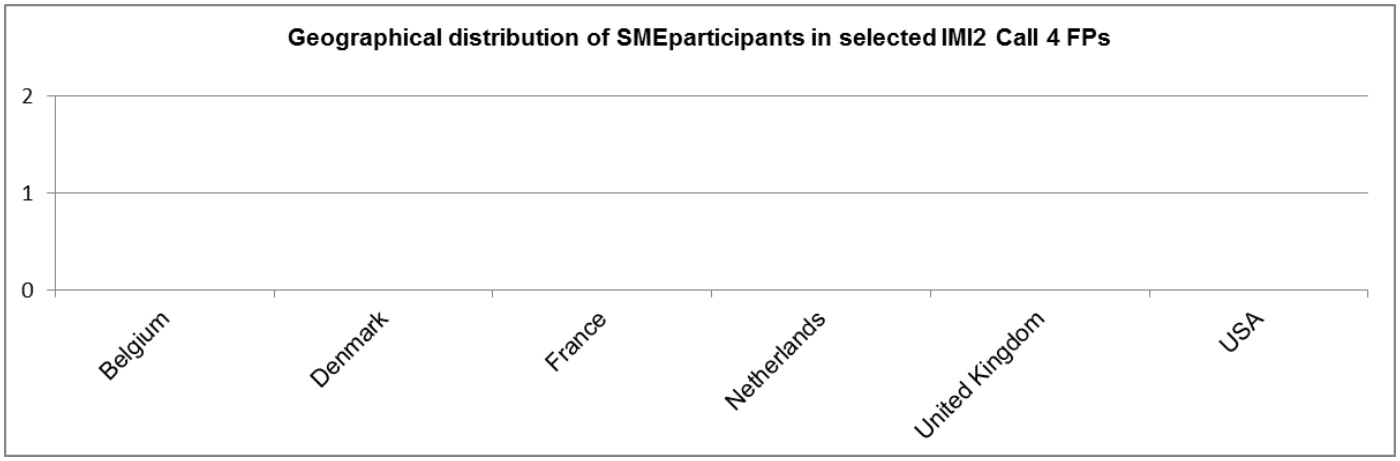


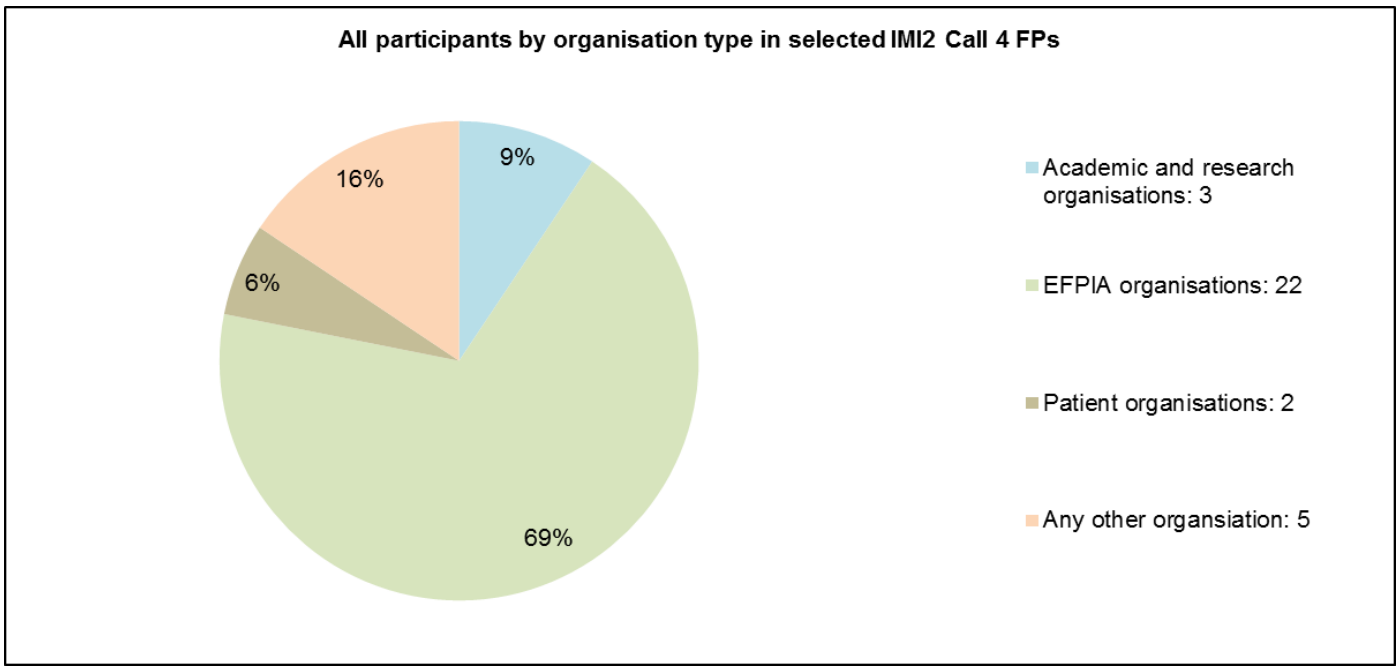
IMI2 JU Call 4 Full Proposal Participant Details

The key figures of the participants in FPs submitted in response to the IMI2 Call 4 are presented below:




Geographical distribution of academic and research participants in selected IMI2 Call 4 FPs
2
1
0
1
1
1
Belgium
Denmark
France
Netherlands
United Kingdom
USA

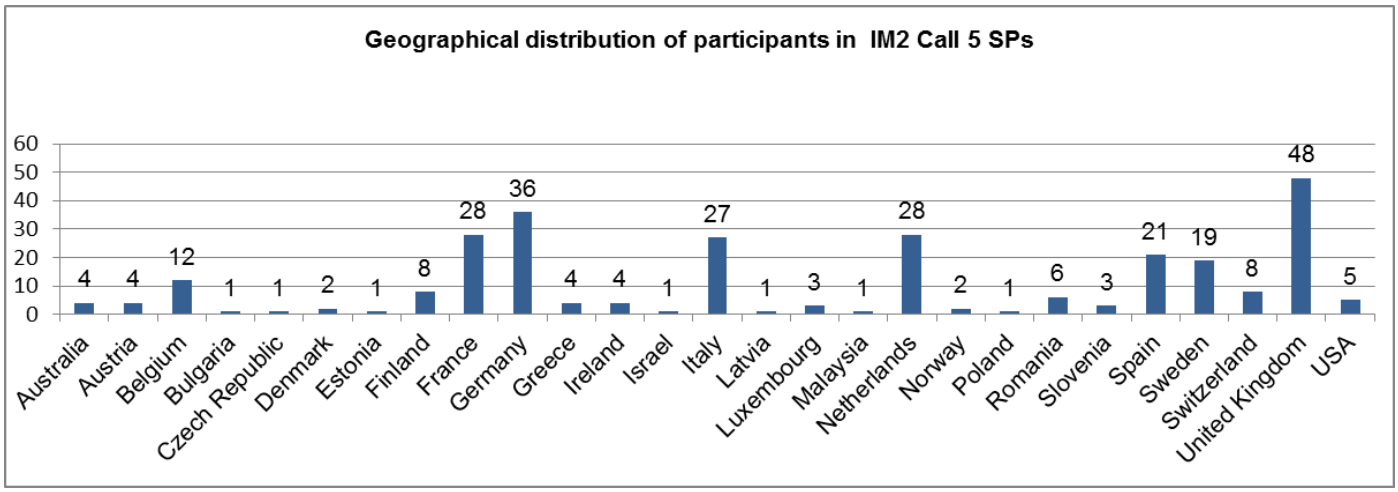

Geographical distribution of SMEparticipants in selected IMI2 Call 4 FPs
2
1
0
Belgium
Denmark
France
Netherlands
United Kingdom
USA

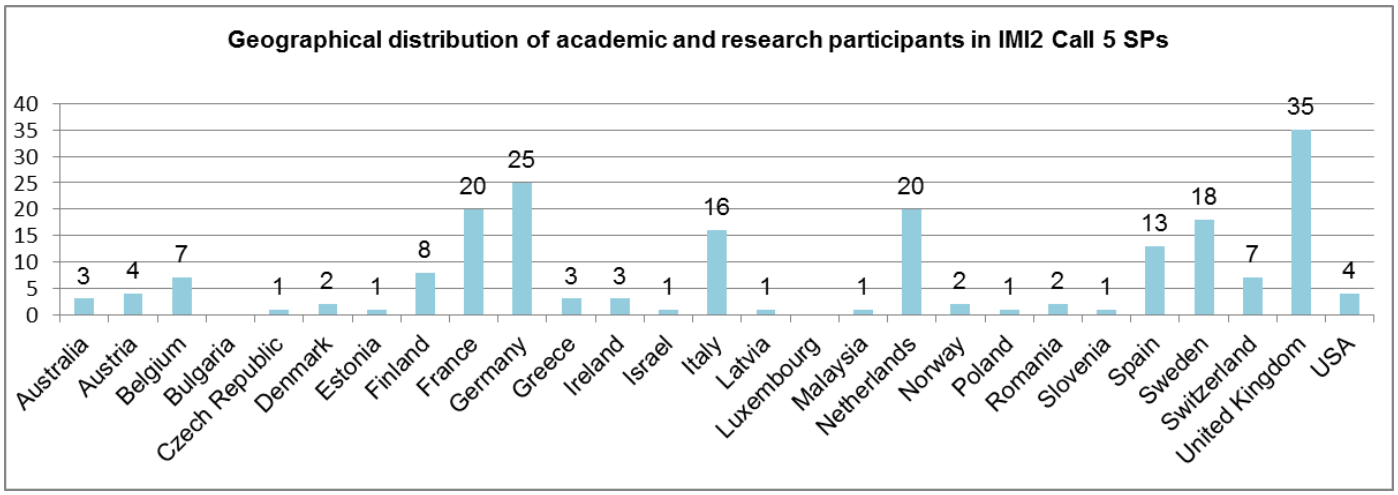

All participants by organisation type in selected IMI2 Call 4 FPs
9%
16%
6%
69%
Academic and research organisations: 3
EFPIA organisations: 22
Patient organisations: 2
Any other organsiation: 5

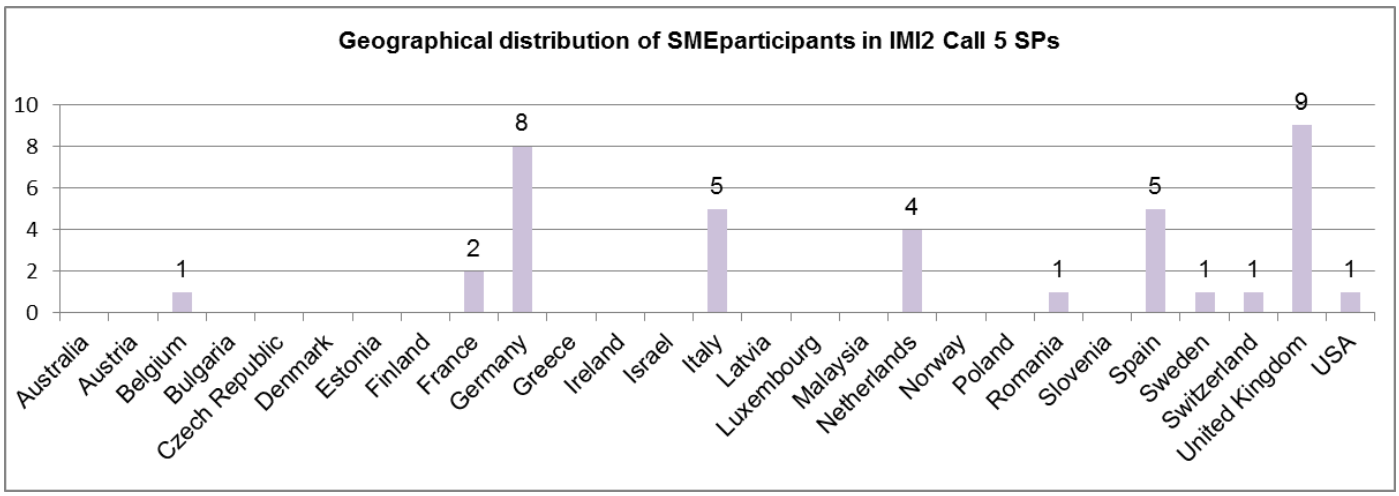
Launch and implementation of IMI2 JU Call 5 (H2020-JTI-IMI2-2015-05-two-stage)

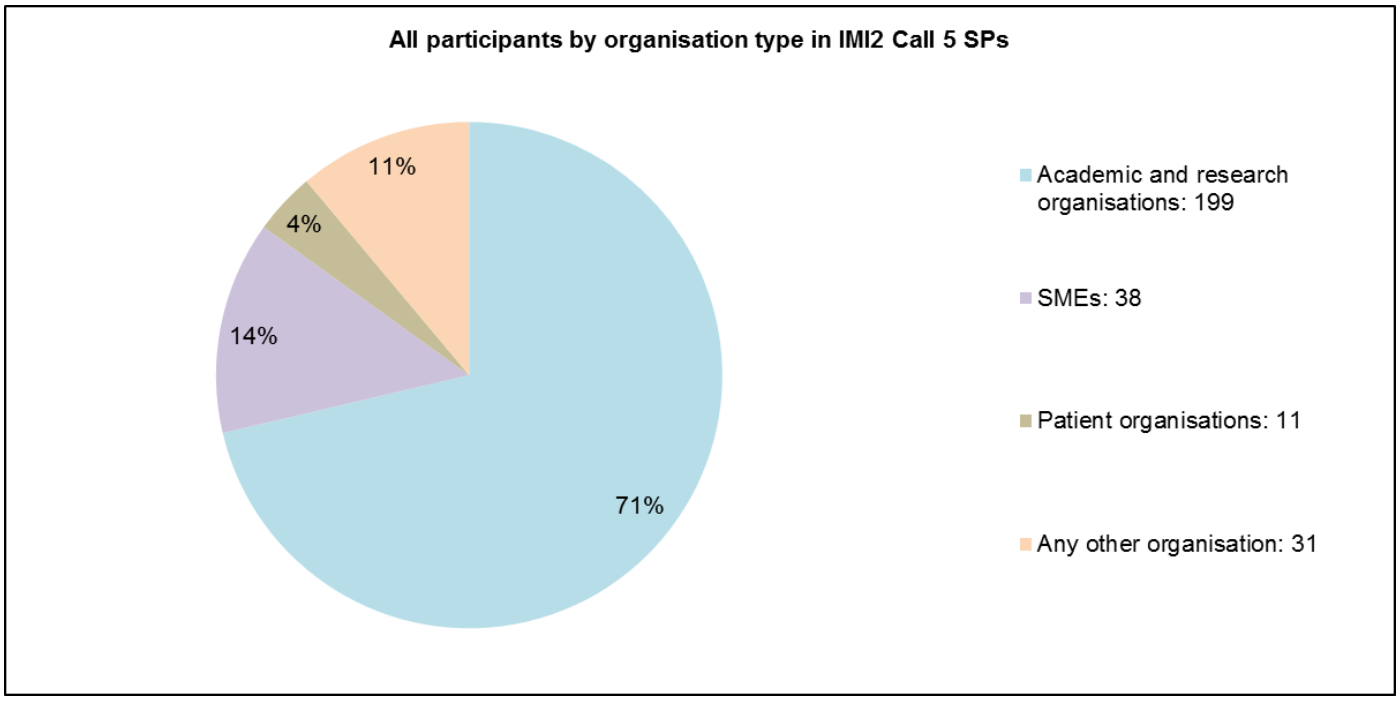
Launched on 9 July 2015, the stage 1 evaluation for submitted SPs was successfully concluded. The IMI2 JU Governing Board adopted the results of the evaluation on 18 December 2015. The consortia of successful SPs were invited to submit FPs. The deadline for submission of FPs was set to 15 March 2016.

The key figures of the participants in SPs submitted in response to the IMI2 Call 5 are presented below:









Launch of IMI2 JU - Call 6 (H2020-JTI-IMI2-2015-06-two-stage)

The Call was launched on 6 October 2015 with the deadline for submission of SPs of 12 January 2016.

Launch of IMI2 JU Call 7 (H2020-JTI-IMI2-2015-07-two-stage)

IMI2 JU - Call 7 was launched on 18 December 2015 with a deadline for submission of SPs of 17 March 2016.

Launch of IMI2 JU Call 8 (H2020-JTI-IMI2-2015-08-one-stage)

The IMI2 JU Call 8 for proposals on Ebola and other filoviral haemorrhagic fevers (Ebola+) programme: future outbreaks consists of a single topic with multiple cut-off dates.

The Call was launched on 18 December 2015 with deadlines for submission of FPs of 16 March 2016, 15 September 2016, 16 March 2017, 14 September 2017 and 15 March 2018.

Table summarising the number of beneficiaries and budgets for projects with GAs signed in 2015

Calls	Acronym of the projects	Number of IMI2 JU beneficiaries	Number of EFPIA companies	Number of IMI2 JU Associated Partners	IMI2 JU Funding to academic &research (1)	IMI2 JU Funding to SMEs (2)	IMI2 JU Funding to patient organisations (3)	Others (4)	IMI2 JU contribution (EUR) (5=1+2+3+4)	EFPIA in-kind contribution (EUR) (6)	IMI 2 JU Associated partners (EUR) (7)	Total budget (EUR) (5+6+7)
IMI2 Call 1	INNODIA	27	4	2	17 277 000	353 000	0	0	17 630 000	12 745 192	5 577 316	35 952 508
IMI2 Call 2	VSV-EBOVAC	11	0	0	3 612 260	212 500	0	62 500	3 887 260	0	0	3 887 260
IMI2 Call 2	EBOVAC1	3	1	0	58 336 885	0	0	0	58 336 885	33 745 758	0	92 082 643
IMI2 Call 2	EBOVAC2	7	1	0	22 419 320		0	371 500	22 790 820	13 880 240	0	36 671 060
IMI2 Call 2	EBOMAN	1	1	0	0	1 023 325	0	0	1 023 325	47 642 879	0	48 666 204
IMI2 Call 2	EBODAC	2	1	0	2 088 630	15 284 473	0	2 955 753	20 328 856	5 412 000	0	25 740 858
IMI2 Call 2	EbolaMo DRAD	16	0	0	3 125 482	569 375	0	606 078	4 300 935	0	0	4 300 935
IMI2 Call 2	FILODIAG	3	0	0	765 855	1 058 750	0	435 500	2 260 105	0	0	2 260 105
IMI2 Call 2	MOFINA	5	0	0	435 984	394 178	0	332 460	1 162 622	0	0	4 520 492
IMI2 Call 3	PRISM	15	7	0	5 486 414	2 581 586	12 000	0	8 080 000	8 479 551	0	16 559 551
IMI2 Call 4	ADAPT-SMART	8	22	0	974 000	0	156 000	0	1 130 000	1 979 131	0	3 309 131

1.5.2 Interim reviews for IMI1 projects

In 2015, IMI conducted 12 interim reviews and 1 ethical review of projects from IMI1 JU Calls 3, 4, 5, 6, 7 and 8, as shown in the table below.

IMI project acronym	Call #	Full project name	Interim review	Review at month X out of Y (duration of the project)
CHEM21	IMI1 JU Call 4	Chemical manufacturing methods for the 21st century pharmaceutical industries	16/01/2015	22M out of 48M
K4DD	IMI1 JU Call 4	Kinetics for drug discovery	06/03/2015	21M out of 60M
DIRECT	IMI1 JU Call 3	Diabetes research on patient stratification	23/03/2015	35M out of 84M
OrBiTo	IMI1 JU Call 4	Oral biopharmaceutics tools	15/04/2015	22M out of 60M
StemBANCC	IMI1 JU Call 4	Stem cells for biological assays of novel drugs and predictive toxicology	29/04/2015	22M out of 60M
eTRIKS	IMI1 JU Call 4	Delivering European translational information & knowledge management services	21/05/2015	22M out of 60M
EBiSC	IMI1 JU Call 8	European bank for induced pluripotent stem cells	02/06/2015	12M out of 36M
GetReal	IMI1 JU Call 7	Incorporating real-life clinical data into drug development	09/06/2015	15M out of 39M
ELF EUC2LID	IMI1 JU Call 5	European Lead Factory	18/06/2015	24M out of 60M
TRANSLOCATION	IMI1 JU Call 6	Molecular basis of the bacterial cell wall permeability	10/07/2015	24M out of 60M
COMPACT	IMI1 JU Call 4	Collaboration on the optimisation of macromolecular pharmaceutical access to cellular targets	11/09/2015	26M out of 60M
AETIONOMY	IMI1 JU Call 8	Organising mechanistic knowledge about neurodegenerative diseases for the improvement of drug development and therapy	29/09/2015	12M out of 60M
Ethical review				
OrBiTo	IMI1 JU Call 4	Oral biopharmaceutics tools	01/12/2015	N/A

Recommendations from the reviews experts were shared with the consortia, which are now in the process of responding to them by proposing appropriate actions and/or amending the work planned for the remainder of the project. Further information on each project reviewed is presented below.

AETIONOMY

The early (18M) review of the project demonstrated that AETIONOMY had progressed according to the work plan. Essential infrastructures have been implemented; procedures and workflows have been established; essential software tools have been developed and the first data sets have been incorporated.

The consortium appears to be functional and has started to actively engage with other communities. However, it was not yet possible to determine if the overall goals of the project will be successful. In this project, the output is weighted towards the final product, making assessment during the course of the project more challenging. Importantly, the finalisation of the specific hypotheses that will be tested in the prospective study has been delayed until month 36. Thus the reviewers provided specific recommendations and invited the consortium for a further review at month 36, when this key milestone should have been achieved.

CHEM21

The CHEM21 project is generating a range of methods to make the drug development process, particularly manufacturing, more environmentally friendly. The outcome of the review was very positive with recognition of the efforts by all partners both public and private in attempting to meet the objectives. It was recognised that while the project has made impressive progress the partners should decide on a limited set of approaches and target molecules and focus on these for the remainder of the time available. The continued demonstration of approaches developed by academia being taken up and applied by industry was strongly encouraged.

COMPACT

The goal of the COMPACT project is to shed new light on the obstacles that biopharmaceuticals need to overcome to get to where they are needed in the body. The reviewers acknowledged that the COMPACT project is tackling a challenging problem. Nevertheless, the team had undertaken many efforts to accomplish the goals, respect the milestones and deliverables and the overall assessment was positive. While the reviewers acknowledged that the project was making good progress, they advised the project team to prioritise some of their approaches towards the development of advanced drug delivery systems for specific biopharmaceutical drugs. Focusing on a smaller number of specific drugs or targets should ensure a greater impact of project results.

DIRECT

The review was organised at year three of a seven-year program. The project aims for a better stratification of diabetes and prediabetes patients, and for a more effective, rational therapeutic treatment. The study is still very early in its discovery phase; some deficits in expected achievements have been recorded, e.g. progress concerning the identification of markers in terms of stratification. It was recommended that the project work towards establishment of a tight collaboration with leading professional associations active in the fields of diabetes care and predictive, preventive and personalised medicine. An additional review in two years was recommended.

EBiSC

EBiSC is setting up a large hiPSC generating, banking, and distribution enterprise that coordinates and harmonises the activities, practices, and standards of many centres and scientists, each with their own methodologies, metrics, and biases based on varying past experiences. During its first 17 months of funding, EBiSC has made substantial progress. The reviewers acknowledged that the biggest accomplishments are: the meta-data analyses performed to date on variations in hiPSC practices and the IP landscape; the various SOPs and protocols which can be published in methods journals; the various training regimes and syllabuses; the information management system; and the automation systems. If successful, the EBiSC project will facilitate the discovery of new medicines and the creation of knowledge of human disease biology. It will also have successfully created jobs and a sustainable business in the area of stem cells. The review panel recommended to secure funding for years 4-6 to sustain EBiSC until such time as it can become self-sustaining. A strength was seen in the establishment of successfully-piloted collaborations with IMI JU StemBANCC project.

eTRIKS

The expert panel acknowledged that eTRIKS is a unique project within the IMI framework, having been created mainly to support other projects in their research activities and including an (albeit smaller) research component. eTRIKS has managed to successfully transform a new open source project into a comprehensive translational platform available for EU projects and beyond. TranSMART (TM) 1.1 was developed predominantly by eTRIKS and has been deployed to eTRIKS clients.

This was viewed as a significant achievement by the review panel. TM 1.1 implements a fully open source software platform that is available under the GNU General Public License (v3), a mandate by the IMI1 and the eTRIKS description of work. In addition, eTRIKS has successfully managed to: 1) create a service by deploying TM to provide an integrated service that is fit-for-purpose, secure, easy to access, and standardised to support translational research; 2) provide training; 3) create an easy installation version of TM; 4) provide a full service to four other IMI projects to access TM as well as a Medical Research Council project, a multi-tiered engagement model has been commissioned to offer services ranging from limited-term training and consulting sessions to comprehensive system hosting, data curation and bespoke solution development. The reviewers supported the great progress being made in relation to data curation and harmonisation but highlighted the need for the project to refine its deliverables in order to achieve an even greater impact.

EUROPEAN LEAD FACTORY

Comprising a collection of half a million compounds (derived from new public and existing private company collections) and a screening centre, the European Lead Factory offers researchers in academia, SMEs and patient organisations an unprecedented opportunity to advance medical research and develop new medicines. The reviewers recognised that the establishment of a state-of-the-art infrastructure is a highly significant achievement. They particularly praised the IT solutions, namely the Honest Data Broker system and Tarosgate, which enable the project to function correctly and for the benefit of all partners. They also recognised the challenges faced with recruiting high quality screen-ready targets and novel chemistry ideas from outside of the project and suggested flexibility in the use of resources in order to help address these.

GetReal

The reviewers recognised that GetReal is a unique collaborative project that will have significant regulatory, scientific, operational, societal, and public benefits. The project is progressing along the major intended work trajectories, though with some initial delays due mainly to difficulties acquiring materials for the intended case studies from the EFPIA partners. Where necessary, priorities and tasks were realigned. Further alignments were recommended in the best interest of the project, its potential contributions and impact, and in view of the short duration of the project. Indeed the project has the potential to reshape, rather than merely contribute to, the state of the art concerning drug development, regulatory affairs, and market access.

Nonetheless, to achieve this the panel strongly recommended that the consortium should ensure that the high academic and scientific level deliverables are followed up with ‘translational’ work products targeting the various stakeholders. This will enable the diffusion (including education and training), adoption, and application of the key results and outputs of the project to optimise the integration of the know-how and ‘do-how’ in drug development and regulation. The consortium has already acted on the reviewers’ comments in particular by enhancing its communication plan for the final year of the project.

K4DD

The goal of the K4DD project is to improve the understanding of how potential drugs bind with their target, and develop methods and tools to allow researchers to study drug-target interactions with greater ease. The interim review established that the project is on track to meet its objectives and is well managed. Given that the role of binding kinetics on drug effect *in vivo* remains to be established, it is too early to assess the impact of project results on the state of the art, but project results are an invaluable prerequisite for user acceptance and long-term viability of the data. The review highlighted that K4DD is opening a new field in drug discovery and therefore encouraged the project team to proactively involve more scientists from outside the project.

OrBiTo

The OrBiTo project aims to enhance the understanding of how orally-administered drugs are taken up from the gastrointestinal tract into the body, and apply this knowledge to create new laboratory tests and computer models that will better predict the performance of these drugs in patients. The review highlighted that the results so far have been significant and contribute to the development of the state of the art in the field. The reviewers felt that more engagement from the academic partners would benefit the project but did not doubt that the potential impact for the project was very high.

The OrBiTo project was also subject to a review of ethics at the interim stage requested at the time of the full proposal evaluation. The ethics review panel reported that the issues identified at the time of the full proposal evaluation had been satisfactorily addressed by the consortium.

StemBANCC

This project is working towards establishing iPSCs of disease and normal controls for research and drug discovery. StemBANCC has been generating new iPS lines, developing differentiation protocols for a range of cell lineages that will be studied in depth by individual work packages. The expert panel acknowledged that the project has made good progress against its original objectives. Ethics and governance structures progress are in place and the network has also incorporated CRISPR (Clustered regularly interspaced short palindromic repeats) technologies into its work plan. StemBANCC will partner with the ISSCR to deliver a symposium to publicise the work of StemBANCC and the opportunities that it provides. The panel highlighted that a clearer plan for database maintenance, cell line storage and distribution and for the sustainability of the project was required. In this regard clarification of the relationship between StemBANCC and EBiSC was also requested to ensure that synergies could be fully exploited and redundancies avoided.

TRANSLOCATION

The reviewers acknowledged that the consortium has produced and already published some important structural and modelling results generated from the technical work packages, while stressing the importance to keep the focus on the overall goal of making information available to assist antibiotic drug discovery. Concerns were raised about the status of the InfoCentre and the small amount of information that has been captured, especially in light of the fact that this should be the data hub for the whole New Drugs for Bad Bugs (ND4BB) platform. Another concern was that some of the industry partners appear either not really engaged in the project or due to changes in internal strategy have significantly decreased their contribution. The reviewers provided several recommendations to address and correct these critical issues.

1.5.3 Progress against key performance indicators (KPIs) and statistics

The 2015 annual objectives and KPIs, presented in Annexes 5, 6 and 7, are linked to the main policy objectives of IMI JU (established under Council Regulation 73/2008 of 20 December 2007) and IMI2 JU (replacing and succeeding IMI JU and established through Council Regulation 557/2014 of 6 May 2014) and focus on performance in the following key strategic areas of the Joint Undertaking's activities, namely:

(1) the coverage of the research portfolio, i.e. adequate implementation of the annual scientific priorities;
(2) the degree of progress of IMI projects in delivering pre-set results and achieving targeted research;
(3) performance;
(4) the impact of the IMI programme on the regulatory framework as well as EU competitiveness;
(5) the level of collaboration and SME participation so far;
(6) the level of involvement of patients groups;
(7) the extent of communication and awareness of IMI among all target groups; and
(8) the overall efficiency, budget execution and the level of awareness of the IMI Programme Office.

For the purpose of monitoring of IMI's contribution to achieving the H2020 objectives, the Programme Office will start to collect data as set out below.

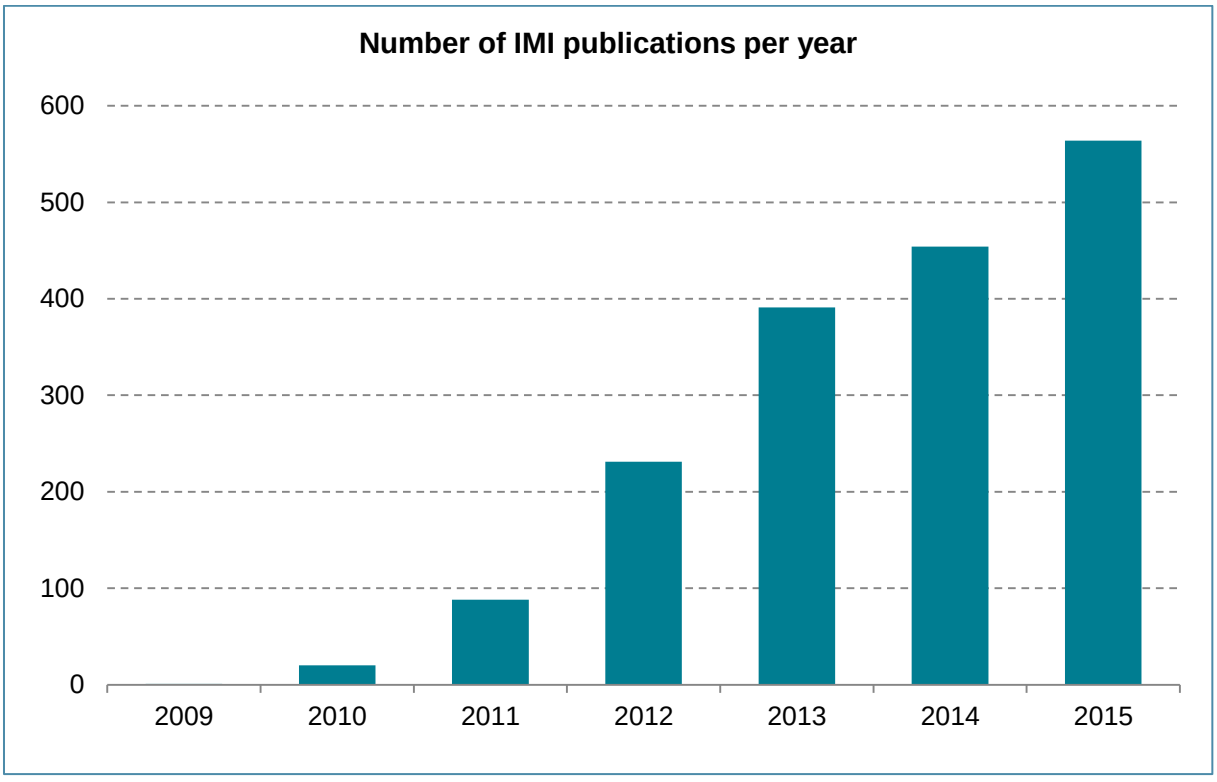
(1) Reporting against the indicators of results and impact as specified in the legislative financial statement included in the European Commission's proposal for the IMI2 Council Regulation. These are presented in Annex II of the IMI2 JU Annual Work Plan (AWP) 2015.
(2) Reporting against the relevant standard H2020 performance indicators for assessing the results and impacts of the specific objectives of the programme, as detailed in Annex I and II of the Council Decision 2013/743/EU establishing Horizon 2020 - the Framework Programme for Research and Innovation. These indicators are listed in the in Annex III of the AWP 2015.

The Programme Office will continue to measure and track, with the assistance of external consultants and service providers, all aspects of the Joint Undertaking's performance, outputs and impact using different methods for reporting results and outcomes including qualitative assessments, periodic scoreboards, and other metrics. These will continue to reflect the longer term outputs and impacts of both the IMI and IMI2 programmes for the ultimate benefit of patients, as well as European competitiveness, economic growth, and the advancement of science and innovation.

1.6 Dissemination and information about projects results

An important aspect of IMI projects is to generate the tools and methodologies that lead to a change in the way in which new medicines are discovered and developed. Many of the project achievements are already presented in Section 1.2, Research and Innovation Activities, and have been disseminated via the activities of the communication team (outlined in Section 2.1). We are beginning to see project results being taken up and used not only by industry but also the wider scientific community. In addition, activities within IMI projects are resulting in the setting up of new initiatives such as SMEs or new collaborations, as well as opportunities for the commercial exploitation of project results.

Excellent science is a prerequisite for all of this to happen. IMI evaluates and monitors this by means of bibliometric analysis of IMI project outputs conducted by an external contractor, Thomson Reuters, (see Annex 3). Thus far the analyses have revealed the high quality of scientific results that continue to be published by IMI projects. The latest report demonstrates that the overall volume of IMI JU project research output has been increasing rapidly since 2009, as illustrated below. By 31 December 2015, IMI JU projects had produced 1 678 publications, 30 % of which were published in the last year. It is expected that publication output will continue to rise as the number of active projects increases and those projects yield results for publication.

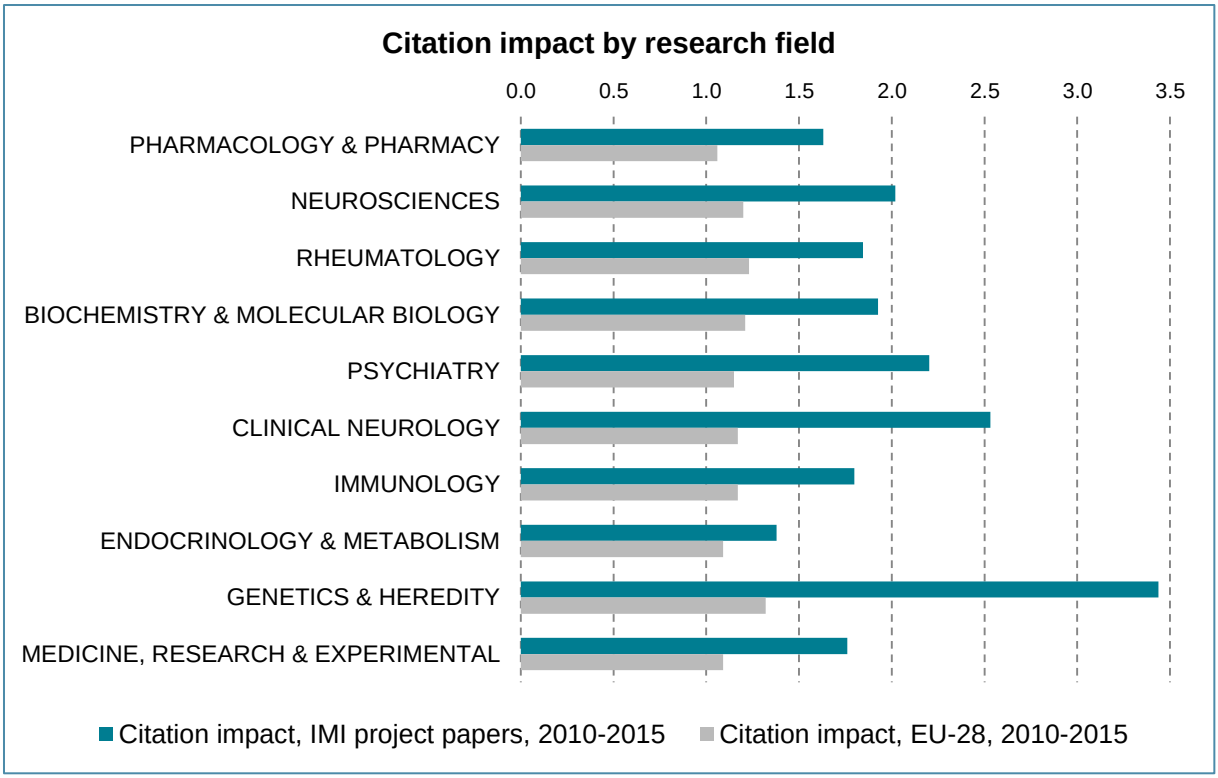


Source: Thomson Reuters analysis, 2016

IMI JU project publications have been found in a total of 620 journals, and 73 % of papers were published in top quartile journals (determined by journal impact factor), including PLOS One, JAMA (the Journal of the American Medical Association), Science and Nature Publishing Group titles. The analysis also reveals that 23.5 % of papers from IMI JU projects are 'highly cited', meaning they are in the top 10 % of papers by journal category and year of publication. The average journal impact factor of all the journals in which IMI project publications have been published is 5.97.

The citation impact of papers associated with IMI JU projects is internationally influential, with an average citation impact average of 1.93 for the 6-year period from 2010 to 2015 (compared to the world baseline of 1.0). This is a substantial increase since 2012, when the average citation impact was 1.55, and indicates that the quality of IMI JU research has not only been maintained but has increased while output has grown. The EU's average citation impact relative to world baseline for the same period in similar research fields was 1.11.

IMI JU project research that is published in the fields of genetics and heredity, psychiatry, clinical neurology and neurosciences is exceptionally well-cited, with average citation impact well above the European and world benchmarks. This performance is driven by multiple, highly-cited papers, as well as publications identified as 'hot papers' in the Thomson Reuters databases. Hot papers are those which gather citations at a faster than average rate and may represent breakthroughs in the field(s) to which they relate.



Source: Thomson Reuters analysis, 2016

The number of papers, four-year average citation impact and share of highly-cited papers were analysed in order to compare the research performance of individual projects. Projects from IMI 1 JU Calls 1 to 4 with at least 10 publications during the time period 2010-2014 were included.

The most prolific projects among projects from IMI 1 - Call 1 in terms of publication outputs are NEWMEDS and EUROPAIN, with more than 100 publications each. PROactive is a project with the highest average citation impact (2.33), followed by NEWMEDS (2.19) and U-BIOPRED (2.10). U-BIOPRED is also the project with the highest percentile of highly-cited papers (38 %).

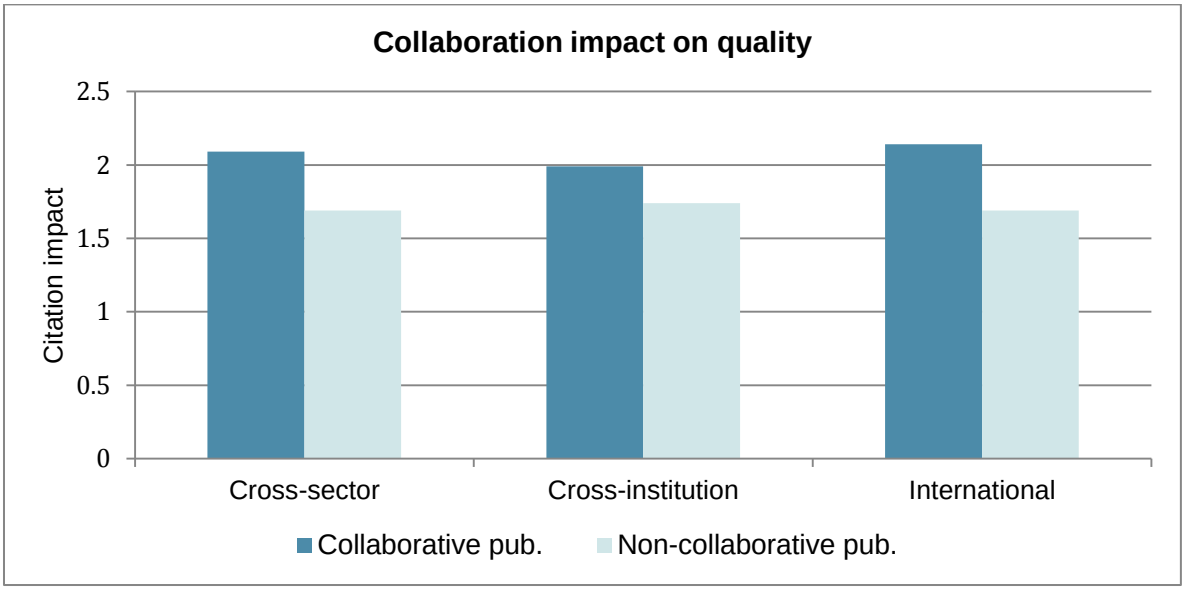
Among the projects from IMI1 - Call 2, the most prolific project for output is BTCURE, with 282 publications. The most highly-cited project from this Call is OncoTrack (3.06), followed by QUIC-CONCEPT (2.38) and Open PHACTS (2.06).

The most prolific project among projects from IMI 1 - Call 3 is EU-AIMS, with 122 publications. This project is also most highly cited among Call 3 projects (2.65), followed by BioVacSafe (2.62), and DIRECT (2.26).

Projects from IMI 1 - Call 4 are starting to accumulate publications. So far EMIF is the most prolific with 55 publications. eTRIKS is the most highly cited (2.92), followed by EMIF (2.71) and COMPACT (2.43).

International research collaboration is a rapidly-growing element of research activity. In addition, international collaboration has been shown to be associated with an increase in the number of citations received by research papers, although this may vary across countries.

Co-authorship is likely to be a good indicator of collaboration, therefore co-authorship on IMI JU project publications has been analysed. The following graph compares the output and citation impact of IMI JU project papers that are co-authored between different sectors, institutions and countries.



Source: Thomson Reuters analysis, 2016

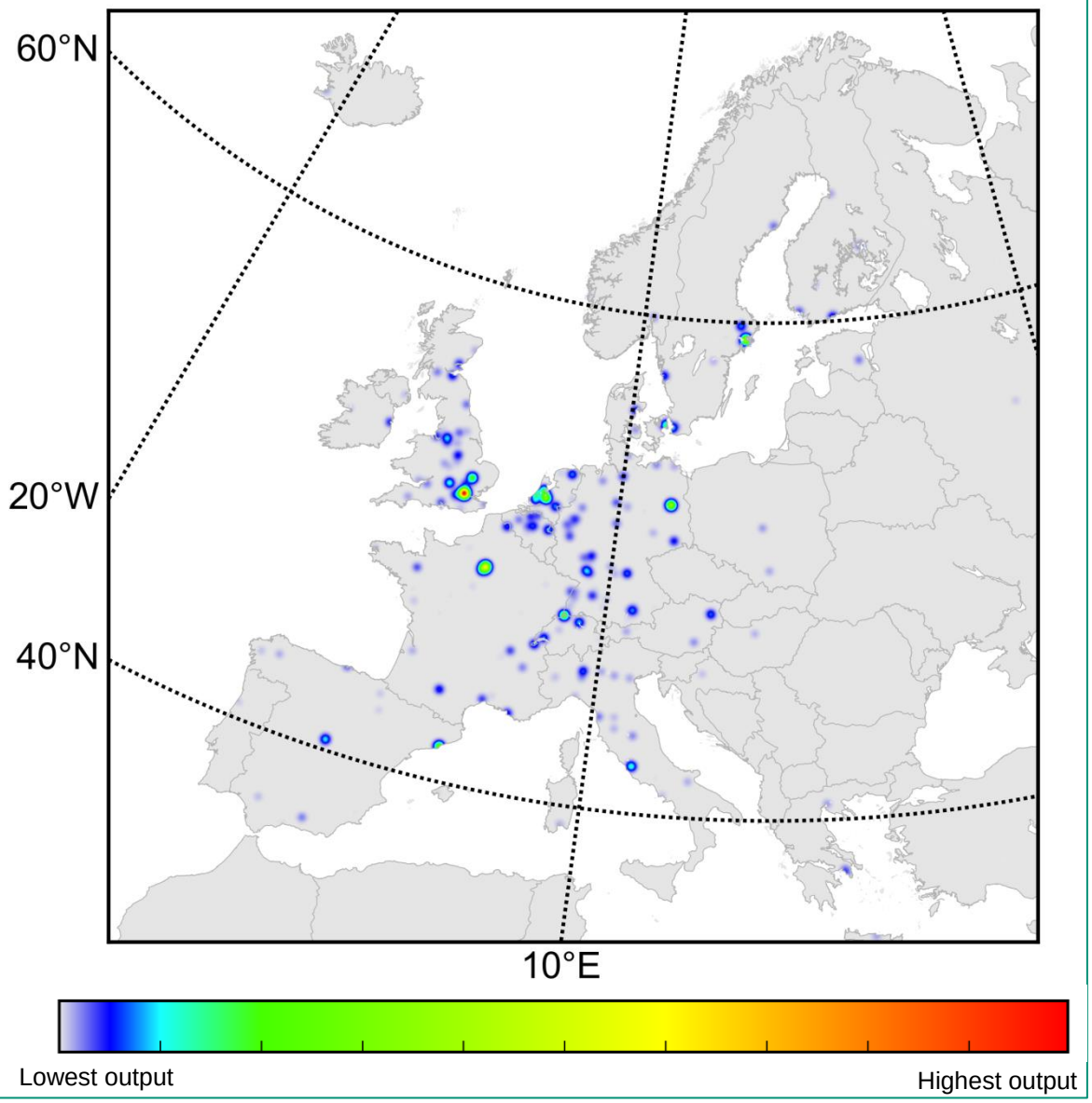
The data shows that IMI JU project research is collaborative at the sector, institution and country level. Well over half (61.7 %) of all IMI project papers have been published by researchers affiliated with different sectors (such as researchers with academia publishing together with researchers from industry or SMEs). More than three quarters (79.7 %) of IMI JU project papers involve collaboration between different institutions. Half (55.6 %) of all IMI JU project papers are internationally collaborative.

The collaborative IMI JU publications are internationally influential, with a citation impact well over twice the world average (1.0). Within IMI JU project research, there is a clear increase in average citation impact between collaborative publications in comparison with the non-collaborative ones. This supports the hypothesis that collaboration has a positive impact on the quality of research performed.

Another analysis was performed to identify research clusters where IMI research occurs; taking into account both IMI-funded researchers as well as their co-authoring collaborators. The analysis also identifies the constituent institutions and organisations within the clusters. As already mentioned above, IMI projects are collaborative by design and this is also confirmed by their publication and co-authorship trends. The cluster analysis reveals many hot spots both in Europe and North America illustrating areas of the highest IMI-related research and collaboration activity. The European geographic clusters comprise both IMI project researchers and their collaborators. The most intensive areas of output are shaded red and the lowest areas of output are blue.

In the following table, the 11 European clusters are listed by country and city with the associated number of IMI project-related publications, average citation impact, % of highly cited papers, and the extent of international collaboration. It appears that the most prolific cluster is located in London, the highest average citation impact was achieved in Cambridge, and the most internationally collaborative cluster is Basel in Switzerland.

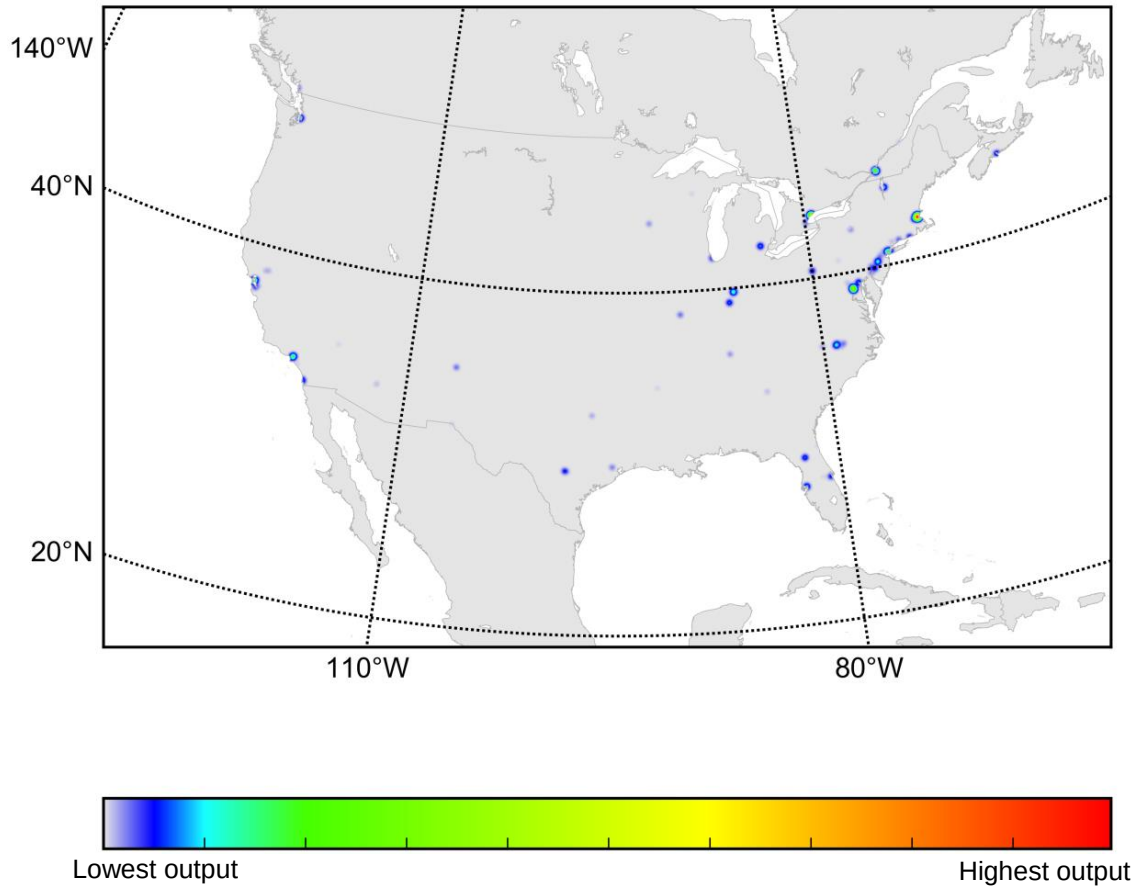
European geographic clusters of IMI project related research



City	Country	# of papers	Field normalised citation impact	Percentage of highly-cited papers	Percentage of internationally collaborative papers
London	UK	348	2.62	29.90 %	75.90 %
Utrecht	Netherlands	341	2.43	29.60 %	72.40 %
Stockholm	Sweden	183	2.68	27.30 %	69.40 %
Paris	France	128	3.13	36.70 %	83.60 %
Cambridge	UK	117	3.42	32.50 %	85.50 %
Copenhagen	Denmark	98	2.76	24.50 %	63.30 %
Barcelona	Spain	91	1.88	27.50 %	62.60 %
Basel	Switzerland	89	1.66	23.60 %	91.00 %
Berlin	Germany	76	2.77	36.80 %	69.70 %
Oxford	UK	73	2.85	35.60 %	84.90 %
Rome	Italy	57	2.26	35.10 %	71.90 %

The north American geographic clusters comprise organisations and researchers that collaborate and co-author with IMI researchers on IMI project-related publications. Similarly the most intensive areas of output are shaded red and the lowest areas of output are blue, however the two maps are scaled differently and therefore are not directly comparable. Clusters are located in the following metropolitan areas: Los Angeles, Chapel Hill, San Francisco, Bethesda, Indianapolis, Titusville, New York, Boston, Toronto, Montreal, and Seattle.

North American geographic clusters of IMI project collaborators



Spin-offs and commercial exploitation
In early IMI Calls, sustainability and commercial exploitation plans were not specifically part of the project objectives. However as projects are nearing completion, they are bringing forward sustainability plans and investigating how best to exploit the results generated. Several have identified innovative business solutions for keeping the added value of the project sustainable after the IMI-funded project duration. Also, the results of several projects have resulted in spin-off activities as well as commercialisation.

- **Spin-offs**
  Companies, foundations and non-profits generated by IMI projects:
  - **EBiSC** participant, Roslin Cells Ltd, has initiated a new spin-out in the UK named Roslin Cell Sciences Ltd.
  - **Open PHACTS** has established the Open PHACTS Foundation and it currently has four paying members – GlaxoSmithKline, Janssen, Lilly and the University of Vienna.
  - **OncoTrack** has founded a spin-off under the name CPO Cellular Phenomics & Oncology Berlin-Buch GmbH to conduct the biological and pharmacological testing of new cancer therapeutics and diagnostics in preclinical models.
  - Education and training project **PharmaTrain** has created the PharmaTrain Federation, which succeeds the IMI project and which is managing and continuing to develop the project 'assets' created during the IMI funding phase.
  - The European Institute for Innovation through Health Data (i~HD) has been formed as one of the key sustainable entities arising from the **EHR4CR** and SemanticHealthNet projects, in collaboration with several other European projects and initiatives supported by the European Commission.
  - A start-up company in Lund, Sweden called diaBRIDGE was created to bridge the translational gap in diabetes as a result of the output from the **SUMMIT** project.
  - A partner in the **EUROPAIN** consortium, Neuroscience Technologies S.L., (based in Spain) has opened an affiliate in UK and has significantly expanded its business via commercialisation of the microneurography assays developed as part of the project activities. Several companies are using the technology in clinical development, both inside of and outside of the project.

- **Follow-up projects, grants or new collaborations**
  - The Education and training projects Eu2P, **PharmaTrain**, **SafeSciMET** and **EMTRAIN** have combined to create the follow-on IMI-TRAIN project.
  - BTCURE - The background data on Abatacept treatment initiated a new collaboration between UGLA and Karolinska Institute to examine the immune status of T cells and antigen-presenting cells in Abatacept treated patients.
  - Based on preliminary results developed through the **MARCAR** project, the University of Edinburgh was awarded a European chemical industry council long range research initiative (CEfic LRi) grant to generate a comprehensive epigenomic profile of liver tissue from rat and mouse.
  - **QUIC-CONCEPT** - PTtheranostics has been formed to create a sustainable platform for radiomics (partly developed under QUIC-CONCEPT).

- **Commercialisation and exploitation**
  - One of the SME partners in **BioVacSafe**, Immunoarray, has commercialised an ichip® antibody platform technology that provides a molecular diagnostic test to measure Systemic lupus erythematosus (SLE) specific antibodies. The test is called the SLE-Key® RuleOut test and has been launched in a commercial setting in the US.
  - Exploitation of the ultrasound-based plaque structure analyses (UPSA) technology developed in the **SUMMIT** project by Lund University in Sweden. Negotiations are ongoing with an imaging-interested party.
  - A mouse model developed by **SUMMIT** for diabetic cardiovascular disease and nephropathy has been transferred to Taconic BioSciences for further exploitation. In addition a licensing agreement for exploitation of a SUMMIT rat model is under negotiation with Janvier Labs.
  - The touch screen technology developed and validated by partners in the **NEWMEDS** project is now commercially available.
  - The CNV mice and the MAM-E17 mice developed by partners in the **NEWMEDS** project have been commercialised and made available to the wider research community through vendors.
  - The SME Noldus Information Technology via its work in the **EU-AIMS** project developed and commercialised a new suite of tools for behavioural testing of rodent models of autism.

- **WEB-RADR**: The Yellow Card app was launched by the UK Life Sciences Minister in July 2015. This app allows patients, consumers, carers and healthcare professionals to report drug side effects directly to the UK medicines regulator through their mobile device. App users can also create a ‘watch list’ of medicines to receive regulatory approved ‘news’ items and alerts.

1.7 Operational budget execution

Details about the legal and financial framework of IMI2 JU are set out in section 2.2.

IMI JU programmes

Since 2014, IMI has been managing in parallel the two programmes IMI1 (under FP7) and IMI2 (under H2020).

FP7 was the European Union's Research and Innovation funding programme for 2007-2013. For the whole lifespan of the IMI Joint Undertaking, the European Commission contributed EUR 966 million to the IMI research programme via FP7. That amount matches the contributions worth at least another EUR 996 million from member companies of EFPIA. EFPIA contributions were made mainly in kind and consist primarily of research activities.

The table below outlines the breakdown per Call of committed EU funds for IMI1 (FP7).

IMI1 (FP7)	EU (in EUR million)
Call 1	116.082
Call 2	85.765
Call 3	112.839
Call 4	97.943
Call 5	79.999
Call 6	125.417
Call 7	12.999
Call 8	98.732
Call 9	56.440
Call 10	6.100
Call 11	173.410
Total	**965.731**

Following the Council Regulation (EU) No 557/2014 of 6 May 2014 establishing the Innovative Medicines Initiative 2 Joint Undertaking, all rights and obligations including assets, debts or liabilities of the Members of the IMI Joint Undertaking pursuant to Regulation (EC) No 73/2008 have been transferred to IMI2 Joint Undertaking on 27 June 2014.

The table below outlines the breakdown per Call of committed EU funds for IMI2 (H2020) as of the end of 2015.

IMI2 (H2020)	EU (EUR million)
Call 1	17.630
Call 2	114.090
Call 3	8.080
Call 4	1.130
Call 5	47.477
Call 6	46.500
Call 7	46.802
Call 8	70.000
Total	**351.709**

Budget execution in 2015

The expenses linked to the Research Agenda of IMI2 JU are reflected in the IMI2 JU operational budget Title 3. The operational budget approved for 2015 was EUR 306.4 million in commitment appropriation (CA) and EUR 184.9 million in payment appropriation (PA).

The budget execution of the commitment appropriation reached 91.17 % of the total budget, with payment appropriation execution reaching 72.74 %.

The commitment appropriation was consumed by GAs implementing IMI1 - Calls 9 – 11 and by launching IMI2 - Calls 5 – 8. The commitment appropriation consumed by launching IMI2 - Calls 5 – 8 was available under the fund source C1[7].

The commitment appropriation on additional appropriations (fund sources C2 and C4) was fully used during 2015 for IMI2 activities, while for IMI1 activities EUR 5.5 million remained unspent. Part of the commitments on fund source C8 (IMI2 activities carried forward) were de-committed as the negotiations of several projects took longer than expected (four projects of IMI2 - Call 3) and one project of IMI2 Call 1 was cancelled.
The unused appropriation will be entered into the 2016 budget.

The payment appropriation was consumed by intermediate payments for projects from IMI1 - Calls 1 – 8 as well as pre-financing for projects of IMI1 - Calls 9 – 11 and IMI2 - Calls 1 – 4. The budgeted payment appropriation was not fully used in 2015 as the negotiations of several projects took longer than expected (four projects of IMI2 Call 3), and the payment of pre-financing will be made in 2016. At the same time, one project for IMI2 Call 1 was cancelled.

The tables below indicate the operational budget execution (Title 3) per programmes and fund sources.

	Execution of commitment appropriations in EUR million							
	Budget			Additional appropriations		Total		
	Voted budget	Execution	%	Appropriations	Execution	Appropriations	Execution	%
IMI1 (FP7)	*-*	*-*	*-*	*74.053*	*68.553*	*74.053*	*68.553*	*92.57*
IMI2 (H2020)	*217.593*	*196.051*	*90.10*	*14.727*	*14.727*	*232.321*	*210.779*	*90.73*
Title 3 Implementing of the Research Agenda of IMI JU	**217.593**	**196.051**	**90.10**	**88.780**	**83.280**	**306.374**	**279.332**	**91.17**

[7] The fund sources shall be read as follow:
C1 – voted budget for the current year
C2 – non-automatic carry overs, unspent appropriations from previous year(s)
C4 – amounts recovered during the year
C8 – automatic carry forward of committed amounts

	Execution of payment appropriations in EUR million							
	Budget			Additional appropriations		Total		
	Voted budget	Execution	%	Appropriations	Execution	Appropriations	Execution	%
IMI1 (FP7)	*107.869*	*66.661*	*61.80*	*21.900*	*21.900*	*129.770*	*88.561*	*68.25*
IMI2 (H2020)	*35.130*	*25.927*	*73.80*	*20.025*	*20.025*	*55.155*	*45.952*	*83.31*
Title 3 Implementing of the Research Agenda of IMI JU	**143.000**	**92.589**	**64.75**	**41.925**	**41.925**	**184.925**	**134.514**	**72.74**

The commitments carried forward from previous year are reflected in the fund source C8. The commitments carried forward include the amounts committed at the launch of Calls and the amounts committed based on GAs concluded.

The commitments related to Calls launched are consumed by the commitments based on the Gas concluded during 2015. Based on the N+ 3 rule as set out in the IMI2 Financial Rules, the unused appropriations will be carried over to the 2016 budget.

Commitments carried forward from previous year	Commitment appropriation in EUR million		
	Carry forward	Consumed	Not used
IMI1 (FP7)	*447.958*	*447.958*	*0*
IMI2 (H2020)	*198.805*	*140.930*	*57.875*
Title 3 C8	**646.764**	**588.889**	**57.875**

The table below shows the summary of commitments outstanding (reste à liquider - RAL) for operational expenditure per programme at the end of 2015.

	EUR million
Commitments outstanding from 2014	**588.889**
IMI1 (FP7)	*447.958*
IMI2 (H2020)	*140.930*
Commitments made during 2015	**279.332**
IMI1 (FP7)	*68.553*
IMI2 (H2020)	*210.779*
Payments made during 2015	**-134.514**
IMI1 (FP7)	*-88.561*
IMI2 (H2020)	*-45.952*
Total commitments outstanding at the end of 2015	**733.706**
IMI1 (FP7)	*427.949*
IMI2 (H2020)	*305.757*

1.8 In-kind contribution

IMI is a public-private partnership between the European Commission and companies in the pharmaceutical sector, represented in IMI by EFPIA. The public budget from the Commission is granted to academic institutions, SMEs and non-profit organisations participating in IMI's research projects. As described in the IMI2 Council Regulation, the principle of the programme is that EU funds match the contributions made by EFPIA companies and Associated Partners, up to limits set out in the legislation.

Accordingly, EFPIA companies do not receive any EU funding through IMI, but contribute to the projects in kind. These in-kind contributions are costs incurred by EFPIA companies in the implementation of IMI projects and include, for instance the cost of researchers, research equipment and materials.

EFPIA companies are contractually subject to eligibility criteria as well as regular reporting requirements for all the costs that they claim as incurred in the projects. IMI controls the eligibility and regularity of the contributions and carefully monitors the development of the overall amount of in-kind contributions in the programme.

As explained in the previous section (and also below), the IMI Programme Office manages in parallel two programmes under two different sets of funding rules. For each programme, the Council regulations clearly define the matching requirement:

- For IMI1, EC funding of EUR 966 million, to match the equivalent in-kind contributions from EFPIA
- For IMI2, EC funding of EUR 1.425 million, to match the equivalent in kind contributions from EFPIA companies. An additional EUR 213 million EC funding may be provided to match additional contributions from other Members, Associated Partners, or from their constituent entities or their affiliated entities

IMI1 programme

In terms of commitment, EFPIA companies had committed EUR 996.4 million as of 31 December 2015 for the IMI1 programme (see below table). Out of these EUR 996.4 million, EUR 106 million have been committed during the year 2015, for projects of call 9, 10 and 11.

As of 31 December 2015, EFPIA companies had reported EUR 369 million in-kind contributions, of which EUR **307 million** had been formally validated (checked by IMI staff and/or audited by external auditors – see section below on Control), the remaining EUR 62 million were still in the validation phase at the end of 2015.

At the same time, EC funding paid to beneficiaries amounted to EUR 531 million, which is made of EUR 269.5 million for reimbursement of costs incurred by beneficiaries and EUR 261.5 million advance payment (pre-financings) which remains the property of IMI.

As most beneficiaries also contribute with their own funding to projects, total research spending by far exceeds **EUR 577 million** (307 + 269 million EUR).

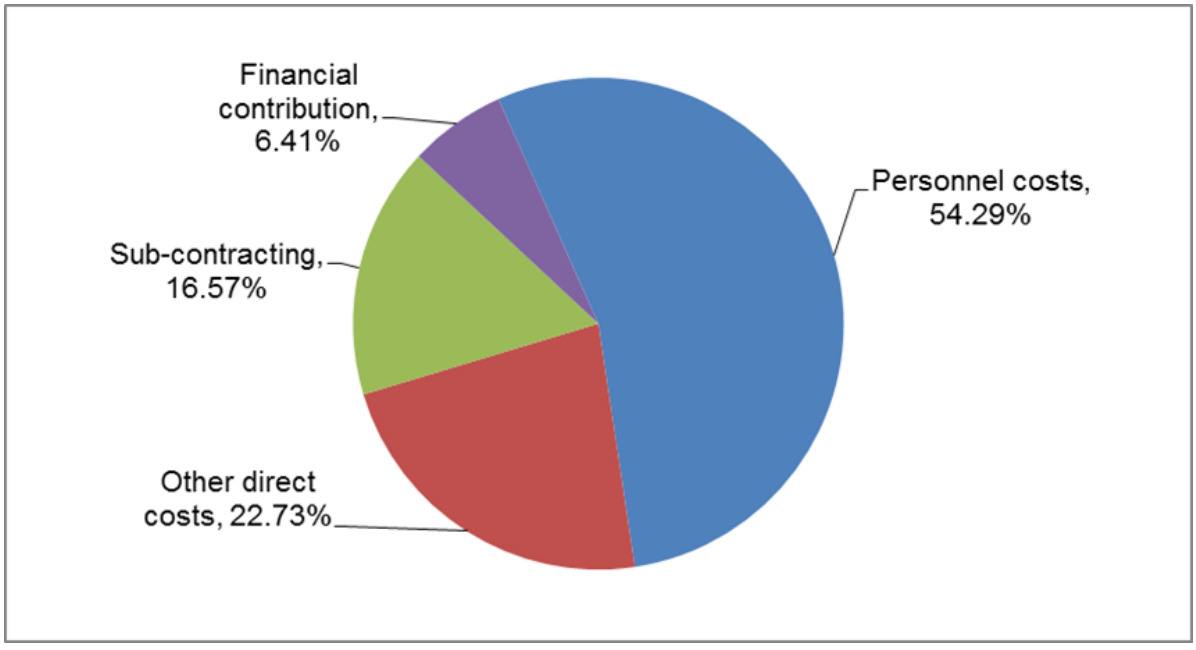
The below table provides a breakdown of the reported contributions (Cost claims only) for the whole IMI 1 programme since the publication of the very first call in 2008 Projects of IMI1 - Calls 10 and 11 will report costs for the first time in 2016.

	No of	EU (EUR million)			EFPIA in-kind contribution (EUR million)		
	projects	Committed	Accepted	%	Committed	Accepted	%
Call 1 - 2008	15	116.1	85.2	73.4 %	150.1	110.7	73.7 %
Call 2 - 2009	8	85.8	60.1	70.0 %	73.7	45.2	61.3 %
Call 3 -2010	7	112.8	43.3	38.3 %	73.3	25.1	34.3 %
Call 4 - 2011	7	97.9	29.8	30.4 %	110.0	34.3	31.2 %

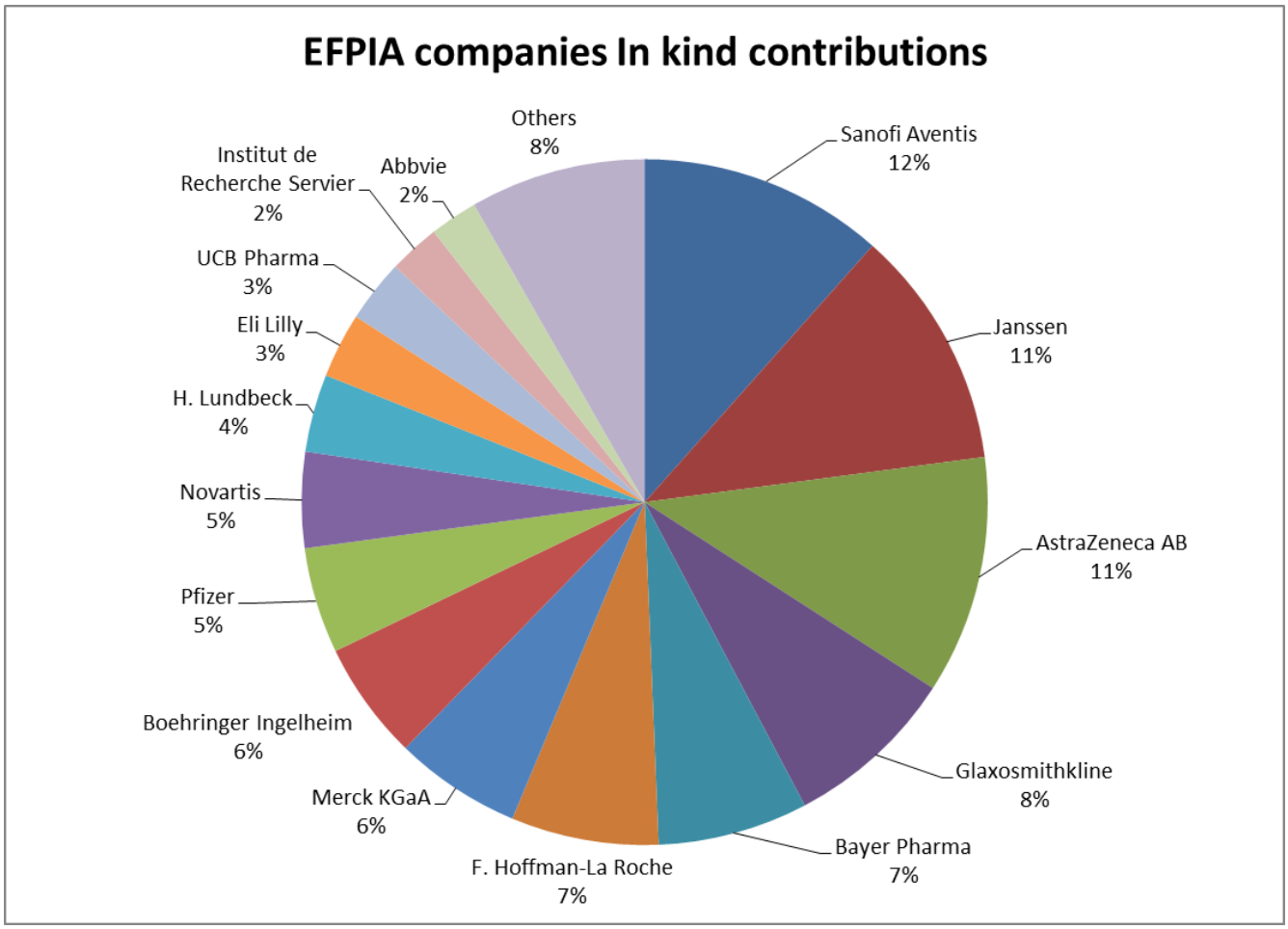
	No of	EU (EUR million)			EFPIA in-kind contribution (EUR million)		
	projects	Committed	Accepted	%	Committed	Accepted	%
Call 5 - 2012	1	80.0	25.6	32.0 %	91.3	74.9	82.0 %
Call 6 -2012	2	125.4	13.1	10.4 %	142.1	7.9	5.5 %
Call 7 -2012	2	13.0	3.0	23.2 %	11.9	2.5	20.6 %
Call 8 -2012	4	98.7	8.1		49.2	5.0	
Call 9 - 2013	4	56.4	1.4		89.0	2.1	
Call 10 - 2013	1	6.1	0.0		6.1	0.0	
Call 11 - 2013	8	173.4	0.0		199.7	0.0	
Total	**59**	**965.7**	**269.5**	**27.9 %**	**996.4**	**307.6**	**30.9 %**

EFPIA in-kind contribution includes the following cost categories:

- Personnel: staff employed by EFPIA companies directly working on IMI JU projects.
- Financial contribution: A transfer of funds from an EFPIA company to an academic institution within the same project/consortium. This financial contribution is used by the academics to hire researchers during the lifetime of the IMI JU project or to buy consumables or equipment.
- Other direct costs: consumables, equipment depreciation, samples, compounds.
- Subcontracting: clinical trials, subcontracting to clinical research organisations, subcontracting to data management companies, lab services, communication, project management support, etc



For IMI1 projects, the breakdown of in-kind contribution by EFPIA companies is as follows:



IMI2 programme

The following table provides an overview of committed EU and EFPIA contributions. So far 11 projects have been launched and will report for the first time in 2016. As of 31 December 2015, no projects had reported any costs.

IMI2	No of	EU (million EUR)		EFPIA in-kind contribution (million EUR)		Associated Partners	
	projects	Committed	Accepted	Committed	Reported	Committed	Accepted
Ongoing projects							
Call 1	1	17.6		12.7		5.0	
Call 2	8	114.1		100.7			
Call 3	1	8.1		8.1			
Call 4	1	1.1		2.0			
Total	11	140.9		123.5		5.0	

At least additional 22 projects are expected to be launched following the publication of IMI2 - Calls 3 to 8

Ongoing Calls (submission or negotiation stage)							
Call 3	4	41.0		36.8		7.0	
Call 5	6	47.5		47.5			
Call 6	4	46.5		46.5			
Call 7	8	46.8		46.8			
Call 8		70.0		70.0			
Total	22	251.8		247.6		7.0	
Total IMI2	33	393		371		12	

Ex-ante controls of the in-kind contribution

In-kind contributions are reported by participating companies for each project as an integral part of the annual project report. Before validating each annual report and the related contributions, IMI carries out a series of checks to verify the eligibility of in-kind contributions, i.e. that they are in line with the Grant Agreement requirements and the project's description of work.

EFPIA and Associated Partner contributions to IMI projects are reviewed from before the start of the project, when proposals for new projects are evaluated by independent experts. During evaluation, experts assess whether the proposed in-kind EFPIA contribution is in line with the work to be carried out in the project.

Once the project is underway, EFPIA companies' in-kind contributions are declared in a similar way to the cost claims of beneficiaries. Declarations of in-kind contributions by the companies are carefully scrutinised by the IMI Programme Office. All in-kind contributions declared must be accompanied by audit certificates, during or at the end of the project. Furthermore, the IMI Programme Office audits companies providing in-kind contributions.

The IMI Governing Board receives regular updates from the IMI Programme Office on the level of in-kind contributions to projects. The in-kind contributions are also reported in a transparent manner in the annual accounts and the Annual Activity Reports of IMI, both of which are published online. Before their formal approval, the draft annual accounts of IMI are carefully scrutinised by the European Commission. The approval of the annual accounts, including the in-kind contributions, is part of the decision-making process in which the European Commission has a controlling vote at the level of the IMI Governing Board.

The European Court of Auditors audits IMI's accounts. In doing so, the Court has full access to all the documentation linked to the reporting of the in-kind contributions and the validation and auditing of such reports.

Ex-post controls of the in-kind contribution

In addition to the ex-post audits covering the IMI share of the funding to beneficiaries, the IMI Programme Office also continually conducts ex-post reviews and financial audits on the declared in-kind contributions by EFPIA companies participating in IMI JU projects. These companies do not receive any IMI JU funding but contribute their own resources in-kind to the projects in which they participate.

The purpose of these audits, using a risk-based approach as per IMI JU's audit strategy, is to independently verify that the in-kind contributions accepted by IMI JU have been effectively committed to the projects.

Each control exercise consisted of two key elements: an ex-post review followed by a financial audit:

- A review of the in-kind methodology used by the EFPIA company to declare in-kind contributions for all the IMI JU projects in which it participates, applying agreed-upon procedures to confirm the factual basis of the responses and descriptions provided in the submitted certificate on in-kind contribution methodology. On this basis, the auditors were able to conclude whether:
  - the approach and basis of the actual calculations were as originally described in the accepted methodology;
  - whether any mathematical errors or other inconsistencies were noted in the actual calculations made relating to the direct personnel full time equivalent (FTE) daily cost rate;
  - the in-kind methodology was consistently applied by the EFPIA company across all research and business activities and in accordance with its usual accounting and management principles and practices;
  - the basis of the methodology and calculation was consistent with Article II.13.4 of the GA and excludes prescribed ineligible costs.
- A financial audit of a sample of in-kind contributions declared in the financial statements submitted by EFPIA companies to IMI JU in order to assess and present an opinion on whether these meet the conditions of the grant agreement

Controls carried out by IMI on EFPIA companies' contributions are subject to scrutiny by IMI's internal and external auditors, namely the European Commission's Internal Audit Service (IAS) and the European Court of Auditors (ECA).

Audit coverage of the in-kind contribution

To date IMI JU has completed ex-post audits of 6 EFPIA companies, covering a total of EUR 139 million of accepted contributions to IMI JU projects or 45 % of all EFPIA contributions. A further seven companies' audits are ongoing and due to be finalised in the first and second quarters of 2016. Together the 13 companies' contributions to IMI JU projects total EUR 282 million or 92 % of total contributions.

An overview of the audit coverage of the in-kind contribution provided by the EFPIA companies is detailed below:

Company	In-kind contribution (IKC) accepted as of 31 December 2015 (EUR million)
Total finalised audits	**139.4**
Total ongoing audits	**142.6**
Total all EFPIA companies audited or under audit	**282**
Total all EFPIA companies	**307.6**
Coverage of audits	**92%**

The audits finalised to date have identified adjustments, either positive ones thus increasing the contribution or negative ones decreasing it, for a total value of EUR 1 801 455 corresponding to 1.29 % of the total audited amounts.

Accepted IKC (EUR)	Audited IKC (EUR)	Coverage	Negative adjustments (EUR)	Positive adjustments (EUR)	Total absolute adjustments (EUR)	% of absolute adjustments
307 600 000	139 374 897	45.31 %	-756 609	1 044 807	1 801 455	1.29 %

2 SUPPORT TO OPERATIONS

2.1 Communication and events

In 2015, priorities for IMI's communication activities were:

g) continuing to raise awareness of IMI (including the IMI 2 programme and the arrival of the new Executive Director);
h) promoting new IMI Calls for proposals;
i) increasing IMI's outreach to policymakers, including MEPs.

IMI JU's communication activities are a team effort, and IMI JU's communication successes in 2015 were considerably boosted by the efforts of many IMI staff, the European Commission and EFPIA, as well as the SRG, the Scientific Committee, the projects themselves, and external contractors.

IMI outreach activities - events

Event	Date & location	Outcome
IMI at AD/PD 2015 IMI and its Alzheimer's disease projects AETIONOMY, EMIF and EPAD held a symposium on 'From data to mechanisms to therapies for patients' at the 12th International Conference on Alzheimer's and Parkinson's Diseases and Related Neurological Disorders (AD/PD 2015).	19 March 2015 Nice, France	The event was extremely useful for raising awareness among the Alzheimer's / Parkinson's disease community of IMI's activities in this area.
IMI Stakeholder Forum 2015 This year's event asked three questions: ▪ How far have we come? ▪ Where are we now? ▪ What are the next big things in biomedical R&D and how will they impact on IMI? The event was followed by a networking event for IMI project participants	15 June 2015 Brussels, Belgium	Over 300 registrations Feedback gathered through consultations and discussions on big data and advanced therapies Extremely positive feedback from stakeholders Extensive networking among participants
Webinar for National Contact Points (NCPs) The goal of this webinar was to update NCPs on IMI.	21 September Online	The event was well received by the participants.
European Joint Undertakings: Innovation in Action The six Joint Undertakings (JUs) – IMI, BBI (bio-based industries), Clean Sky (greener aviation), ECSEL (electronic components and systems), FCH (fuel cells and hydrogen), and SESAR (single European sky) – showed the state of play and results to date during a series of sessions and at an exhibition in the European Parliament (EP) and Committee of the Regions (CoR) in Brussels, Belgium. The events took place in the framework of the 7th European Innovation Summit.	8 - 12 December 2015 Brussels, Belgium	IMI participated in two conference sessions plus a press conference and was part of the exhibition. IMI was also active on social media throughout the event. This gave IMI good visibility among certain key MEPs and other policymakers.

In addition to the events listed above, information days were organised by several Member States and associated countries on the initiative of the SRG representatives and/or the national industry associations with the support of the IMI Programme Office in order to promote the Calls for proposals and explain the IMI2 JU rules and procedures as much as possible to all stakeholders. More information is available on the IMI website: http://www.imi.europa.eu/events/2014/12/22/national-info-days-imi-2

The Communication team also contributed to the organisation of webinars for other teams (e.g. financial workshops, project reviews, and a webinar on CDISC).

Promoting IMI Calls for proposals

IMI started 2015 by continuing the promotion of IMI 2 – Calls 3 and 4, which were launched at the end of 2014. IMI subsequently launched its 5th, 6th, 7th and 8th Calls under IMI 2 during 2015. Calls were promoted via the following channels:

- IMI website
- H2020 Participant Portal
- Press
- IMI Newsletter
- Social media (Twitter, LinkedIn)
- Brochures and flyers
- Events organised by others (e.g. SRG members)
- Direct e-mails to stakeholder organisations (e.g. academic societies, patient groups) and relevant individuals
- IMI events
- Presentations by IMI staff at external events

For each Call launched, IMI also organised webinars on all Call topics as well as IMI's rules and procedures. The webinars represent an important opportunity for potential applicants to learn more about the topics, ask questions, and network with fellow participants.

Call	Dates	Registrations
IMI 2 - Call 3	9 January – 17 February 2015	528
IMI 2 - Call 5	1 – 14 July 2015	509
IMI 2 - Call 6	9 – 27 October	344

Note: the webinars for IMI 2 – Calls 7 and 8 were held at the beginning of 2016.

Promoting IMI projects and their successes

The Communications team promotes IMI projects and their successes through a variety of channels:

- IMI newsletter
- IMI website
- Social media (Twitter, LinkedIn)
- IMI press releases
- Other organisations' press materials (e.g. European Commission)
- Press and scientific articles by the IMI office
- Examples given to journalists writing about IMI
- IMI events
- Presentations by IMI staff and ambassadors at external events

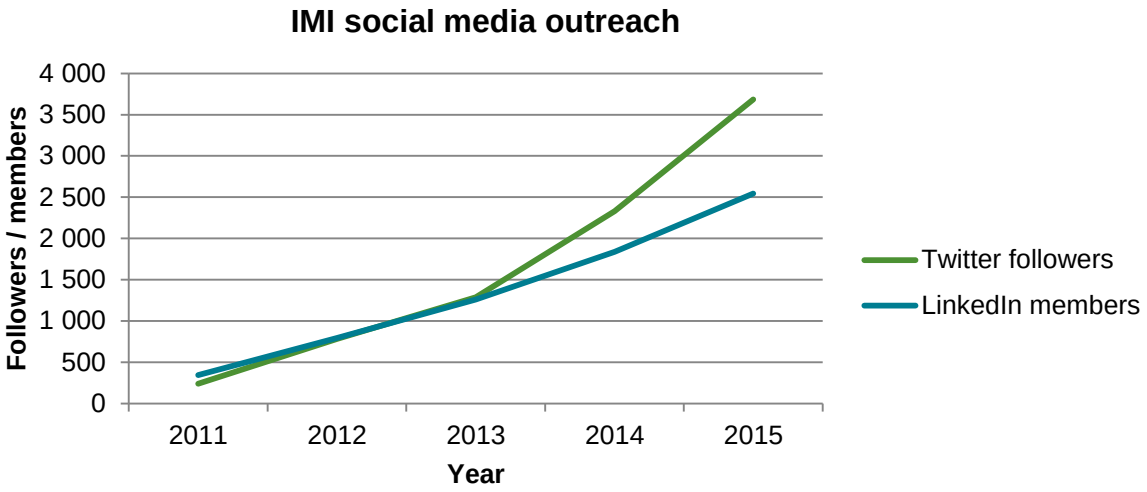
IMI website

In 2015, in response to queries from policymakers at the beginning of the year, IMI added a number of new pages to its website to make key information more visible and easy to find. The pages covered issues such as how IMI works, the IMI funding model, and budgetary control. In addition, the Communication Team added a number of pages for people interested in getting involved in IMI's work, covering the different routes for getting involved, tips for applicants, and advice on finding project partners.

The average number of website visitors per month for 2015 was 12 946, which is similar to the figures achieved in 2014.

IMI social media

IMI's social media reach continues to expand. By the end of 2015, @IMI_JU had 3 684 followers on Twitter, up from 2 332 the year before. IMI tweets on a range of subjects, including new Calls for proposals, project successes, IMI events (including live tweets on the day) and more. The LinkedIn group also continued to grow, and had 2 543 members at the end of 2015.



IMI Newsletter

IMI sent out 11 newsletters in 2015, covering Call launches, new projects, IMI events, news on IMI reports and publications, and news from the projects. At the end of 2014, there were around 5 500 newsletter subscribers (up from 4 300 the previous year).

Publications

In 2015, IMI twice updated its existing Highlights brochure to take account of the arrival of the Acting Executive Director at the end of 2014 and the new Executive Director in September 2015. IMI also produced simple flyers on all new Calls for proposals (see for example the IMI 2 – Call 7 flyer). Other publications delivered by the Communication team in 2015 include:

- A leaflet on the latest successes from IMI's antimicrobial resistance projects (released on 18 November, European Antibiotic Awareness Day).
- A short booklet entitled 'IMI facts and figures', published in September 2015.
- A leaflet entitled 'IMI: fiction vs facts – setting the record straight', which counters certain misconceptions and inaccuracies about IMI published in certain outlets in 2015. Published September 2015.
- A stand-alone executive summary of the 6th bibliometric analysis of IMI's projects (published alongside the press release on the same subject on 10 August 2015).

Media relations

In 2015, IMI issued the following press releases:

- 18.12.2015 - Ebola, big data, childhood cancers and medicines safety feature in new IMI Calls
- 08.12.2015 - European public-private partnerships delivering first socio-economic impacts (sent jointly by all Joint Undertakings)
- 18.11.2015 - New Drugs for Bad Bugs – IMI's response to a major public health threat
  06.10.2015 - Big data, medicines safety and respiratory disease focus of EUR93 million IMI Call for proposals
- 16.09.2015 - 'IMI is the only game in town' – an interview with Pierre Meulien
- 10.08.2015 - IMI research world class, report reveals
- 09.07.2015 - IMI launches EUR95 million Call for proposals with focus on Alzheimer's disease, diabetes, patient involvement
- 15.06.2015 - Pierre Meulien named as new Executive Director of Innovative Medicines Initiative
- 29.04.2015 - IMI response to European Parliament vote on 2013 discharge procedure
- 14.04.2015 - IMI and World Anti-Doping Agency to collaborate
- 24.03.2015 - Ipsen's Marc de Garidel to chair Innovative Medicines Initiative Governing Board
- 19.03.2015 - Innovative Medicines Initiative Alzheimer's disease projects launch joint platform
- 16.01.2015 - First Innovative Medicines Initiative Ebola projects get underway

IMI published statements on certain key issues:

- 19.11.2015 - European Court of Auditors report on IMI's annual accounts for the financial year 2014
- 11.03.2015 - Innovative Medicines Initiative statement in response to criticisms in the media

In addition, on Pierre Meulien's first day as IMI Executive Director in September 2015, IMI published an interview with him.

In terms of press coverage, IMI was mentioned in over 850 articles in the European press in 2015. On average, IMI's headline presence was 13 %. Tonality throughout the year was largely neutral to positive, despite some negative coverage in the spring. Subjects that attracted particular interest included the arrival of Irene Norstedt and Pierre Meulien at the helm of IMI; the launch of the Ebola+, EPAD and PRECISESADS projects; the antimicrobial resistance projects, and the launches of IMI Calls for proposals. Some of the most significant press articles are listed below. A fuller list can be found in Annex 10.

- 2. program Radia Slovenija (Slovenia), 26 November 2015 | Antibiotik ni za vsak primer (The antibiotic is not for every case)
- The Guardian (UK), 24 November 2015 | Ebola will always return unless we develop the tools to end it
- Politico (European), 6 October 2015 | IMI boss: Public gets good return on investment
- RTE (Ireland), 7 September 2015 | New drugs to help patients with cystic fibrosis & bronchiectasis
- Nature Reviews Drug Discovery (international), 31 July 2015 | An audience with Pierre Meulien
- Politico (European), 15 June 2015 | EU drugs partnership gets new chief
- Die Welt (Germany), 22 April 2015 | Impfstoff könnte im Herbst zugelassen werden (Ebola vaccine could be approved in autumn)
- Irish Times (Ireland), 21 April 2015 | Educating advocates: how patients and parents can speak for change
- BioCentury Innovations (international), 16 April 2015 | IMI's innovation ecosystem
- Le Monde (France), 27 March 2015 | Ebola : la course aux vaccins s'accélère (Ebola: the race for the vaccine is accelerating)
- Elsevier (The Netherlands), 19 March 2015 | Waarschuwing voor resistente bacteriën onderweg naar Nederland (Warning of resistant bacteria on route to the Netherlands)
- De Morgen (Belgium), 12 March 2015 | Efficiëntere griepvaccins dankzij beter evaluatie (More effective influenza vaccines through better evaluation)
- European Voice (Europe), 20 February 2015 | A stand-in at the controls of the Innovative Medicines Initiative
- Il Sole 24 Ore – ed. Sanità (Italy), 11 February 2015 | Terapie 'su misura' per le malattie autoimmuni: Policlinico tra i capofila del progetto europeo PreciseSads ('Tailored' therapies for autoimmune diseases: Policlinico of Milan among the leaders of the European project PreciseSads)
- La Vanguardia (Spain), 15 January 2015 | 35 instituciones europeas se alían para investigar la prevención del Alzheimer (35 European institutions join forces to investigate the prevention of Alzheimer)

2.2 Legal and financial framework

Legal framework

The IMI2 JU is a PPP between the EU (represented by the EC) and the European pharmaceutical industry (represented by EFPIA).

IMI2 JU was established, within the meaning of Article 187 of the Treaty on the Functioning of the European Union, by Council Regulation (EU) 557/2014 of 06/05/2014[8] for the implementation of the Joint Technology Initiative on Innovative Medicines.

PPPs are an instrument foreseen by H2020, established by Regulation (EU) No 1291/2013 of the European Parliament and of the Council[9] to achieve a greater impact with respect to research and innovation by combining EU public funds and private sector funds in key areas where research and innovation can contribute to the Union's wider competitiveness goals, leverage private investment and help tackle societal challenges.

IMI2 JU is established for a period until 31 December 2024. However, in order to take into account the duration of Horizon 2020, Calls for proposals by IMI2 JU shall be launched at the latest by 31 December 2020. In duly justified cases, Calls for proposals may be launched until 31 December 2021.

IMI2 JU replaced and succeeded the IMI JU, established by Regulation (EC) No 73/2008. However, according to Article 19.2 of Regulation 557/2014, actions initiated under Regulation (EC) No 73/2008 and financial obligations related to those actions shall continue to be governed by that Regulation until their completion.

Regulation (EU) No 1290/2013[10] shall apply to the actions funded by IMI2 JU. In accordance with that Regulation, IMI2 JU shall be considered as a funding body and shall provide financial support to indirect actions as set out in Article 1 of the Statutes.

Financial framework

IMI2 JU has a budget of EUR 3.3 billion for the period 2014-2024[11]. Of this:

- EUR 1.638 billion comes from the Horizon 2020;
- EUR 1.425 billion to be committed to the programme by EFPIA companies;
- up to EUR 213 million can be committed by other life science industries or organisations that decide to contribute to IMI2 as members or Associated Partners in individual projects.

EFPIA companies and other Associated Partners do not receive any EU funding, but contribute to the projects 'in kind', for example by donating their researchers' time or providing access to research facilities or resources.

In accordance[12] with Article 209 of Regulation (EU, Euratom) No 966/2012[13] on the financial rules applicable to the general budget of the Union and Commission Delegated Regulation (EU) No 110/2014[14], IMI2 JU has adopted specific financial rules.

[8] OJUE 07/06/2014 L 169/54.

[9] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 — the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC (OJ L 347, 20.12.2013, p. 104).

[10] Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in 'Horizon 2020 — the Framework Programme for Research and Innovation (2014-2020)' and repealing Regulation (EC) No 1906/2006 (OJ L 347, 20.12.2013, p. 81).

[11] During its first phase (2008-2013 established by Regulation 73/2008), IMI JU had a budget of EUR 2 billion, half of which came from the EU's Seventh Framework Programme for research (FP7), and half of which came from in kind contributions by EFPIA companies.

[12] By way of derogation from Article 60.7 and Article 209 of Regulation (EU, Euratom) No 966/2012, the discharge for the implementation of the budget of the IMI2 Joint Undertaking shall be given by the European Parliament, upon recommendation of the Council in accordance with the procedure provided for in the financial rules of the IMI2 Joint Undertaking.

[13] Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 (OJ L 298, 26.10.2012, p. 1).

[14] Commission Delegated Regulation (EU) No 110/2014 of 30 September 2013 on the model financial regulation for public-private partnership bodies referred to in Article 209 of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council (OJ L 38, 7.2.2014, p. 2).

2.3 Budgetary and financial management

2.3.1 2015 Budget approved

The total budget approved for 2015 was EUR 315.2 million in commitment appropriation (CA) and EUR 195.4 million in payment appropriation (PA).

The budget of IMI JU is divided in three Titles:

- Title 1 covers staff expenditure such as salaries, training, costs associated with recruitment procedures and staff well-being.
- Title 2 covers the costs associated with functioning of IMI JU such as renting of premises, IT needs, expenses related to external communication, expert fees, and costs of ex-post audits.

Title 1 and Title 2 together form the running costs (administrative expenditure).

- Title 3 covers the operational activities of IMI JU.

The in-kind contribution is not included in the budget of IMI2 JU as it is a direct contribution to the projects (see section 1.8 on in-kind contribution).

The 2015 budget was approved by the Governing Board on 21 January 2015 and adjustments were made based on the decision of the Governing Board on carry over amounts[15] of 2 March 2015.

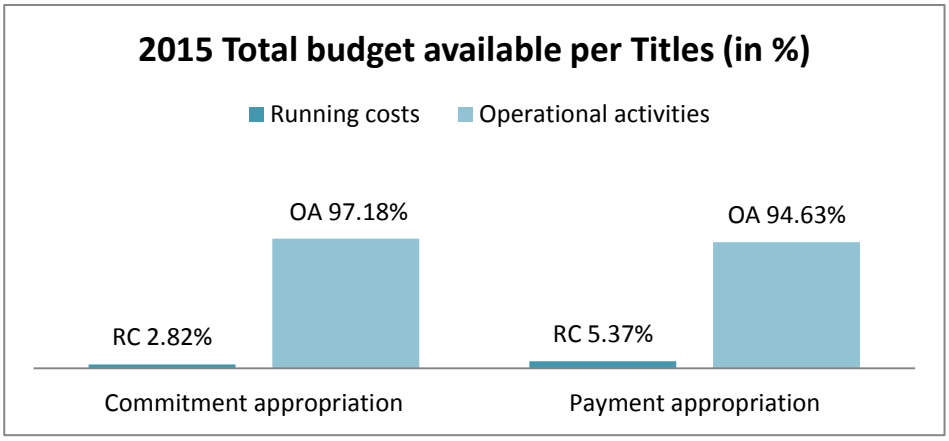
Budget 2015 in EUR million						
	Voted budget		Amending budget		Final budget	
	CA	PA	CA	PA	CA	PA
Revenue						
EC contribution	222.034	147.440	88.780	43.516	310.815	190.957
EFPIA contribution	4.440	4.440	-	-	4.440	4.440
Total revenue	**226.474**	**151.881**	**88.780**	**43.516**	**315.255**	**195.397**
Expenditure						
Title 1	4.852	4.852	0.005	0.159	4.858	5.011
Title 2	4.028	4.028	0.007	1.445	4.036	5.473
Title 3	217.593	143.000	88.780	41.925	306.374	184.925
Total expenditure	**226.474**	**151.881**	**88.794**	**43.530**	**315.269**	**195.411**
Difference	-	-	*- 0.013*	*- 0.013*	*0.013*	*0.013*

The difference of EUR 13 000 shows amounts recovered during the year from suppliers.

The amending budget of payment appropriations of Title 1 and 2 includes the amount of EUR 1 590 774 representing the commitments carried forward from 2014 to 2015. The amending budget of payment appropriations of Title 3 represents the carry over of unused appropriations into 2015 budget.

The graph below shows the 2015 total budget available per Titles in %.

[15] Appropriations remained unused in a financial year are added to the next year budget.



2.3.2 Budget transfers

No budget transfers between Titles were made during 2015.

Budget transfers between chapters were authorised in 2015 which led to the following changes:

Chapter	Final Budget EUR million	Budget transfer EUR million	Budget after transfers EUR million
Chapter 11	4.392	(-) 0.151	4.241
Chapter 14	0.230	(+) 0.151	0.381
Chapter 20	0.870	(+) 0.144	1.014
Chapter 21	0.561	(-) 0.065	0.495
Chapter 22	0.153	(-) 0.152	0.009
Chapter 23	0.123	(-) 0.020	0.102
Chapter 24	0.067	(-) 0.027	0.039
Chapter 25	0.158	(-) 0.048	0.110
Chapter 26	0.291	(+) 0.035	0.327
Chapter 27	0.625	(-) 0.230	0.394
Chapter 28	0.580	(+) 0.363	0.943

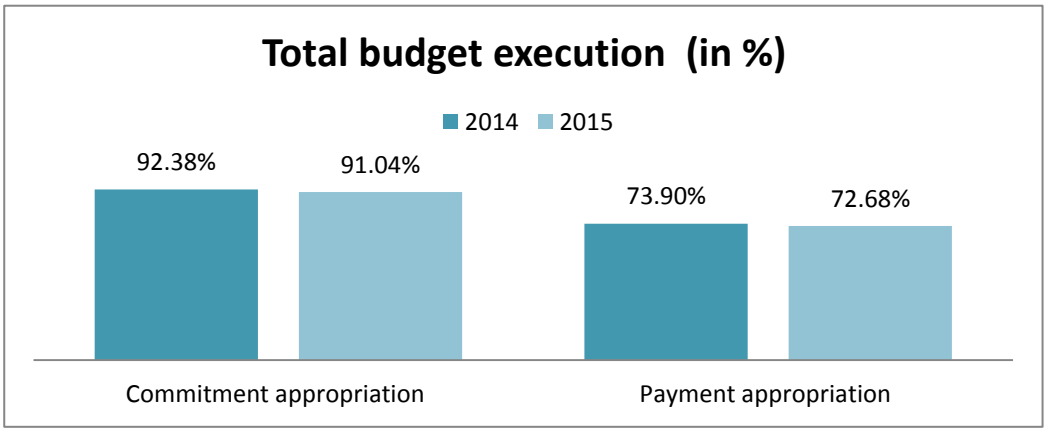
Overall, the budget transfers made in 2015 had no impact on the voted budget.

2.3.3 2015 budget execution

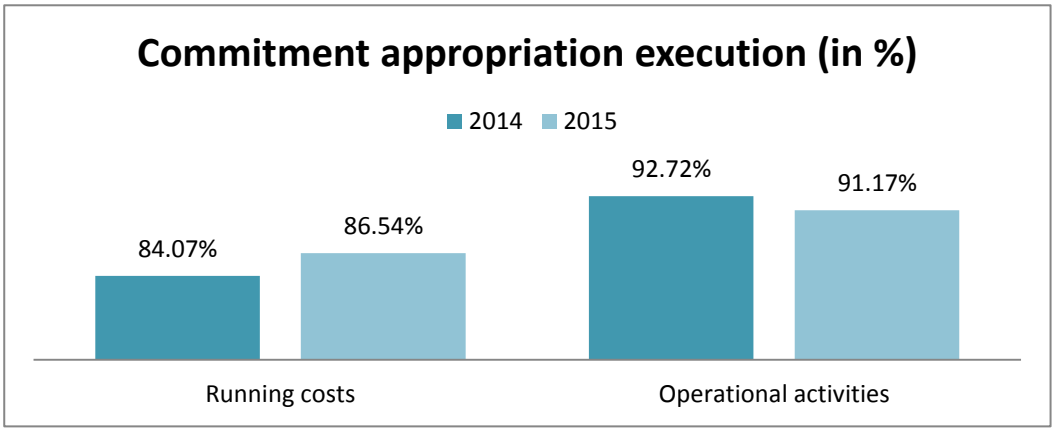
The performance objectives of the annual budget execution as established in the Annual Work Program 2015 were: ≥95 % for commitment appropriations of running costs and operational costs, respectively ≥ 95% for payment appropriations of operational costs.

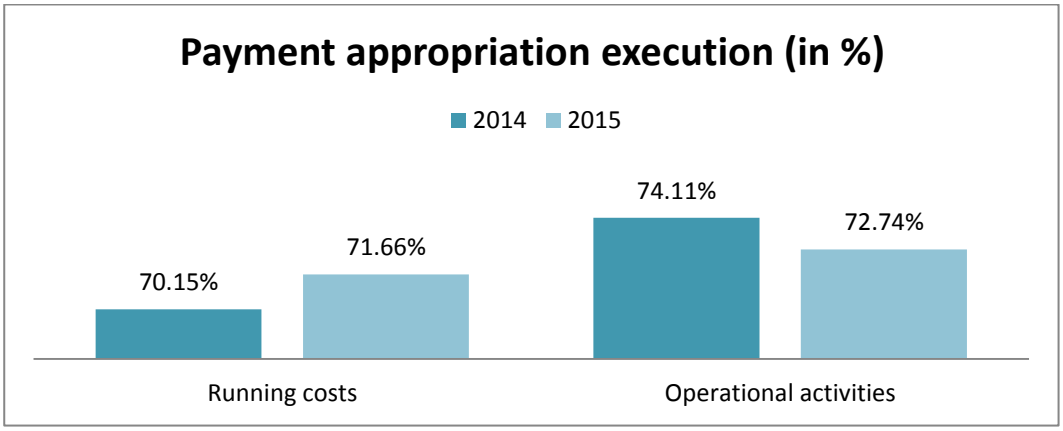
The total budget execution of the commitment appropriation reached a level of 91.04 % and of the payment appropriation a level of 72.68 %. This was due to delays in negotiations of a few projects for operational expenditure. For administrative expenditure, the number of staff recruited was lower than the number of staff approved.

The graph below shows the 2015 total budget execution compared with 2014.



The graphs below show the 2015 budget execution for operational activities (project-related) and running costs (staff and infrastructure) compared with 2014.





The table below shows the execution of the 2015 budget per Title in absolute amounts.

Title	2015 final budget execution per title in EUR million					
	CA	Execution	%	PA	Execution	%
Title 1	4.858	4.094	84.27 %	5.011	3.930	78.41 %
Title 2	4.036	3.603	89.28 %	5.473	3.583	65.47 %
Subtotal running costs	*8.895*	*7.697*	*86.54 %*	*10.485*	*7.513*	*71.66 %*
Title 3	306.374	279.332	91.17 %	184.925	134.514	72.74 %
Total (Title1, 2 and 3)	**315.269**	**287.029**	**91.04 %**	**195.411**	**142.028**	**72.68 %**

Despite some recruitments carried in 2015, the number of staff employed at the end of 2015 was lower than the one approved, therefore the additional budget was not used.

Works related to extension of working space to accommodate additional staff took place in 2015, resulting in the full spending of the office equipment budget.

IMI continued to execute its budget applying principles of sound financial management which resulted in savings, for example, in organisation of events and communication related expenditure.

It is important to note that the EC part of unused appropriations for running costs will be made available for operational activities in the 2016 budget – see section 2.3.5.detailing the carry over appropriations to the 2016 budget.

The execution of Title 3 is further detailed at point 1.7. “Operational budget execution”.

The table below shows the summary of commitments outstanding (*reste à liquider)* at the end of 2015.

	EUR million
Commitments carried from previous year	590.155
Commitments made during 2015	287.029
Payments made during 2015	-142.028
Total commitments outstanding at the end of 2015	**735.156**

2.3.4 Overview of the carry over appropriations to 2016

The N+3 rule for the PPP bodies states that the unused appropriations may be entered in the estimate of revenue and expenditure of up to the following three financial years. IMI JU will re-enter into 2016 budget the unused commitment and payment appropriations from previous years 2013-2015.

Administrative expenditure:

- Payment appropriation of EUR 1,449,720 corresponding to the amount of commitments carried forward from 2015 to 2016 budget.

Operational expenditure:

- Unused commitment and payment appropriation to be carry over to 2016 budget.

	Commitment appropriation EUR million	Payment appropriation EUR million
Unused appropriations (operational and administrative)	*80.971	*51.965

*subject to Governing Board approval

2.4 Procurement and contracts

The large majority of IMI2 JU's procurement in 2015 was done under existing multi-annual framework contracts (FWCs). The framework contracts mostly used in terms of volume regard the provision of IT services, audit services and interim staff provision and were concluded jointly with other JUs to avoid duplication and minimise administrative effort. During Q4, IMI2 JU, on behalf of five other JUs, published an open procedure for a multiannual JUs framework contract for interim staff services. This new procedure will be finalised in early 2016 to replace the JUs' previous framework contracts for interim staff services which expired in November 2015.

Where possible, IMI JU has also made use of the European Commission's framework contracts that it is party to. During 2015, the most significant of these in usage volume terms were in IT development, software licenses and communications consultancy services.

Apart from the contracts mentioned above, a significant number of specific contracts were concluded for the rental of meeting premises for organising project evaluations under a framework contract IMI JU tendered on its own in 2012.

In 2015 one low value negotiated procedure under Article 134(b) of the Rules of Application was carried out due to the need to purchase and to assemble additional furniture together with existing one following the extension of IMI office.

Additionally, aiming to support the funded IMI projects, IMI2 JU has awarded under a low value negotiated procedure (<EUR 134 000) a tender to provide projects with the necessary expertise and support in the development of business cases and sustainability plans in order to ensure the exploitation of generated assets beyond projects' duration.

The table below gives details of the tender procedures used with a value exceeding EUR 15 000:

Tender procedures in 2015				
Reference and subject	Procedure	Publication date	Award date	Contractor(s)
IMI.2015.SPC.050 Purchase and installation additional furniture,	Negotiated procedure(<134.000 EUR) under Article under Art,134(b) RA	25 March 2015	4 May 2015	Gipsen NV
IMI/2015/SC/030 - Consultancy services to develop sustainability plans for IMI project outcomes	Negotiated procedure (<134.000 EUR) – Service contract	20 February 2015	26 March 2015	Deloitte Bedrijfsrevisoren BV
IMI/2015/FWC/182-JTIsINTERIM	Open procedure – joint framework contract	29-10-2015	Ongoing	Ongoing

2.5 IT and logistics

IMI's ICT strategic objective is to deliver value to the business and to be a key enabler of new business initiatives with the goal of supporting and shaping the present and future of IMI. ICT applications and infrastructure aim at making all IMI processes simpler and more efficient.

The IT team's activities in the year 2015 were filled with the project management of the transition of IMI2 Calls and projects to the Horizon 2020 IT tools, enhancements of in-house developed applications for core and administrative processes, IT infrastructure and helpdesk support, and ICT procurement aspects.

The following subsections provide an overview of the main activities in 2015.

2.5.1 Transition to H2020 IT tools

A roadmap was produced describing concretely the steps that had to be followed in order to achieve a smooth transition. A gap analysis took place, and the IMI2 requirements regarding the particular IT tools were drafted. Several meetings with EC colleagues were held, where IMI2 requirements were discussed and analysed. The project has progressed significantly until now, taking into consideration its reliance on EC resources (DG RTD) for the implementation of IMI2 requirements. The current plan is to start using the Submission and Evaluation of Proposals (SEP) tool in Q4 2016.

2.5.2 Enhancements of in-house applications

Several new enhancement and service requests regarding the further development and maintenance of applications developed in-house, supporting core and administrative processes, were handled. In particular, 96 change and service requests were implemented related to SOFIA (Submission of Information Application) and 46 related to DORA (Document Repository Application), ISA (Information System for Absences), eMA (electronic Missions Application), and the web collaborative platforms for Strategic Governance Groups (SGGs) and States Representatives Group (SRG).

The following list presents the most important developments:

- SOFIA transformation of IMI2 financial forms in line with H2020
- SOFIA improvement of submission of project deliverables
- SOFIA enhancement of encoding of work packages, deliverables, milestones
- SOFIA mapping of old layout of projects to a layout compatible with H2020
- Improvement of the integration between ISA and eMA
- New version of eMA improving the user friendliness of the tool and the workflows managing mission and expenses requests
- ISA improvement regarding time registration, new part-time rules, working hours bandwidth
- SRG platform enhancement regarding document management
- Administrative application services were made available to BBI (Bio-Based Industries) and Shift2Rail JUs.

2.5.3 IT infrastructure and helpdesk support

The IT Helpdesk support process was streamlined, introducing a single point of contact for end-users via the email address helpdesk@imi.europa.eu. In addition, an incident management system was launched that is expected to improve the overall process and end-user experience. From the beginning of the new process until the end of the year 617 tickets were processed by the helpdesk.

Furthermore, the migration of the IMI cloud server infrastructure was completed successfully to the new vendor data centre, located in Belgium, with minimum interruption of the related services (SOFIA and other IMI in-house tools). In addition, the IT team participated in the organisation of the removal of IMI office / staff and the expansion of the organisation to two floors, resulting in a successful exercise where staff could continue working on and off-site seamlessly.

Moreover, in November 2015 a printer consolidation initiative was launched in order to optimise the printer fleet and decrease the cost of hardware, consumables (paper and toner), electricity and maintenance. In addition, the printer consolidation presents an opportunity to become greener, since consolidating and eliminating devices will allow IMI to cut its carbon footprint by lowering the consumption of both electricity and paper and reducing hazardous waste from consumables and devices.

The IT team also cooperated closely with the IT staff of the other JUs located in the same building, in order to jointly safeguard the common ICT infrastructure. One tangible result of this collaboration is that in the beginning of 2016 a Backup as a Service (BaaS) solution is going to be setup that will improve the IT disaster recovery plan of all JUs.

2.5.4 IT procurement

2015 saw the implementation of the results of the framework contract for in-house IT operations support with the establishment of three specific contracts for the common JU infrastructure with the awarded vendor. Additionally, the continuation of software development support was safeguarded with two specific contracts under the DG RTD framework contract. Likewise, numerous acquisitions through the European Commission DIGIT (Directorate-General for Informatics) framework contracts for consultancy, licenses and equipment were concluded.

2.6 Human Resources

Staff and recruitment

The objective for 2015 was to increase the number of staff to 44 positions. At 31/12/2015, out of 44 positions in total, there were 35 positions occupied (and 5 new staff have been appointed since then).

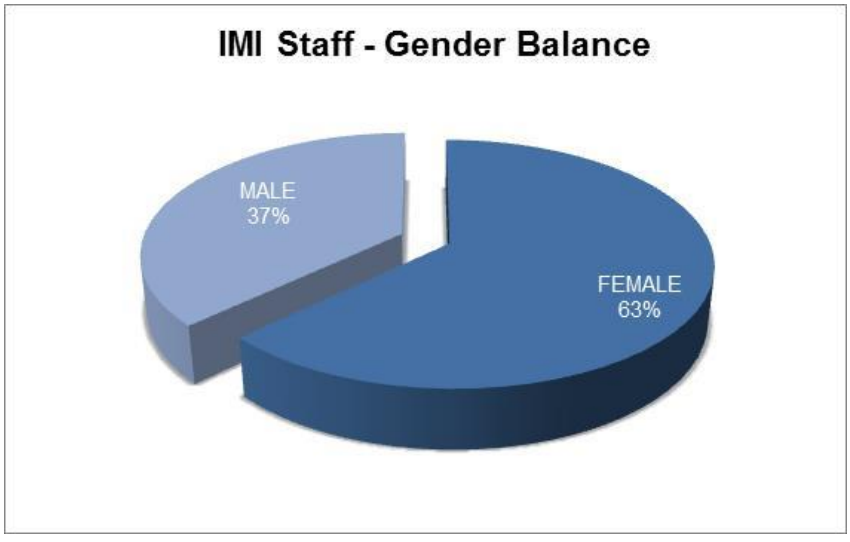
In 2015, the contract of the Acting Executive Director ended, and she was replaced by the new Executive Director on 16/09/2015. The recruitment for another important position, the Head of Scientific Operations, grade AD 12, was finalised in December 2015. The position will be filled in Q1 2016.

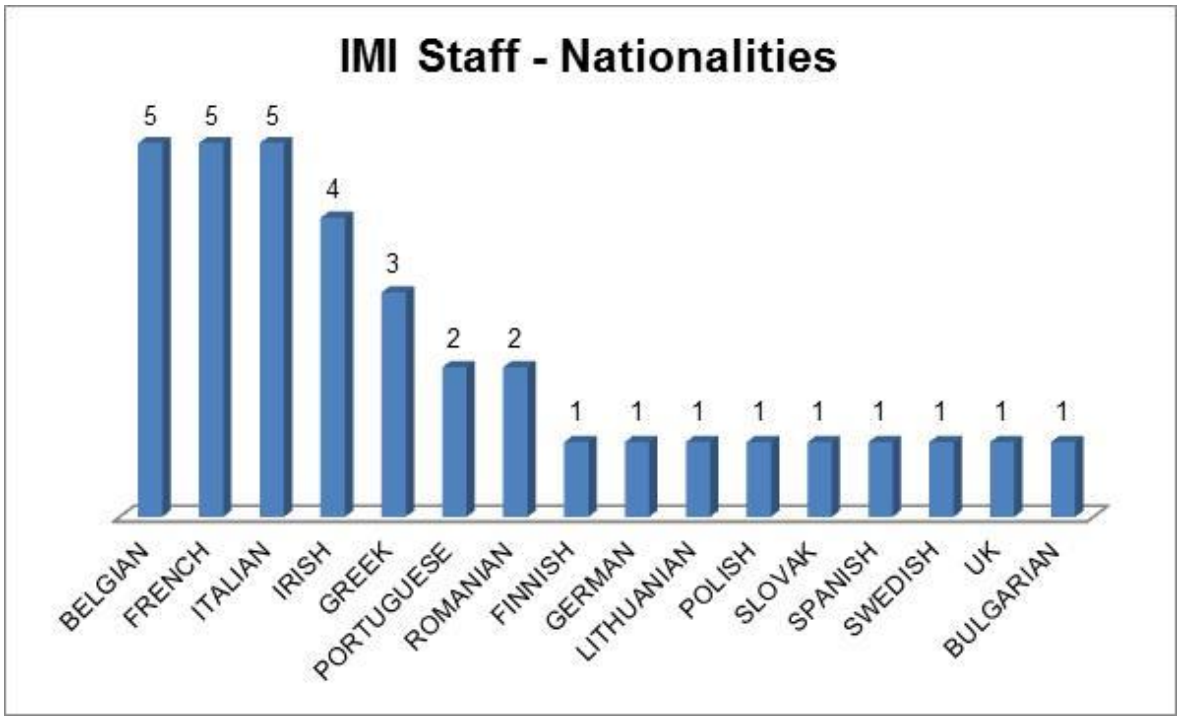
Key positions that were filled during 2015 were HR Manager, IT Manager, Audit Manager, Budget Officer / Financial Officer and Ex-Post Audit Officer.

Other positions filled were two Financial Officers, one Legal/IP Officer and one IT Assistant.

In addition, vacancy notices for the positions of Head of Communication and Institutional Relations and Editor/Writer were launched in Q3 2015.

The two graphs below show the gender and geographical balance within IMI 2 JU on 31/12/2015:





Learning and professional development

The organisational efficiency takes in particular account the learning and professional training in order to keep staff members up-to-date. The main areas covered were:

- Scientific knowledge;
- Operational and legal context: H2020 new environment, financial regulations, audit rules, staff regulations;
- IT skills (Word, Excel, MS Project or ABAC and any IT tool developed by IMI);
- A team building seminar was organised in December 2015 focused on six different themes (management by objectives, people and resources, customer focus, teamwork and internal collaboration, business processes, internal communication).

Staff regulations and implementing rules

IMI2 JU, in cooperation with other EU agencies and JUs, is working on a second set of rules to be adopted in line with the new Staff Regulations and the EC Human Resources and Security Directorate General (DG HR) guidelines.

2.7 Data protection

In 2015, IMI2 JU pursued the implementation of data protection principles within its activities involving the processing of personal data.

Regular communication with IMI2 JU staff, with the network and the JUs' data protection officers, and with the European Data Protection Supervisor (EDPS) services, enabled the continuing implementation of data protection principles. In particular, there were regular internal consultations with the data protection officer (DPO) in the areas of science, human resources, communication and IT.

- Prior checking activities

In 2015, IMI2 JU continued to follow up the notifications to the EDPS and issues related to existing processing operations. There is no specificity on the IMI2 JU processing of personal data to report. Recommendations from the EDPS as an outcome of IMI JU notifications are being implemented.

- Notifications to the DPO

Notifications from the staff to the Data Protection Officer cover IMI activities including communication with IMI JU bodies, organisation of meetings, remuneration schemes, audits, grants and procurement schemes, business trips, conflicts of interest & confidentiality, HR matters, and invitations of experts.

- Consultations

There were no formal consultations of the EDPS in 2015 to report.
The Data Protection Officer continued to collaborate on the work developed by the projects through consultation and advice.

- Inspections

There were no site visits by the EDPS in 2015.

- Complaints

There were no complaints to the EDPS in relation to IMI JU's processing of personal data to report in 2015.

- Network activities

In 2015, the DPO participated in one meeting of the network hosted by the European Investment Fund. The network meetings are an important forum to exchange best practices among Data Protection Officers and to learn more about EDPS activities, such as developments related to the new data protection directive. In 2015, the Data Protection Officer participated in DG RTD common support service meetings to discuss privacy statements on experts and grants, in view of publication on the European Commission participants' portal.

- Training/Communication activities

In 2015, the DPO provided systematic data protection training for newcomers.
Information on developments in data protection activities was provided to the IMI Programme Office staff.

Thematic guidelines

EDPS Guidelines	Notification to EDPS	Status of procedure	Comments
Tasks, duties and powers of the DPO	Yes	concluded	
Recruitment	Yes	concluded	
Health data at work	Yes	final stage	
Staff evaluation	Yes	final stage	
Leave & flexitime	Yes	final stage	
Conflict of interest	No	preparatory work	Pending adoption by IMI2 JU of new Guidelines
Anti-harassment procedures	No	preparatory work	Procedures being developed in IMI2 JU
Administrative inquiries and disciplinary proceedings	No	preparatory work	Procedures being developed in IMI2 JU
Video surveillance	No	not applicable	IMI2 JU is not the controller of the data
Electronic communications	No	preparatory work	Adopted by EDPS on 16 December 2015
Mobile devices	No	preparatory work	Adopted by EDPS on 17 December 2015

3 GOVERNANCE

3.1 Governing Board

The Governing Board is the main decision-making body of the IMI2 JU. It carries the overall responsibility for the operations and oversees the implementation of its activities. It therefore guarantees the fulfilment of the objectives set by the organisation.

On 2015 the Governing Board of IMI2 JU held five meetings in February (teleconference), March, n May (extraordinary meeting), June and November. The main items on the agenda included the Annual Activity Report 2014, the Annual Work Plans for 2015 and 2016 and the selection of the new Executive Director.

The Governing Board, in addition to the items indicated above, also approved the IMI2 JU Anti-Fraud Strategy, the revised Financial Rules and documents related to the launch of IMI2 - Calls 5, 6, 7 and 8 and the results of the evaluation procedures carried out on IMI2 - Calls 1, 3, 4 and 5.

Members of the IMI2 JU Governing Board

- Change of EFPIA representatives

Dr Roch Doliveux resigned as a member of the Governing Board following his retirement from the post of UCB CEO on 31 December 31 2014. As of 1 January 2015, Mr Marc de Garidel, CEO of Ipsen, member of the EFPIA Board and Vice-President of EFPIA, was appointed to represent EFPIA in the IMI2 JU Governing Board. Ms Magda Chlebus, Director Science Policy at EFPIA was appointed to represent EFPIA as a substitute member.

As of 26 February 2015, Dr Trafford Clarke, Managing Director Research Centre UK at Eli Lilly and Company Ltd, was appointed as EFPIA representative to join the Governing Board as a substitute member.

The vacant position was filled by a substitute until the nomination of the EFPIA representative. As of 16 September 2015, Dr Paul Stoffels, Chief Scientific Officer at Johnson & Johnson and Worldwide Chairman of Janssen Pharmaceutical Companies of Johnson & Johnson, was appointed by the EFPIA Board as an EFPIA representative in the IMI2 JU Governing Board.

- Change of European Commission representatives

During the period of secondment of Ms Irene Norstedt, and as foreseen in the decision from the European Commission on the Commission's representatives in the Governing Board, Dr Arnd Hoeveler, Head of Unit responsible for novel medical developments within DG RTD, served as alternate member of the Governing Board to Irene Norstedt.

As of 1 June 2015, Mr Carlo Pettinelli was nominated as the new Director responsible for the pharmaceutical sector in the organisation of the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) of the European Commission. He has therefore replaced Mr Gwenole Cozigou. Mr Christian Siebert as Head of Unit responsible for the pharmaceutical sector was appointed as alternate member to Mr Pettinelli.

- Change of chairperson, rotation of the role of chair

On 12 March 2015, Mr Marc de Garidel, CEO of the Ipsen pharmaceutical company was elected Chair. He accepted to hold the position of Chair of the Governing Board until July 2015 and therefore to complete the term kicked off initially by Dr Roch Doliveux at the formal set up of IMI2 JU. The election for the rotation of role of Chair was organised at the Governing Board meeting of 26 June 2015. Dr Rudolf Strohmeier, Commission representative and Mr Marc de Garidel, EFPIA representative were appointed as Chair and Deputy-Chair respectively of the IMI2 JU Governing Board from 7 July 2015 to 6 July 2016.

More information on the composition of Governing Board and on its representatives can be found at: http://www.imi.europa.eu/content/governing-board

Strategic Governing Groups (SGGs)

The SGGs ensure the coordination of IMI JU's work in certain strategic areas and work to make the development of new topics more transparent and effective. As such, the SGGs are made up of representatives of companies active or interested in the area covered by the scope of the SGG as well as representatives from the European Commission, the IMI Programme Office and the IMI Scientific Committee. The SGGs were created in 2014 on the basis of Article 7.3.p of the legislation establishing the IMI2 JU programme.

In 2015 the six established SGGs focused on the following areas:

- Immunology
- Diabetes / metabolic disorders
- Neurodegeneration
- Translational safety
- Data and knowledge management
- Infections control.

Immunology

The SGG Immunology has interests in tackling diseases such as rheumatoid arthritis, lupus, type 1 diabetes, multiple sclerosis and rare immune-mediated diseases. The SGG held two face-to-face meetings and two teleconferences during 2015 and provided a prioritised set of scientific priorities for inclusion in the 2016 AWP.

Diabetes / metabolic disorders

The SGG Diabetes and Metabolic disorders held four face-to-face meetings in 2015. The SGG has developed a comprehensive strategy for future projects in IMI JU to address diabetes and metabolic related diseases. In 2015 one topic resulting from this SGG was launched: diabetic kidney disease biomarkers, as part of IMI 2 - Call 5.

Neurodegeneration

The SGG Neurodegeneration met three times in plenary session during the year. An IMI scientific officer participated in all meetings. The SGG Neurodegeneratoin provided input to the IMI Governing Board regarding the scientific priorities for 2016, and developed four topics that were launched in the IMI2 – Call 5 and two for IMI2 – Call 7.

Translational Safety

The SGG Translational Safety continued its work to consolidate the member companies' approaches in the area of translational safety, resulting in a comprehensive strategy for future projects under IMI2. In 2015, four face-to-face meetings were held that facilitated the development of a portfolio of topics that were prioritised and included in the scientific priorities for 2016.

Data and knowledge management

In 2015, the SGG Data and Knowledge Management met three times. Speakers were invited from electronic health care and patient initiatives on the topic of patient-level medical data. Furthermore, representatives of the group were closely involved in an external meeting on adaptive clinical trials (Cambridge, July 2015). The SGG also actively engaged with other EFPIA partners in research. Apart from working on Call topics and the AWP, the SGG contributed to the implementation of best practice in data management by providing input into the Call template, adoption of the requirement for a data management plan and delegated some representatives to the other SGGs with the purpose to ensure appropriate input in call topics on data management. They also initiated the requirement and roll-out for an SGG platform for use across the SGGs.

Infections Control

The SGG Infections Control held two face-to-face meetings and five teleconferences to discuss issues surrounding infections control and to develop a portfolio of topics. The SGG provided input into the development of the IMI2 scientific priorities for 2016.

More information on the SGGs is available at http://www.imi.europa.eu/content/strategic-governing-groups.

3.2 Executive Director

Ms Irene Norstedt was the Acting Executive Director from 16 December 2014 to 15 September 2015. During this period, she was seconded from the European Commission.

Dr Pierre Meulien became Executive Director of IMI2 JU on 16 September 2015.

The Executive Director is the chief executive responsible for the day-to-day management of IMI2 JU in accordance with the decisions of the Governing Board. The Executive Director also performs the duties of authorising officer in accordance with the financial rules of the IMI2 JU.
The declaration of interests of the Executive Director can be found at:
http://www.imi.europa.eu/sites/default/files/uploads/documents/Governance/PierreMeulien_DoI_Sept2015.pdf

3.3 States Representatives Group

The IMI2 JU States Representatives Group (SRG) is composed of representatives of each Member State and of each country associated to the EU's research programmes. It provides strategic opinions to the Governing Board. Presently, the SRG counts 28 members. More information on the members can be found at:
http://www.imi.europa.eu/content/states-representatives-groups

The position of Chair is held by Marta Gómez Quintanilla (Spain) and the position of Vice-Chair by Gunnar Sandberg (Sweden). The Chair and the Vice-Chair were elected for a period of two years from 04/02/2015.

On 2015 the SRG met in February, June and October. At the meetings. detailed updates on IMI JU activities with a specific focus on Call and project achievements were provided.

During 2015, the SRG was consulted on the Call topics and documents and on the Annual Work Plans.

3.4 Scientific Committee

In 2015 the IMI2 JU Scientific Committee (http://www.imi.europa.eu/content/scientific-committee) held two meetings and one teleconference, all under IMI 2 JU. The meetings were held at the IMI Programme Office and were also attended by representatives from EFPIA, the European Commission and the EMA as permanent observer. Among contributions of the IMI Scientific Committee are:

- participation in the SGGs conducting a strategic reflexion on the field as well as in the development of new topics;
- feedback and input to the IMI2 Calls launched in 2015 (4) as well as to the Annual Work Plan 2016;
- participation, according to their field of expertise, in the interim reviews of IMI1 - Call 3 projects, making recommendations to the project consortium;
- communication activities enhancing IMI visibility.

3.5 Stakeholder Forum

Details about the 2015 Stakeholder Forum are available under the Section 2.1.

4 INTERNAL CONTROL FRAMEWORK

IMI2 JU implements a clearly defined framework of 16 internal control standards (ICS) aimed at maintaining an efficient and effective internal control system that contributes to achieving the organisation's strategic objectives and aligns with is lifespan, its governance structure and resources, as well as to the degree of maturity and risks across its operational and support systems and processes.

The image below outlines the role of internal control and risk management within the governance structure of the JU.

In accordance with these control standards, and having due regard to the risks associated with the management environment and the nature of the action financed, IMI2 JU has put in place over the years an effective and efficient internal control system designed to provide reasonable assurance of achieving the following objectives (IMI2 JU Financial Rules, Art. 17.3):

- effectiveness, efficiency and economy of operations;
- reliability of reporting;
- safeguarding of assets and information;
- prevention, detection, correction and follow-up of fraud and irregularities;
- adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the multi-annual character of programmes as well as the nature of the payments concerned.

The management structure of the IMI2 JU internal control system is designed as follows.

1. The Executive Director steers and supervises the control and risk management functions, with the assistance of the Head of Administration and Finance, the Audit Manager and the Internal Control Coordinator.

2. Management's key internal control responsibilities include:
   - overall supervision, monitoring, checks and reporting on the functioning of the internal control systems;
   - preparation and execution of the annual internal control action plan, including the implementation of the standards prioritised by the Governing Board in the AWP;
   - presentation of the annual self-assessment of the effectiveness of the internal control system, complemented by an intermediate mid-year report where needed;
   - set up the annual risk assessment exercise;
   - reporting in the AAR on the JU's compliance with the internal control standards and requirements, and on the effectiveness of the internal control system that the JU has put in place.

3. The main references for internal control activities are:
   - articles 12 and 17.3 of the IMI2 JU Financial Rules[16];
   - list of 16 ICS as approved by the IMI2 JU Governing Board Decision on 7 July 2014 with the corresponding requirements;

[16] Adopted by the Governing Board on 07/07/2014 and revised on 22/12/2015 (IMI2-GB-DEC-2015-44).

- the internal control framework and guideline adopted by the Executive Director on 10 December 2009, which continues to be applicable to IMI2 JU.

This model is embedded across IMI2's administrative, support and grant management procedures and workflows. It relies in particular on a combination of ex-ante and ex-post controls, adequate segregation of duties, documented processes and procedures, control of deviations, promotion of ethical behaviour, and sound financial management.

	Ex-ante controls	Ex-post controls
When	Before the transaction is authorised.	After execution of the authorised transaction.
Frequency	Mandatory for all transactions.	Made on a sample basis.
Methodology	At least a desk review of documents (e.g. proposal received, reports, etc.) and available results of controls already carried out relating to the operational and financial aspects of the operation. However, ex-ante controls may take place on the spot at the beneficiary's premises where necessary and cost effective.	On-the-spot checks at the beneficiary's premises.
Impact	Errors detected should be rectified before the transaction is approved.	Errors detected are corrected. Where the error caused an ineligible expenditure, a recovery order is issued or an offset is made against future payments.
Level of assurance	Primary means of ensuring sound financial management and legality and regularity of transactions, but less evidence (in particular for the eligibility of costs) as usually based on desk review.	Secondary means of ensuring sound financial management and legality and regularity of transactions, but more robust as normally carried out on the spot.

4.1 Financial procedures

In line with Article 209 of Regulation 996/2012 applicable to the general budget of the Union as well as with Article 1 of the model financial regulation for PPPs[17] and Article 5 of the Council Regulation (EU) No 557/2014, IMI2 JU has adopted its specific financial rules in their last version of 22 December 2015[18]. The rules lay down the principles necessary to ensure sound financial management of Union funds based on Article 60 of the general Financial Regulation and in particular the budgetary principles of unity, budgetary accuracy, annuality, equilibrium, unit of account, universality, specification, sound financial management (which requires effective and efficient internal control), and transparency.

In accordance with the principle of sound financial management, IMI2 JU has also adopted and implements a Manual of Procedures for Financial Operations which provides guidance on the main responsibilities and controls to be performed on documents and financial operations by IMI2 JU staff.

The manual is divided into three different parts:

- general definitions, legal and control framework;
- operational expenditure (i.e. expenditure related to grant management)[19];
- administrative expenditure.

[17] Commission Delegated Regulation (EU) No 110/2014 of 30 September 2013 on the model financial regulation for public-private partnership bodies referred to in Article 209 of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council.

[18] Governing Board Decision, IMI2-GB-DEC-2015-44.

[19] It should be noted that the operational expenditure only refers to payments made in favour of beneficiaries of the project which not include EFPIA (European Federation of Pharmaceutical Industries and Associations) companies.

EFPIA companies do not receive any EU funding through IMI, but contribute to the projects 'in kind'. In-kind contributions are costs incurred by EFPIA companies in the implementation of IMI projects and include, for instance, the costs of researchers, research equipment and materials to match the funds provided by the European Commission. The total 'in-kind contributions' have to reach a value explicitly foreseen in the legislation on IMI1. The Governing Board regularly monitors the reported in-kind contribution. For more information on in-kind contribution and controls see above section 1.8.

Even though the main focus is on actions to be performed by financial actors, when necessary for the implementation of the transaction, actions due by operational actors or legal officers are also described in the manual. Indicative templates of checklists, routing sheets, step-by-step guides for each operation, overview of the main workflows used in IMI2 JU as well as model letters/e-mails can also be found in annexes to the manual.

4.2 Ex ante controls on operational expenditure

According to the establishing regulation[20] and its financial rules, the IMI2 JU implements the budget within the limits of the appropriations authorised and in compliance with the requirements of legality and regularity.

Each and every operation is subject at least to an ex-ante control based on a desk review of documents and on the available results of controls already carried out relating to the operational and financial aspects of the operation (see also part 3.3 for ex-post controls).

IMI2 JU's ex-ante controls form an integral part of the respective financial circuits and procedures for both the administrative and operational expenditure. These controls are documented and enforced through internal policies, management decisions, documented procedures and templates as well as by a series of established internal checks aimed primarily at preventing errors from entering the process and also detecting and correcting errors in case they occur.

Ex-ante controls system

The IMI2 JU annual budget is implemented through operational (i.e. related to the management of the research programme) and administrative (i.e. staff and other support for day-to-day activities) expenditure.

The administrative expenditure is divided into Title I – staff expenses and Title II – administrative expenses which relate to rent, evaluation and experts, contracts and various service level agreements for administrative support received from Commission's horizontal services (e.g. HR/Payment management office for salaries, DG BUDG for the use of the Commission's accounting system). It also includes expenditure for ex-post audits, purchase of IT equipment and services, training, etc. Most of this expenditure is incurred by using framework contracts made available by the Commission (e.g. training, audits).

All transactions related to administrative expenditure are subject to an ex-ante control in accordance with the principle of four eyes and segregations of duties.

Operational expenditure relates to the payment of beneficiaries of the IMI2 JU funding programme (Title III of IMI2 JU budget). The ex-ante controls cover the whole project lifecycle, from the initial validation and approval of the pre-financing payments to the initiation and verification of interim and final payments.

It should be noted that IMI2 JU is currently managing actions funded and ruled under two different framework programmes, with different obligations and *modus operandi*:

- Actions initiated under Regulation (EC) No 73/2008 (IMI1) and financial obligations related to those actions are governed by the above regulation until their completion. In particular, 'actions arising from Calls for proposals provided for in annual implementation plans adopted under Regulation (EC) No 73/2008 shall be regarded as actions initiated under that Regulation'[21].
- Actions funded under the IMI2 JU shall be subject to Regulation (EU) No 1290/2013[22] laying down the rules for participation and dissemination in Horizon 2020. In accordance with that regulation, the IMI2 JU shall be considered as a funding body and shall provide financial support to indirect actions[23].

As of 31/12/2015, IMI2 JU was managing 70 projects of which 59 were funded under FP7 and 11 were funded under H2020.

The 11 projects under H2020 rules and procedures started in 2015, therefore only pre-financing instalments have been paid. The first periodic reports and cost claims are due by 29/02/2016.

[20] The IMI2 Joint Undertaking established by Council Regulation 557/2014 replaced and succeeded the IMI Joint Undertaking, established by Regulation (EC) No 73/2008.

[21] Council Regulation 557/2014, Article 19.2.

[22] Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in 'Horizon 2020 — the Framework Programme for Research and Innovation (2014-2020)' and repealing Regulation (EC) No 1906/2006 (OJ L 347, 20.12.2013, p. 81).

[23] Council Regulation 557/2014, Article 17.

For that reason, references and samples to ex-ante control procedures provided in this section refer mainly to projects governed by Regulation 73/2008 which are the more representative of the operational expenditure during 2015 in terms of value.

Furthermore, IMI2 JU has not used the common Horizon 2020 IT tools yet. This is in accordance with the derogation granted by the Delegation Agreement signed on 20/10/2014 with the European Commission (article 5.g, footnote No 3) which allows that IMI2 JU to apply the common H2020 IT tools 'as soon as technically feasible'[24].

Apart from financial procedures linked with beneficiary payments, the ex-ante internal controls are also embedded in the Call and grant award process, including the eligibility screening of the proposals; the selection of experts; the ethical reviews of the proposals performed by independent external experts; the controls to ensure conformity with IMI JU rules, procedures and checks carried out during the negotiation; and grant preparation and signature processes.

Furthermore, during the implementation of the projects, IMI2 JU monitors their progress not only through the systematic review of the periodic technical progress reports but also through interim reviews of each.

This review is performed by independent observers and their recommendations are closely followed up by the project managers.

In 2015, 12 interim reviews were held and overall these had positive conclusions on the progress made and the early achievements of projects funded under IMI 1 JU – Calls 3, 4, 5, 6 and 8, as well as on additional measures that can be taken to ensure successful completion of the projects by the end of the respective funding periods. Further details are available in section 1.5.2.

Ex-ante controls of the operational budget

The ex-ante control of operational expenditure in place at IMI2 JU means that the payment business process is supported by key controls designed to ensure sound financial management as well as the legality and regularity of underlying transactions. These controls are carried out at the level of each operation, from pre-financing, subsequent interim payments through the life-time of the projects, to the final payment.

In particular, grants are paid on the basis of the beneficiaries' declarations of eligible costs, the submitted periodic reports, and where applicable, certificates on the financial statements (CFS)[25].

The operational (scientific officers) and financial agents perform initiation and verification tasks.

As the ex-ante control is based on a desk review of the self-declarations of beneficiaries and on the results of controls of the operation as known at the moment the payment is authorised, IMI2 JU can only have the reasonable assurance that the costs claimed are accurate and in compliance with the applicable legal and contractual provisions. Additional levels of assurance of costs paid can only be achieved through ex-post audits carried out at the beneficiaries' premises, after the costs have been incurred and declared (see following section).

a) Volume of operational transactions

During the year 2015, the IMI2 JU handled 47 operational transactions for a total of EUR 148 978.190 million.

As reported in the table below, 16 of those were pre-financing payments and 31 consisted of interim payments of costs related to project execution claimed by beneficiaries and paid (or cleared against the pre-financing already received) by IMI2 JU following analysis and acceptance of each project's periodic report.

The analysis of the periodic reports consists of an operational review of the description of work performed and related deliverables and the validation of all financial claims and certificates of financial statements submitted by participants in the project, including any adjustments for previous reporting periods or for audit findings. The interim payment which follows the approval of the periodic report is calculated on the basis of the accepted eligible costs and is paid taking into account the pre-financing already advanced. This means that, in some cases, payments for the interim periods are fully or partially reduced ('clearing'). In 2015, the total amount of the costs cleared against pre-financing was EUR 14 463 524 .

[24] The IMI2 JU is planning to implement the common H2020 IT tool as from Call 9 of 2016. Since all the actions, including projects started before shall migrate to H2020 IT system (see above Section 2.5).

[25] Certificates on financial statements are required for claims from the beneficiary participating in an FP7 project for more than EUR 375,000 (EUR 325.000 for H2020).

Number of operational transactions in 2015

Pre-financing payments	Costs claims paid or partially cleared	Cost claims paid against full clearing	**Total**
16	30	1	**47**

Number of operational payments

	2012	**2013**	**2014**	**2015**
Pre-financing payments	12	14	18	16
Interim and final payments	26	33	32	30
Total	38	47	50	46

b) Value of operational budget

The total value of the 46 operational payments made in 2015 (i.e. 16 pre-financing and 30 operational payments except the 1 clearing) was EUR 134 514 666, corresponding to a budget execution of 72.74 %.

Value of operational payments in 2015

		No. transactions	**Value of transactions (EUR)**
IMI1 JU (FP7)	Pre-financing payments	**5**	21 895 395
	Interim and final payments	**30**	66 666 482
IMI2 JU (H2020)	Pre-financing payments	**11**	45 952 789
	Interim payments	**0**	0.00
TOTAL		**46**	134 514 666
		Budget Execution %	**72.74 %**

Operational budget execution - cumulative

		2012	**2013**	**2014**	**2015**
IMI1 JU (FP7)	Pre-financing payments	100 %	99.43 %	74.11 %	68.25 %
	Interim and final payments				
IMI2 JU (H2020)	Pre-financing payments			N/A	83.31 %
	Interim payments			N/A	N/A

Interim and final costs reported and accepted during 2015 (EUR)

Reported costs	110 874 565.93
Of which covered by CFS	55 699 880.37
Accepted costs	109 422 330.45
Of which covered by CFS	54 579 698.85
Rejection	1 452 235.48
Rejection (in %)	1.33 %

c) Time to pay (TTP)

In 2015, on average it took 13 days to process the pre-financing payment of the new projects implemented.

Concerning the handling of costs claimed in the periodic reports, the actual average time to pay increased from 71 days in 2014 to 90 days in 2015. The reason for this was threefold:

i) the exceptional situation linked to the shortage of payment credits during the first half of 2015 which meant that the Programme Office could not execute any payment;
ii) the increased workload linked to unbalanced reporting periods;
iii) the limited resources within the financial team.

The IMI2 management made a thorough review and follow up of the payments strategy in order to achieve the payment execution target and related 'time to pay', however, despite these measures and the mitigating actions implemented, it was not possible to prevent delays and payment of late interests to beneficiaries for 12 projects.

Budget year	No. of operational payments	Average time to pay (days)* c)	% of payments on time	% beyond time limit
2012	26	60	96	4
2013	33	66	91	9
2014	32	71	63	37
2015	30	90	63	37

* This figure indicates the average delay, after the 60 days allowed, that projects take in reporting their annual cost claims.

During the year, IMI2 JU continued its effort to improve the effectiveness of its ex-ante controls by maximising the efficient use of available resources, to reduce the administrative burden, and to facilitate and streamline the work process of grant beneficiaries through the following provisions:

- publication of guidance on its website and the organisation of workshop and webinars for participants on the applicable financial rules and the correct completion of the financial statements;
- implementation of simplified internal workflows and key documents;
- use of IMI JU's core business application SOFIA that automates and further supports project-related processes.

To this end in particular, IMI2 JU has established and is implementing an action plan to address the recommendations of the IAS and observations of the ECA and enhance the ex- ante control system. IMI2 JU has introduced internal control system improvements to better document ex-ante checks on periodic project reports. These improvements help to ensure a sufficient audit trail. (See also sections 4.4 and 4.5).

4.3 Ex-post control of operational expenditure and error rates identified

Ex-post controls are the final stage of IMI JU's control strategy in the project lifecycle. This stage includes the ex-post audits as well as the recovery/correction of any unduly paid amounts. Ex-post audits are carried out on the cost claims accepted and paid following the ex-ante controls described above. The indicators on ex-post audit results in the chapter below refer to the IMI1 programme only. For IMI2, the first ex-post audits will be carried out in 2016 by the European Commission's Common Audit Service.

Ex-post controls: audit and corrective actions

Ex-post audits have three main objectives:

(1) to assess the legality and regularity of expenditure on a multi-annual basis;
(2) to provide an indication on the effectiveness of the ex-ante controls;
(3) to provide the basis for corrective and recovery mechanisms.

IMI JU mainly uses two types of audits in order to arrive at a substantial representative coverage across beneficiaries as well as to identify and correct irregularities by providing coverage of certain participants' risk profiles.

- **Representative audits**, which contribute to an error rate representative of the whole population. This kind of audit is conducted by IMI JU on the basis of representative samples in accordance with the sampling methodology identified in the ex-post audit strategy. Each sample includes a combination of the largest cost claims by beneficiaries and randomly selected entities.
- **Corrective audits**, which aim to identify and correct irregularities and allow the coverage of certain risk profiles through **risk-based audits**. There may be populations which are not sufficiently covered by representative audits and which might present specific risks. This kind of audit provides IMI JU with enough flexibility, ensuring that specific populations are properly covered.

The main legality and regularity indicators for payments made to beneficiaries, as defined in the ex-post audit strategy, are the **representative** and **residual error rates** detected through financial ex-post audits.

- The ***representative error rate*** **(RepER)** is the detected error rate resulting from the representative audits. It provides a reasonable estimate of the level of error in the population relating to the accepted IMI JU contributions on completion of the audits, but does not take into account the corrections and follow-up undertaken by IMI JU. The formula for the calculation of the representative error rate, under the IMI JU ex-post audit strategy approved by the Governing Board, is shown below in Annex 9 – Materiality Criteria.
- The ***residual error rate*** (**ResER**) is the level of error remaining in the population after deducting corrections and recoveries made by IMI JU. This includes the extension of audit results to non-audited financial statements of the audited beneficiaries to correct systematic errors. The formula for the calculation of the representative error rate under the IMI JU ex-post audit strategy approved by the Governing Board is shown below in Annex 9 – Materiality Criteria.

Given the multi-annual nature of both the IMI programme and its individual research projects, the **residual error rate** calculated on the duration of the programme provides the most meaningful indication of the financial impact of errors. It takes into account the corrections made by IMI and the fact that IMI extrapolates the systematic findings of the audits, significantly increasing the cleaning effect of audits. Moreover, as the programme advances, beneficiaries learn from their errors. Furthermore, drawing from the lessons learned from the audit findings, IMI also works continuously to better inform beneficiaries of any pitfalls to help them report their costs correctly.

Resources

Since the lean structure of IMI JU does not allow for the setting up of an internal team of auditors for these purposes, ex-post audits are outsourced to external audit firms. Nevertheless, the IMI Programme Office remains responsible for the management of ex-post audits, namely:

- the selection of audits;
- coordination with the EC;
- the preparation of the audit input files;
- contract management and the monitoring of the external audit firms' progress and deliverables (regular follow up of the audit status, interaction with audit firms on technical questions and quality checks of audit reports);

j) the analysis of errors detected and the implementation of audit results.

The following table gives an overview on the resources devoted to ex-post audits:

	2011	2012	2013	2014	2015
Internal resources ex-post audits	0.50 FTE	1 FTE	1.5 FTE	2 FTE	3 FTE
Costs of externalised audits in EUR (Commitments)	370 790	381 049	336 011	199 163[26]	359 232

Cost of audits (cumulative total 2011-2015)

A. Total cost of audit contracts 2011-2015	**EUR 1 646 245**
B. Total cost of FTEs in ex-post function (based on standard salary per personnel grade)	EUR 345 000
C. Total cost of audits (A+B)	EUR 1 991 245
D. Total audits contracted by the end of 2015	177
E. Total amount audited (all contracted audits)	EUR 55 246 277
F. Ratio: total cost of audits/total audited amount (C/E)	0.036
G. Average cost per audit (C/D)	EUR 11 250

Indicators of coverage: Number of audits and audit coverage (cumulative)

For the calculation of the audit coverage of the total costs claimed, the cumulative audited value of finalised ex-post audit assignments is compared to the total cumulative validated costs claims as of the cut-off date of 31 December 2015.

	Total population[2]	Audited	Audit coverage
Beneficiaries	636	144	22.6 %
Projects	59	38	64.4 %
Costs accepted by IMI JU (cumulative)	EUR 190 019 374	EUR 37 488 711	19.7 %

The following table gives an overview of the status of individual audit assignments as of the cut-off date of 31 December 2015:

Sample	Audits finalised[1][2	Of which		Of which finalised in 2015	Audits ongoing	Total	Of which	
		Representative	Risk-based				Representative	Risk-based
2011	**58**	**56**	**2**	**1**	**0**	**58**	**56**	**2**
2012	**35**	**34**	**1**	**14**	**0**	**35**	**34**	**1**
2013	**26**	**24**	**2**	**19**	**9**	**35**	**33**	**2**
2014	**17**	**17**	**0**	**17**	**7**	**24**	**24**	**0**
2015	**8**	**6**	**2**	**8**	**6**	**14**	**11**	**3**
Total	**144**	**137**	**7**	**59**	**22**	**166**	**158**	**8**

[26] In 2014, due to staff turnover and subsequent clearing of a large number of outstanding audits from previous batches, fewer new resources were committed. No risk-based audits were launched.

[2] Beneficiaries in IMI1 projects (FP7)

[1] An audit is considered finalised when the audit adjustment and the related 'error rate' is final. This comprises either audits with 'final audit reports' accepted by IMI or if not received or accepted, with a 'pre-final audit report' (after contradictory procedure with the beneficiary) approved by the JU and therefore with a definitive audit adjustment and error rate.

The first sample launched in 2011 included accepted cost claims received in 2010 and 2011. The subsequent samples 2012, 2013 and 2014 were established on a yearly basis covering accepted costs claims as of a single cut-off date. In the first half of 2015, IMI JU launched 11 representative audits based on the validated costs claims as of 30 April 2015. A further three risk-based audits were launched. A second sample of 11 audits was drawn at the end of 2015 based on cost claims paid before 15 November 2015. These will be launched in early 2016.

Representative and residual error rates as of 31 December 2015

At this point, the **cumulative representative error rate** (RepER) resulting from 137 representative audits finalised is 1.99 % in terms of IMI contribution. The **cumulative Residual Error Rate** (ResER; error remaining in the population after corrections and recoveries) is 1.50 % in terms of IMI JU contribution. The error rates are thus below the 2 % materiality threshold established in Annex 9 of this report. The table below shows in detail the development of the error rates annually as well as the cumulative error rates to date.

Sample ref.	Annual ER	Annual ResER	Cumulative RepER	Cumulative ResER
2011	4.30 %	2.35 %	0.72 %	0.44 %
2012	3.68 %	2.32 %	0.62 %	0.43 %
2013	3.00 %	2.62 %	0.50 %	0.49 %
2014	0.91 %	0.77 %	0.15 %	0.14 %
2015	0.01 %	0.00 %	0.00 %	0.00 %
TOTAL			1.99 %	1.50 %

Implementation of audit results

Following the finalisation of each audit by an external audit firm, IMI JU launches the necessary corrective actions to recover or offset against subsequent claims of the same beneficiaries any amounts that have been found to be unduly paid.

The table below summarises the status of implementation of audit results as of the cut-off reporting date of 31 December 2015.

Unduly paid amounts identified in audits	Adjustment implemented	Adjustment pending	% Implemented
543 693	458 269	85 423	84.3 %

Implementation of extrapolation

IMI extrapolates the systematic findings of the audits to all other cost claims by the same beneficiary. The unduly paid amounts thus identified are recovered or offset against subsequent cost claims of the beneficiary. The status of the implementation of extrapolation of audit findings is shown in the table below.

Implementation of extrapolation of systematic findings	Beneficiaries
Audits finalised	144
Pre-information letters / letters of conclusion sent	126
Of which affected by systematic errors[27]	33
Extrapolation feedback received from beneficiary	24
Of which implemented[28]	20

4.4 Audit of the European Court of Auditors

On 16 November 2015 the European Court of Auditors (ECA) published its report on IMI2 JU's annual accounts for the financial year 2014 in which ECA issued an unqualified 'clean opinion' on the reliability of the accounts as well as on the legality and regularity of all transactions underlying the annual accounts.

Without calling into question its clean opinion as outlined above, the ECA also provided in its report on the financial year 2014 general comments on the following:

- *Budgetary and financial management* - the overall budget implementation rate being 92.4 % for commitment appropriations and 73.9 % for payment appropriations. The ECA notes the successful commitment of the entire budget for research under FP7 by means of Calls for proposals organised in 2008 - 2013 resulting in Grant Agreements totalling EUR 897 million, amounting to 93 % of the maximum EU contribution to the Joint Undertaking for research activities.
- *Key controls and supervisory systems* – an outstanding need to better document operational ex-ante controls on the payment of project cost claims; a need to focus on operational compliance, indicate status of the project and outcomes of assessment of deliverables.
- *Internal audit* – The ECA notes that previous recommendations have been addressed through agreed actions and the IAS is monitoring the implementation.
- *Monitoring and reporting of project research results* – acknowledges that IMI JU has developed key performance indicators for the various aspects of project achievement and it measures progress on this basis. The ECA notes the progress made by IMI to integrate its activities into the Commission's system for monitoring and reporting on research results as well as on the need for further development in this area;
- *The Commission's Second Interim Evaluation* – notes actions to implement recommendations related to the establishment of the IMI2 JU and a need to carry out consolidated follow-up and assessment of the actions undertaken by the end of 2015.

IMI2 JU takes the Court's observations seriously and, as stated in the formal responses to the Court, has established and is implementing an action plan to address the weaknesses identified in the ex-ante control process by streamlining and linking existing procedures and preparing project monitoring guidelines aligned with H2020. An operational guidance document which will optimise the implementation and documentation of ex-ante control on periodic reports and cost claims is under development.

[27] This does not include positive systematic errors and systematic errors below materiality threshold.

[28] Systematic errors are considered implemented when the complementary letter confirming the submitted adjustments is received from the external audit firm that performed the desk review.

4.5 Internal audit

The Internal Audit Service (IAS) of the European Commission performs the internal audit function for the IMI2 JU as specified in the financial rules of July 2014.

In February 2015, the IAS issued final audit report on 'Grant management: ex ante controls and related processes in IMI2 JU'. The main objective of the audit was to assess the economy, efficiency, effectiveness and reliability of ex-ante control procedures at IMI. In the report, the IAS acknowledges the efforts undertaken by IMI JU to maximise the efficient use of its available resources, to reduce the administrative burden for beneficiaries in line with FP7 provisions as well as to apply preventive measures to mitigate the risk of errors in beneficiaries' cost claims. The IAS also points out IMI2 JU's strengths in ex-ante control, including the consistent use of control checklists, as well as the structured, organised, accurate and well-documented process of controls.

The audit resulted in three recommendations, two of which were classified as 'very important' and one of which was classified as 'important'. No 'Critical' recommendations were issued. The IAS recommends that IMI JU:

- continues to further improve the effectiveness of its ex-ante controls with the aim of using a more risk-based and balanced approach;
- reinforces control procedures connected with the certificates on financial statements (CFS);
- enhances management reporting on the results of ex ante controls.

IMI2 JU is implementing audit recommendations on the basis of the action plan approved by the IAS as of March 2015. The ongoing actions also integrate the Court's observations.

In the course of 2015, the IAS carried out a preliminary survey and fieldwork in the IMI premises for the audit on 'Controls over in-kind contributions'. The audit aimed to assess whether management control procedures on in-kind contributions are adequately designed, compliant with the regulatory framework, and effectively and efficiently implemented. The final audit report was received end January 2016 consequently IMI2 JU issued an action plan for the implementation of accepted recommendations which has to be approved by the IAS.

In April 2015, the IAS communicated to the Governing Board the Internal Audit Strategy established for the period 2015 - 2017 which is based on the results of a risk assessment carried out at the end of 2014. The strategy includes a shortlist of potential topics for assurance audits supporting the Executive Director's reasonable assurance.

Follow-up on outstanding internal audit recommendations from previous years

The implemented audit recommendations from previous years stem from the audit on project monitoring and reporting. Two of those recommendations (concerning KPIs and reviews of interim project reports) were implemented by the IMI management in 2015 and closed by IAS.

The only outstanding recommendation from previous IAS audits referred to strengthening the project monitoring process and improving IT systems. Specifically, it was recommended to issue a standard operating procedure for the review of periodic reports, to establish a central repository of project achievements and to improve the SOFIA IT tool. The agreed actions were completed in the first quarter of 2016; IAS acknowledged the implementation and closed the recommendation in the Issue Tracking system in April 2016.

4.6 Risk management

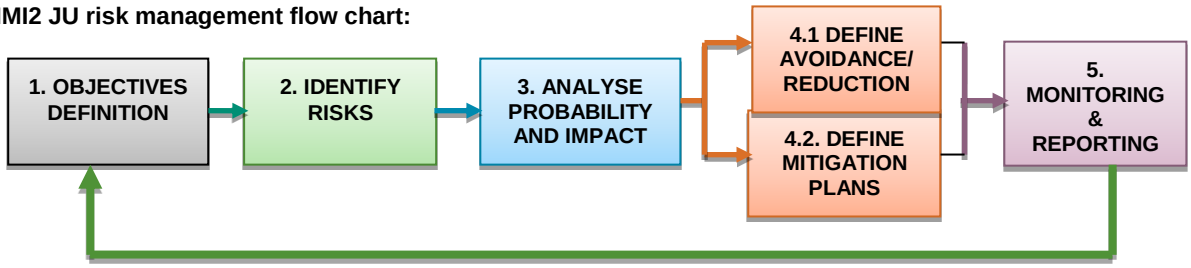
The annual risk assessment exercise is an important step in the definition of the annual objectives and priorities for IMI2 JU as it provides a comprehensive analysis of the weaknesses and risks that can undermine its performance and capacity to deliver.

Risk management is intended by IMI2 JU as a proactive process of identifying and assessing any event that could pose a threat to the achievement of its objectives for determining how the corresponding risks should be managed.

The JU has defined and implements a robust enterprise risk management (ERM) process based on an annual risk assessment exercise (RAE)[29] involving the following five steps:

1. Definition of the objectives and activities to be implemented by the JU.
2. Careful analysis of what could go wrong, preventing the JU's activities and objectives from being attained. Not all risks are equal: some are more likely than others to occur, and some will have a greater impact than others if they occur.
3. Analysis of the probability and impact of risk events assessing whether enough control measures and precautions have been taken to address the potential issues.
4. Once the risks are identified and assessed, management decides how to deal with them, establishing a mitigation plan and implementing the risk response;.
5. Monitoring and continuous reviewing, taking further actions where necessary to ensure controls remain effective and relevant.

IMI2 JU risk management flow chart:



During the assessment, each risk event is treated separately in order to facilitate the elaboration and monitoring of the action plan. Furthermore, risk events are broken down to manageable levels in order to involve as much as possible the staff at all levels and to identify any possible overlaps between risk categories (e.g. resource management or reputational risks which are inherent in a number of events).

The outcome of this exercise is twofold:

- At operational level, each functional area produces an **operating risk registers** (ORR) that identifies and ranks the risks it might have to face when implementing the annual work plan. The ORR is managed at the operational level and includes a risk mitigation plan with details of the responsibilities assigned to specific individuals. For each risk, recommended actions are proposed on how to reduce either the probability of a risk turning into a problem or the severity of the exposure if the risk does occur.
- At corporate level, the JU management makes a strategic, cross-sectional assessment of the JU's objectives and of the risks reported in each ORR. Cross-cutting and policy risks scored above a critical threshold are considered as representing a threat at corporate level. These risks are included in the **strategic risk register** (SRR), which is directly monitored at senior level and complemented by an appropriate risk mitigation plan.

Periodic monitoring and updates are planned in order to keep the risk management dynamic and able to respond to internal/external influences or evolving priorities as the focus of the risk management may change during the course of the year. In this regard, the risk register is supposed to capture risk information from the 'bottom up' within each service area. At this stage the risk is assessed and controlled at line manager level to be escalated when new circumstances prevent objectives from being achieved.

[29] The annual risk assessment is performed in accordance with the methodology defined in the guideline for risk management approved by the Executive Director.

4.7 Compliance and effectiveness of internal control

IMI2 JU implements an internal control (IC) system set up in accordance with the framework of 16 internal control standards (ICS) adopted by the Governing Board. On that basis, the JU has developed over the years a robust and mature control environment that can be considered in line with the requirements of an international public-private partnership.

This system is embedded across IMI2's administrative, support and grant management systems and workflows. It relies in particular on a combination of ex-ante and ex-post controls, adequate segregation of duties, documented processes and procedures, control of deviations, promotion of ethical behaviour, and sound financial management.

2015 has been the first year of implementation of IMI2 JU after the transition to H2020 and the replacement of the previous constituent instrument based on FP7, which nevertheless continues to be applicable for the projects and actions arising from Calls for proposal provided for in annual implementation plans adopted under Regulation (EC) No 73/2008.

Even though the executive structure of the former entity continued without changes in staff and operational structure, the composition of the governing bodies of the new entity were renewed, new financial rules were adopted together with new financial agreements with the European Commission and EFPIA, and an acting Executive Director was in place until September 2015 when the new Executive Director took up his duties.

These circumstances clearly have had an impact on the JU management and control, especially in terms of workload generated throughout the Programme Office. All of these changes required a number of adjustments within the administrative and operational structure of the JU whose complete implementation and consistency need to be assessed and supported by appropriate internal control activities.

In line with the objectives and priorities described in the AWP 2015, the robustness of the internal control system was continuously monitored throughout the year and improved to reflect the evolving needs of the JU and to better meet the expectations of its members and stakeholders in terms of efficiency, effectiveness and flexibility.

In order to address these objectives, the action plan for the implementation of internal control activities in 2015 focused on the following points.

- The prioritisation of ICS 3 (staff allocation and flexibility), ICS 6 (risk management process), ICS 7 (organisational structure), ICS 8 (processes and procedures) and ICS 9 (management supervision).
- Supervisory arrangements by senior management, continuous periodic reports, interviews and on-the-spot checks of the whole system, which should assure a reliable indication of a fairly mature internal control structure. Internal control topics are also regularly discussed during weekly management meetings or working groups (when preparing new processes or revising existing operating procedures).
- Implementation of H2020 legal framework and modus operandi which has been progressively deployed during 2015, although some operational tools have yet to be finalised (e.g. the full implementation of the Horizon 2020 IT tool for the management of the funding programme; this is planned during Q1 and Q2 2016) or assessed.

Furthermore, in 2015 IMI2 JU's internal control system was also strengthened by implementing a large part of the action plan designed to address the IAS audit recommendations on project monitoring and reporting.

In conclusion, the results of periodic supervision reporting, the annual self-assessment of the effectiveness of internal control system and the overall assessment report of 2015 management, confirm that IMI2 JU is in compliance with all ICS the controls in place are working as intended and the internal control system is providing an effective framework for managing the risks to the JU's ability to achieve its objectives.

Risks identified through the annual risk assessment exercise (RAE) and that might pose a threat to the achievement of IMI's mission and objectives were also systematically assessed and managed through appropriate controlling and mitigating actions.

4.8 Fraud prevention and detection

The IMI 2 anti-fraud strategy was adopted by the Governing Board on 22 July 2015. The strategy is aligned with the common anti-fraud strategy of the research family approved on 7 February 2015 by the Executive Committee of the Common Support Centre of the DG RTD.

The new IMI strategy is implemented through a multiannual action plan both at JU level and horizontally within the research family and the fraud risks are assessed in the JU annual risk assessment exercise.

Anti-fraud measures were already embedded in the IMI internal control system (ex-ante and ex-post controls) and pre-dated the strategy. Furthermore, the JU continues to offer tailored training sessions for operational and financial staff on fraud prevention and detection in cooperation with DG RTD.

During the reporting year one case of suspicion of fraud was submitted to OLAF (the European Anti-Fraud Office) for assessment. OLAF decided not to open an investigation pending a technical audit of the JU that was not concluded at the end of the year.

In addition, the IMI2 JU regularly cooperates with DG RTD exchanging information on irregularities, audit findings or suspected risk of fraud involving common beneficiaries.

5 MANAGEMENT ASSURANCE

5.1 Elements supporting assurance

This section reviews the assessment of the elements reported in parts 2 and 4 and draws conclusions supporting the declaration of assurance and namely, whether it should be qualified with reservations.

As a European Union body, IMI2 JU is required to include a structured assessment of the effectiveness of internal controls and on other elements in its Annual Activity Report supporting the Declaration of Assurance by the Executive Director in the capacity of Authorising Officer.

The declaration is intended to provide reasonable assurance, and possible reservations, on the accuracy and completeness of the information included in the report, on the use of resources for their intended purpose, as well as on the legality, regularity and sound financial management of the underlying transactions.

The management assessment is based on the following sources supporting assurance, specifically:

- governance, risk management process and internal control framework;
- findings and opinions from internal and external audits;
- independent external reviews

The information reported covers both the operational budgets related to FP7 and H2020 programme as well as the administrative budget managed by the IMI2 JU in 2015 and supports the statement of the Declaration of Assurance.

Management assessment provides the results of key indicators related to the budget execution addressing the statement on the ‘use of resources for the intended purpose’. It further assesses the ‘sound financial management’ and the ‘legality and regularity of underlying transactions’ per process stages and reports on measures implemented to prevent, detect and correct fraud.

As demonstrated throughout the report, the results of performance and control indicators positively support the statements of the declaration of assurance. Although a few indicators, relating to the efficiency component of the sound financial management, show slight deviations from targets, these do not impair the declaration of assurance. Fraud prevention and detection mechanisms in place did not reveal anything that would impair the declaration of assurance.

Management has reasonable assurance that overall, adequate controls are in place and work as intended; risks are being mitigated and/or monitored; improvements and reinforcements are being implemented. The audit results, the internal control assessment and the control indicators did not reveal any significant weaknesses and do not fulfil any of the materiality criteria laid down in Annex 9. The overall cumulative residual error rate is below 2 %. The control strategy foresees the implementation of further controls during subsequent years aimed to detect and correct these errors.

Taking into account the lessons learned from the indicators of ex-ante and ex-post controls together with the strengths and weaknesses highlighted in the audits conducted in 2015 and the expected corrective capacity of the controls to be implemented in subsequent years, it is possible to conclude that the internal control system implemented by the IMI2 JU provide sufficient assurance to adequately manage the risks relating to the legality and regularity of the underlying transactions, taking into account the multiannual character of programmes. Furthermore, it can be concluded that IMI2 JU has reasonable assurance that its internal control system is adequately designed, works as intended and provides sufficient assurance with regard to the achievement of the other internal control objectives.

5.2 Reservations

As concluded in part 4.2 there are no reasons for introducing new reservations.

Follow-up of previous reservations was implemented with due care. The action plan to reduce the error rate and thus address the cause of the reservation in the Annual Activity Report 2014 was consistently followed up throughout the year.

Importantly, IMI JU has increased resources for the ex-post audit function in 2015. This allowed for revision and improvement of internal procedures, as well as improved coordination and management of the work carried out by external audit firms. The reinforced team followed up and closed audit assignments of IMI JU beneficiaries launched in 2011, 2012, and 2013, and also promptly launched and finalised new audits. The increased coverage of audited cost claims had a major impact on reducing the residual error rate and allowed IMI to overcome the statistical effect of small projects affected by errors influencing the representative error rate of the population. In addition, the growing experience of the programme has allowed the participants to achieve maturity and reduce their error level. IMI JU has also taken preventive measures to address the error rate by implementing targeted risk-based controls. In the course of 2015, IMI JU delivered guidance and workshops for participants to prevent errors in financial statements and certificates on the financial statements.

As indicated in part 4.3 of this report, a steady downward trend is recorded for the residual error rate. A series of corrective and preventive measures taken has brought the residual error rate under control and below the materiality threshold of 2%.

5.3 Overall conclusion

In conclusion, management has reasonable assurance that, overall, suitable controls are in place and working as intended; risks are being appropriately monitored and mitigated; and necessary improvements and reinforcements are being implemented. The Executive Director, in his capacity as Authorising Officer, has signed the Declaration of Assurance.

6 DECLARATION OF ASSURANCE

I, the undersigned,

Executive Director of the Innovative Medicines Initiative 2 Joint Undertaking
In my capacity as authorising officer

Declare that the information contained in this report gives a true and fair view[30].

State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions.

This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the self-assessment, ex-post controls, the handover file of my predecessor, the observations of the Internal Audit Service and the lessons learnt from the reports of the Court of Auditors for years prior to the year of this declaration.

Confirm that I am not aware of anything not reported here which could harm the interests of the Joint Undertaking.

Brussels, 29 February 2016

……..….
(signature)

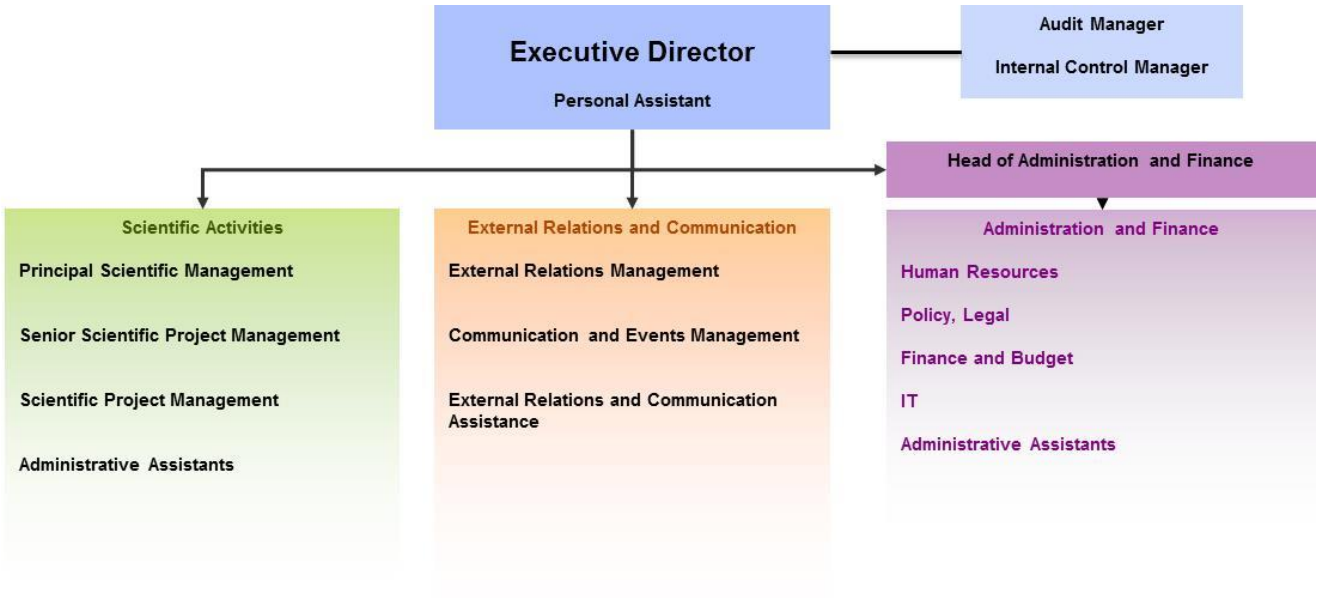
Pierre Meulien

[30]True and fair in this context means a reliable, complete and correct view on the state of affairs in the Joint Undertaking.

7 ANNEXES

1. Organisational chart
2. Establishment plan
3. Publications from projects
4. Patents from projects
5. Scoreboard of H2020 common KPIs
6. Indicators for monitoring cross-cutting issues
7. Scoreboard of KPIs specific to IMI2 JU
8. Draft/final annual accounts
9. Materiality criteria
10. Media highlights 2015
11. List of acronyms
12. Table of IMI projects
13. Governing Board Analysis and Assessment of the Annual Activity Report 2015

Annex 1 - Organisational chart



Annex 2 - Establishment plan

Grade	Establishment plan 2014			Year 2015											
				Evolution in posts						Organisational evolution			Establishment plan 2015		
				Promotion / Career advancement			Turnover (departures/arrivals)			New posts (per grade)			Requested budget		
	Perm [31]	TA [32]	TOTAL	Perm	TA - LT [33]	TA - ST [34]	Perm	TA - LT	TA - ST	Perm	TA - LT	TA - ST	Perm	TA	Total
AD16															
AD15															
AD14		1	1											1	1
AD13															
AD12		1	1											2	2
AD11		4	4											4	4
AD10															
AD9		2	2											3	3
AD8		9	9											7	7
AD7		5	5											5	5
AD6															
AD5		1	1											7	7
Total AD		**23**	**23**											**29**	**29**
AST11															
AST10															
AST9															

[31] Permanent staff
[32] Temporary Agent
[33] Long term contract
[34] Short term contract

Grade	Establishment plan 2014		Year 2015											
			Evolution in posts						Organisational evolution			Establishment plan 2015		
			Promotion / Career advancement			Turnover (departures/arrivals)			New posts (per grade)			Requested budget		
AST8		1	1										1	1
AST7														
AST6														
AST5														
AST4														
AST3		5	5										5	5
AST2														
AST1														
Total AST		**6**	**6**										**6**	**6**
SC6														
SC5														
SC4														
SC3														
SC2														
SC1														
Total SC		**0**	**0**										**0**	**0**
Overall Total		**29**	**29**										**35**	**35**

Staff Establishment Plan approved by the IMI2 JU Governing Board on 26/10/2015

Contract Agents

Grade	2013	2014	2015
CA[35] FG[36] IV	2	2	2
CA FG III	4	5	6
CA FG II	1	1	1
CA FG I	0	0	0
Total CA	**7**	**8**	**9**

[35] Contract Agent
[36] Function Group

Annex 3 - Publications from projects

One of the traditional ways of measuring scientific output is via bibliometrics, which analyse how many scientific papers have been produced by IMI projects, what journals they were published in, and how often they have been cited by other researchers in subsequent publications. IMI conducts these analyses annually with the assistance of Thomson Reuters. Selected data from this analysis are presented in Section 1.6. This annex provides a list of most impactful IMI publications so far, categorised as hot and highly-cited papers. Generally, papers reach their citation peak two, three, or even four years after publication. Hot papers represent publications which are recognized very soon after publication, reflected by rapid accumulation of significant numbers of citations. These papers are often key papers in their fields. Highly-cited papers have been defined as those articles and reviews which belong to the world's top decile of papers in that journal category and year of publication, when ranked by number of citations received.

Following papers are listed in ascending alphabetical order (project, first author). This section lists 24 hot papers and 412 highly-cited papers in the IMI project publications dataset.

Hot papers associated with IMI projects

- BTCURE: HARRE, U et al. (2012) Induction of osteoclastogenesis and bone loss by human autoantibodies against citrullinated vimentin, Journal Of Clinical Investigation, 122: 1791-1802, doi:10.1172/JCI60975
- BTCURE: OKADA, Y et al. (2014) Genetics of rheumatoid arthritis contributes to biology and drug discovery, NATURE, 506: 376-+, 10.1038/nature12873
- EMIF: VOS, SJB et al. (2013) Preclinical Alzheimer's disease and its outcome: a longitudinal cohort study, LANCET NEUROL, 12: 957-965, 10.1016/S1474-4422(13)70194-7
- eTOX: ARIGHI, CN et al. (2011) Overview of the BioCreative III Workshop, BMC Bioinformatics, 12: , doi:10.1186/1471-2105-12-S8-S1
- EU-AIMS: BAUDOUIN, SJ et al. (2012) Shared Synaptic Pathophysiology in Syndromic and Nonsyndromic Rodent Models of Autism, SCIENCE, 338: 128-132, 10.1126/science.1224159
- EU-AIMS: KONG, A et al. (2012) Rate of de novo mutations and the importance of fathers age to disease risk, NATURE, 488: 471-475, 10.1038/nature11396
- EU-AIMS: LAI, MC et al. (2014) Autism, LANCET, 383: 896-910, 10.1016/S0140-6736(13)61539-1
- EU-AIMS: LOTH, E et al. (2014) Oxytocin Receptor Genotype Modulates Ventral Striatal Activity to Social Cues and Response to Stressful Life Events, BIOL PSYCHIAT, 76: 367-376, 10.1016/j.biopsych.2013.07.043
- EUROPAIN: FINNERUP, NB et al. (2010) The evidence for pharmacological treatment of neuropathic pain, PAIN, 150: 573-581, 10.1016/j.pain.2010.06.019
- MARCAR: THOMSON, JP et al. (2012) Non-genotoxic carcinogen exposure induces defined changes in the 5-hydroxymethylome, Genome Biology, 13: , doi:10.1186/gb-2012-13-10-R93
- NEWMEDS: JACQUEMONT, S et al. (2011) Mirror extreme BMI phenotypes associated with gene dosage at the chromosome 16p11.2 locus, NATURE, 478: 97-U111, 10.1038/nature10406
- NEWMEDS: KAPUR, S et al. (2012) Why has it taken so long for biological psychiatry to develop clinical tests and what to do about it?, MOL PSYCHIATR, 17: 1174-1179, 10.1038/mp.2012.105
- NEWMEDS: KIROV, G et al. (2012) De novo CNV analysis implicates specific abnormalities of postsynaptic signalling complexes in the pathogenesis of schizophrenia, MOL PSYCHIATR, 17: 142-153, 10.1038/mp.2011.154
- NEWMEDS: STEFANSSON, H et al. (2014) CNVs conferring risk of autism or schizophrenia affect cognition in controls, NATURE, 505: 361-+, 10.1038/nature12818
- NEWMEDS: SULLIVAN, PF et al. (2013) A mega-analysis of genome-wide association studies for major depressive disorder, Molecular Psychiatry, 18: 497-511, doi:10.1038/mp.2012.21
- NEWMEDS: UHER, R et al. (2013) Common Genetic Variation and Antidepressant Efficacy in Major Depressive Disorder: A Meta-Analysis of Three Genome-Wide Pharmacogenetic Studies, American Journal Of Psychiatry, 170: 207-217, doi:10.1176/appi.ajp.2012.12020237
- OncoTrack: WEGNER, KD . (2015) Quantum dots: bright and versatile in vitro and in vivo fluorescence imaging biosensors, CHEM SOC REV, 44: 4792-4834, 10.1039/c4cs00532e
- Open PHACTS: WILLIAMS, AJ et al. (2012) Towards a gold standard: regarding quality in public domain chemistry databases and approaches to improving the situation, Drug Discovery Today, 17: 685-701

- PHARMA-COG: FRISONI, GB et al. (2010) The clinical use of structural MRI in Alzheimer disease, NAT REV NEUROL, 6: 67-77, 10.1038/nrneurol.2009.215
- PROTECT: NOREN, GN et al. (2014) Zoo or Savannah? Choice of Training Ground for Evidence-Based Pharmacovigilance, DRUG SAFETY, 37: 655-659, 10.1007/s40264-014-0198-z
- SUMMIT: BOEKHOLDT, SM et al. (2012) Association of LDL Cholesterol, Non-HDL Cholesterol, and Apolipoprotein B Levels With Risk of Cardiovascular Events Among Patients Treated With Statins A Meta-analysis, Jama-Journal Of The American Medical Association, 307: 1302-1309, doi:10.1001/jama.2012.366
- Unassigned: ATKINSON, RW et al. (2013) Long-Term Exposure to Outdoor Air Pollution and Incidence of Cardiovascular Diseases, EPIDEMIOLOGY, 24: 44-53, 10.1097/EDE.0b013e318276ccb8
- Unassigned: HOLMES, MV et al. (2014) Association between alcohol and cardiovascular disease: Mendelian randomisation analysis based on individual participant data, BMJ-BRIT MED J, 349: NULL, 10.1136/bmj.g4164
- Unassigned: ZUMLA, AI et al. (2014) New antituberculosis drugs, regimens, and adjunct therapies: needs, advances, and future prospects, LANCET INFECT DIS, 14: 327-340, 10.1016/S1473-3099(13)70328-1

HIGHLY-CITED PAPERS ASSOCIATED WITH IMI PROJECTS

- ABIRISK: KIESEIER, BC et al. (2013) Disease Amelioration With Tocilizumab in a Treatment-Resistant Patient With Neuromyelitis Optica Implication for Cellular Immune Responses, JAMA NEUROL, 70: 390-393, 10.1001/jamaneurol.2013.668
- ABIRISK: UNGAR, B et al. (2014) The temporal evolution of antidrug antibodies in patients with inflammatory bowel disease treated with infliximab, GUT, 63: 1258-1264, 10.1136/gutjnl-2013-305259
- ABIRISK: WARNKE, C et al. (2013) Changes to anti-JCV antibody levels in a Swedish national MS cohort, J NEUROL NEUROSUR PS, 84: 1199-1205, 10.1136/jnnp-2012-304332
- ABIRISK: WARNKE, C et al. (2013) Natalizumab affects the T-cell receptor repertoire in patients with multiple sclerosis, NEUROLOGY, 81: 1400-1408, NULL
- ABIRISK: WENNIGER, LJMD et al. (2013) Immunoglobulin G4+clones identified by next-generation sequencing dominate the B cell receptor repertoire in immunoglobulin G4 associated cholangitis, HEPATOLOGY, 57: 2390-2398, 10.1002/hep.26232
- BioVacSafe: ANDERSEN, P et al. (2014) Tuberculosis vaccines - rethinking the current paradigm, TRENDS IMMUNOL, 35: 387-395, 10.1016/j.it.2014.04.006
- BioVacSafe: CLIFF, JM et al. (2015) The human immune response to tuberculosis and its treatment: a view from the blood, IMMUNOL REV, 264: 88-102, 10.1111/imr.12269
- BioVacSafe: KAUFMANN, SHE . (2013) Tuberculosis vaccines: Time to think about the next generation, SEMIN IMMUNOL, 25: 172-181, 10.1016/j.smim.2013.04.006
- BioVacSafe: KAUFMANN, SHE et al. (2013) Inflammation in tuberculosis: interactions, imbalances and interventions, CURR OPIN IMMUNOL, 25: 441-449, 10.1016/j.coi.2013.05.005
- BioVacSafe: KAUFMANN, SHE . (2014) Tuberculosis vaccine development at a divide, CURR OPIN PULM MED, 20: 294-300, 10.1097/MCP.0000000000000041
- BioVacSafe: KAUFMANN, SHE et al. (2014) Progress in tuberculosis vaccine development and host-directed therapies-a state of the art review, LANCET RESP MED, 2: 301-320, 10.1016/S2213-2600(14)70033-5
- BioVacSafe: KAUFMANN, SHE . (2012) Tuberculosis vaccine development: strength lies in tenacity, TRENDS IMMUNOL, 33: 373-379, 10.1016/j.it.2012.03.004
- BioVacSafe: MAERTZDORF, J et al. (2012) Enabling biomarkers for tuberculosis control, INT J TUBERC LUNG D, 16: 1140-1148, 10.5588/ijtld.12.0246
- BioVacSafe: MAERTZDORF, J et al. (2015) Toward a Unified Biosignature for Tuberculosis, CSH PERSPECT MED, 5: NULL, 10.1101/cshperspect.a018531
- BioVacSafe: OLAFSDOTTIR, T et al. (2015) Molecular signatures of vaccine adjuvants, VACCINE, 33: 5302-5307, 10.1016/j.vaccine.2015.04.099
- BioVacSafe: RAPPUOLI, R et al. (2014) Vaccines, new opportunities for a new society, P NATL ACAD SCI USA, 111: 12288-12293, 10.1073/pnas.1402981111
- BioVacSafe: TRICOT, S et al. (2015) Evaluating the Efficiency of Isotope Transmission for Improved Panel Design and a Comparison of the Detection Sensitivities of Mass Cytometer Instruments, CYTOM PART A, 87A: 357-368, 10.1002/cyto.a.22648
- BioVacSafe: WEINER, J et al. (2014) Recent advances towards tuberculosis control: vaccines and biomarkers, J INTERN MED, 275: 467-480, 10.1111/joim.12212
- BTCURE: AKHMETSHINA, A et al. (2012) Activation of canonical Wnt signalling is required for TGF-beta-mediated fibrosis, NAT COMMUN, 3: NULL, 10.1038/ncomms1734

- BTCURE: ALBRECHT, A et al. (2013) The structural basis of MRI bone erosions: an assessment by microCT, ANN RHEUM DIS, 72: 1351-1357, 10.1136/annrheumdis-2012-201982
- BTCURE: AMARA, K et al. (2013) Monoclonal IgG antibodies generated from joint-derived B cells of RA patients have a strong bias toward citrullinated autoantigen recognition, J EXP MED, 210: 445-455, 10.1084/jem.20121486
- BTCURE: AMMARI, M et al. (2013) Impact of microRNAs on the understanding and treatment of rheumatoid arthritis, CURR OPIN RHEUMATOL, 25: 225-233, 10.1097/BOR.0b013e32835d8385
- BTCURE: BECKER, C et al. (2013) Complex Roles of Caspases in the Pathogenesis of Inflammatory Bowel Disease, GASTROENTEROLOGY, 144: 283-293, 10.1053/j.gastro.2012.11.035
- BTCURE: BLUML, S et al. (2015) Loss of phosphatase and tensin homolog (PTEN) in myeloid cells controls inflammatory bone destruction by regulating the osteoclastogenic potential of myeloid cells, ANN RHEUM DIS, 74: 227-233, 10.1136/annrheumdis-2013-203486
- BTCURE: BRINK, M et al. (2013) Multiplex Analyses of Antibodies Against Citrullinated Peptides in Individuals Prior to Development of Rheumatoid Arthritis, ARTHRITIS RHEUM-US, 65: 899-910, 10.1002/art.37835
- BTCURE: BURSKA, AN et al. (2014) Gene expression analysis in RA: towards personalized medicine, PHARMACOGENOMICS J, 14: 93-106, 10.1038/tpj.2013.48
- BTCURE: CHOI, IY et al. (2015) MRP8/14 serum levels as a strong predictor of response to biological treatments in patients with rheumatoid arthritis, ANN RHEUM DIS, 74: 499-505, 10.1136/annrheumdis-2013-203923
- BTCURE: COPE, A et al. (2011) The Th1 life cycle: molecular control of IFN-gamma to IL-10 switching, TRENDS IMMUNOL, 32: 278-286, 10.1016/j.it.2011.03.010
- BTCURE: CUI, J et al. (2013) Genome-Wide Association Study and Gene Expression Analysis Identifies CD84 as a Predictor of Response to Etanercept Therapy in Rheumatoid Arthritis, PLOS GENET, 9: NULL, 10.1371/journal.pgen.1003394
- BTCURE: DALESSIO, S et al. (2014) VEGF-C-dependent stimulation of lymphatic function ameliorates experimental inflammatory bowel disease, J CLIN INVEST, 124: 3863-3878, 10.1172/JCI72189
- BTCURE: DE HAIR, MJH et al. (2014) Features of the Synovium of Individuals at Risk of Developing Rheumatoid Arthritis, ARTHRITIS RHEUMATOL, 66: 513-522, 10.1002/art.38273
- BTCURE: DE HAIR, MJH et al. (2013) Smoking and overweight determine the likelihood of developing rheumatoid arthritis, ANN RHEUM DIS, 72: 1654-1658, 10.1136/annrheumdis-2012-202254
- BTCURE: DE ROOY, DPC et al. (2014) A genetic variant in the region of MMP-9 is associated with serum levels and progression of joint damage in rheumatoid arthritis, ANN RHEUM DIS, 73: 1163-1169, 10.1136/annrheumdis-2013-203375
- BTCURE: DOORENSPLEET, ME et al. (2014) Rheumatoid arthritis synovial tissue harbours dominant B-cell and plasma-cell clones associated with autoreactivity, ANN RHEUM DIS, 73: 756-762, NULL
- BTCURE: FINZEL, S et al. (2013) Interleukin-6 receptor blockade induces limited repair of bone erosions in rheumatoid arthritis: a micro CT study, ANN RHEUM DIS, 72: 396-400, 10.1136/annrheumdis-2011-201075
- BTCURE: FREY, S et al. (2013) The novel cytokine interleukin-36 alpha is expressed in psoriatic and rheumatoid arthritis synovium, ANN RHEUM DIS, 72: 1569-1574, 10.1136/annrheumdis-2012-202264
- BTCURE: FRISELL, T et al. (2013) Familial Risks and Heritability of Rheumatoid Arthritis Role of Rheumatoid Factor/Anti-Citrullinated Protein Antibody Status, Number and Type of Affected Relatives, Sex, and Age, ARTHRITIS RHEUM-US, 65: 2773-2782, 10.1002/art.38097
- BTCURE: GERLAG, DM et al. (2012) EULAR recommendations for terminology and research in individuals at risk of rheumatoid arthritis: report from the Study Group for Risk Factors for Rheumatoid Arthritis, ANN RHEUM DIS, 71: 638-641, 10.1136/annrheumdis-2011-200990
- BTCURE: GIERA, M et al. (2012) Lipid and lipid mediator profiling of human synovial fluid in rheumatoid arthritis patients by means of LC-MS/MS, BBA-MOL CELL BIOL L, 1821: 1415-1424, 10.1016/j.bbalip.2012.07.011
- BTCURE: GUNTHER, C et al. (2013) Apoptosis, necrosis and necroptosis: cell death regulation in the intestinal epithelium, GUT, 62: 1062-1071, 10.1136/gutjnl-2011-301364
- BTCURE: HAFTMANN, C et al. (2015) miR-148a is upregulated by Twist1 and T-bet and promotes Th1-cell survival by regulating the proapoptotic gene Bim, EUR J IMMUNOL, 45: 1192-1205, 10.1002/eji.201444633
- BTCURE: HAN, B et al. (2014) Fine Mapping Seronegative and Seropositive Rheumatoid Arthritis to Shared and Distinct HLA Alleles by Adjusting for the Effects of Heterogeneity, AM J HUM GENET, 94: 522-532, 10.1016/j.ajhg.2014.02.013
- BTCURE: HARRE, U et al. (2012) Induction of osteoclastogenesis and bone loss by human autoantibodies against citrullinated vimentin, J CLIN INVEST, 122: 1791-1802, 10.1172/JCI60975
- BTCURE: HARRE, U et al. (2015) Glycosylation of immunoglobulin G determines osteoclast differentiation and bone loss, NAT COMMUN, 6: NULL, 10.1038/ncomms7651

- BTCURE: HELLGREN, K et al. (2014) Ankylosing Spondylitis, Psoriatic Arthritis, and Risk of Malignant Lymphoma A Cohort Study Based on Nationwide Prospectively Recorded Data From Sweden, ARTHRITIS RHEUMATOL, 66: 1282-1290, 10.1002/art.38339
- BTCURE: HENSVOLD, AH et al. (2015) Environmental and genetic factors in the development of anticitrullinated protein antibodies (ACPAs) and ACPA-positive rheumatoid arthritis: an epidemiological investigation in twins, ANN RHEUM DIS, 74: 375-380, 10.1136/annrheumdis-2013-203947
- BTCURE: JAMES, EA et al. (2014) Citrulline-Specific Th1 Cells Are Increased in Rheumatoid Arthritis and Their Frequency Is Influenced by Disease Duration and Therapy, ARTHRITIS RHEUMATOL, 66: 1712-1722, 10.1002/art.38637
- BTCURE: KIECHL, S et al. (2013) Blockade of receptor activator of nuclear factor-kappa B (RANKL) signaling improves hepatic insulin resistance and prevents development of diabetes mellitus, NAT MED, 19: 358-363, 10.1038/nm.3084
- BTCURE: KLEYER, A et al. (2014) Bone loss before the clinical onset of rheumatoid arthritis in subjects with anticitrullinated protein antibodies, ANN RHEUM DIS, 73: 854-860, NULL
- BTCURE: KUMARI, S et al. (2013) Tumor Necrosis Factor Receptor Signaling in Keratinocytes Triggers Interleukin-24-Dependent Psoriasis-like Skin Inflammation in Mice, IMMUNITY, 39: 899-911, 10.1016/j.immuni.2013.10.009
- BTCURE: LEPPKES, M et al. (2014) Pleiotropic functions of TNF-alpha in the regulation of the intestinal epithelial response to inflammation, INT IMMUNOL, 26: 509-515, 10.1093/intimm/dxu051
- BTCURE: LIN, NY et al. (2013) Autophagy regulates TNF alpha-mediated joint destruction in experimental arthritis, ANN RHEUM DIS, 72: 761-768, 10.1136/annrheumdis-2012-201671
- BTCURE: LUNDBERG, K et al. (2013) Genetic and environmental determinants for disease risk in subsets of rheumatoid arthritis defined by the anticitrullinated protein/peptide antibody fine specificity profile, ANN RHEUM DIS, 72: 652-658, 10.1136/annrheumdis-2012-201484
- BTCURE: MARESZ, KJ et al. (2013) Porphyromonas gingivalis Facilitates the Development and Progression of Destructive Arthritis through Its Unique Bacterial Peptidylarginine Deiminase (PAD), PLOS PATHOG, 9: NULL, 10.1371/journal.ppat.1003627
- BTCURE: MASCALZONI, D et al. (2015) International Charter of principles for sharing bio-specimens and data, EUR J HUM GENET, 23: 721-728, 10.1038/ejhg.2014.197
- BTCURE: MENON, B et al. (2014) Interleukin-17+CD8+T Cells Are Enriched in the Joints of Patients With Psoriatic Arthritis and Correlate With Disease Activity and Joint Damage Progression, ARTHRITIS RHEUMATOL, 66: 1272-1281, 10.1002/art.38376
- BTCURE: NIKITOPOULOU, I et al. (2012) Autotaxin expression from synovial fibroblasts is essential for the pathogenesis of modeled arthritis, J EXP MED, 209: 923-931, 10.1084/jem.20112012
- BTCURE: OKADA, Y et al. (2014) Genetics of rheumatoid arthritis contributes to biology and drug discovery, NATURE, 506: 376-+, 10.1038/nature12873
- BTCURE: PANDIS, I et al. (2012) Identification of microRNA-221/222 and microRNA-323-3p association with rheumatoid arthritis via predictions using the human tumour necrosis factor transgenic mouse model, ANN RHEUM DIS, 71: 1716-1723, 10.1136/annrheumdis-2011-200803
- BTCURE: PIETERS, BCH et al. (2015) Commercial Cow Milk Contains Physically Stable Extracellular Vesicles Expressing Immunoregulatory TGF-beta, PLOS ONE, 10: NULL, 10.1371/journal.pone.0121123
- BTCURE: QUIRKE, AM et al. (2014) Heightened immune response to autocitrullinated Porphyromonas gingivalis peptidylarginine deiminase: a potential mechanism for breaching immunologic tolerance in rheumatoid arthritis, ANN RHEUM DIS, 73: 263-269, 10.1136/annrheumdis-2012-202726
- BTCURE: ROSE, T et al. (2013) IFN and its response proteins, IP-10 and SIGLEC-1, are biomarkers of disease activity in systemic lupus erythematosus, ANN RHEUM DIS, 72: 1639-1645, 10.1136/annrheumdis-2012-201586
- BTCURE: SCHETT, G et al. (2012) Bone erosion in rheumatoid arthritis: mechanisms, diagnosis and treatment, NAT REV RHEUMATOL, 8: 656-664, 10.1038/nrrheum.2012.153
- BTCURE: SCHETT, G et al. (2013) Diabetes Is an Independent Predictor for Severe Osteoarthritis Results from a longitudinal cohort study, DIABETES CARE, 36: 403-409, 10.2337/dc12-0924
- BTCURE: SHI, J et al. (2013) Brief Report: AntiCarbamylated Protein Antibodies Are Present in Arthralgia Patients and Predict the Development of Rheumatoid Arthritis, ARTHRITIS RHEUM-US, 65: 911-915, 10.1002/art.37830
- BTCURE: SHI, J et al. (2011) Autoantibodies recognizing carbamylated proteins are present in sera of patients with rheumatoid arthritis and predict joint damage, P NATL ACAD SCI USA, 108: 17372-17377, 10.1073/pnas.1114465108
- BTCURE: SHI, J et al. (2014) Carbamylation and antibodies against carbamylated proteins in autoimmunity and other pathologies, AUTOIMMUN REV, 13: 225-230, 10.1016/j.autrev.2013.10.008
- BTCURE: SHI, J et al. (2014) Anti-carbamylated protein (anti-CarP) antibodies precede the onset of rheumatoid arthritis, ANN RHEUM DIS, 73: 780-783, 10.1136/annrheumdis-2013-204154

- BTCURE: SUURMOND, J et al. (2014) Activation of human basophils by combined toll-like receptor- and FceRI-triggering can promote Th2 skewing of naive T helper cells, EUR J IMMUNOL, 44: 386-396, 10.1002/eji.201343617
- BTCURE: SUURMOND, J et al. (2015) Toll-like receptor triggering augments activation of human mast cells by anti-citrullinated protein antibodies, ANN RHEUM DIS, 74: 1915-1923, 10.1136/annrheumdis-2014-205562
- BTCURE: SUWANNALAI, P et al. (2014) Low-avidity anticitrullinated protein antibodies (ACPA) are associated with a higher rate of joint destruction in rheumatoid arthritis, ANN RHEUM DIS, 73: 270-276, 10.1136/annrheumdis-2012-202615
- BTCURE: SUWANNALAI, P et al. (2012) Avidity maturation of anti-citrullinated protein antibodies in rheumatoid arthritis, ARTHRITIS RHEUM-US, 64: 1323-1328, 10.1002/art.33489
- BTCURE: TROUW, LA et al. (2013) Autoimmunity in rheumatoid arthritis: different antigens-common principles, ANN RHEUM DIS, 72: 132-136, 10.1136/annrheumdis-2012-202349
- BTCURE: TROUW, LA et al. (2012) Closing the serological gap: promising novel biomarkers for the early diagnosis of rheumatoid arthritis, AUTOIMMUN REV, 12: 318-322, 10.1016/j.autrev.2012.05.007
- BTCURE: UDERHARDT, S et al. (2012) 12/15-Lipoxygenase Orchestrates the Clearance of Apoptotic Cells and Maintains Immunologic Tolerance, IMMUNITY, 36: 834-846, 10.1016/j.immuni.2012.03.010
- BTCURE: VAN HEEMST, J et al. (2015) Crossreactivity to vinculin and microbes provides a molecular basis for HLA-based protection against rheumatoid arthritis, NAT COMMUN, 6: NULL, 10.1038/ncomms7681
- BTCURE: VAN NIES, JAB et al. (2014) What is the evidence for the presence of a therapeutic window of opportunity in rheumatoid arthritis? A systematic literature review, ANN RHEUM DIS, 73: 861-870, NULL
- BTCURE: VAN SCHAARENBURG, RA et al. (2015) Identification of a novel non-coding mutation in C1qB in a Dutch child with C1q deficiency associated with recurrent infections, IMMUNOBIOLOGY, 220: 422-427, 10.1016/j.imbio.2014.10.005
- BTCURE: VIATTE, S et al. (2015) Association of HLA-DRB1 Haplotypes With Rheumatoid Arthritis Severity, Mortality, and Treatment Response, JAMA-J AM MED ASSOC, 313: 1645-1656, 10.1001/jama.2015.3435
- BTCURE: WALTER, GJ et al. (2013) Interaction with activated monocytes enhances cytokine expression and suppressive activity of human CD4+CD45ro+CD25+CD127low regulatory T cells, ARTHRITIS RHEUM-US, 65: 627-638, 10.1002/art.37832
- BTCURE: WENNIGER, LJMD et al. (2013) Immunoglobulin G4+clones identified by next-generation sequencing dominate the B cell receptor repertoire in immunoglobulin G4 associated cholangitis, HEPATOLOGY, 57: 2390-2398, 10.1002/hep.26232
- BTCURE: WESLEY, A et al. (2013) Association between body mass index and anti-citrullinated protein antibody-positive and anti-citrullinated protein antibody-negative rheumatoid arthritis: Results from a population-based case-control study, ARTHRIT CARE RES, 65: 107-112, 10.1002/acr.21749
- BTCURE: WILLEMZE, A et al. (2012) The ACPA recognition profile and subgrouping of ACPA-positive RA patients, ANN RHEUM DIS, 71: 268-274, 10.1136/annrheumdis-2011-200421
- CHEM21: ASHCROFT, CP et al. (2015) Survey of Solvent Usage in Papers Published in Organic Process Research & Development 1997-2012, ORG PROCESS RES DEV, 19: 740-747, 10.1021/op500276u
- CHEM21: CIOC, RC et al. (2014) Multicomponent reactions: advanced tools for sustainable organic synthesis, GREEN CHEM, 16: 2958-2975, 10.1039/c4gc00013g
- CHEM21: PRAT, D et al. (2014) A survey of solvent selection guides, GREEN CHEM, 16: 4546-4551, 10.1039/c4gc01149j
- CHEM21: SCHELLER, PN et al. (2014) Enzyme Toolbox: Novel Enantiocomplementary Imine Reductases, CHEMBIOCHEM, 15: 2201-2204, 10.1002/cbic.201402213
- CHEM21: WINDLE, CL et al. (2014) Engineering aldolases as biocatalysts, CURR OPIN CHEM BIOL, 19: 25-33, 10.1016/j.cbpa.2013.12.010
- COMBACTE: KOEHLER, P et al. (2014) Aspergillosis of bones and joints - a review from 2002 until today, MYCOSES, 57: 323-335, 10.1111/myc.12165
- COMPACT: GARCIA-DIAZ, M et al. (2015) Improved insulin loading in poly(lactic-co-glycolic) acid (PLGA) nanoparticles upon self-assembly with lipids, INT J PHARMACEUT, 482: 84-91, 10.1016/j.ijpharm.2014.11.047
- COMPACT: NORDIN, JZ et al. (2015) Ultrafiltration with size-exclusion liquid chromatography for high yield isolation of extracellular vesicles preserving intact biophysical and functional properties, NANOMED-NANOTECHNOL, 11: 879-883, 10.1016/j.nano.2015.01.003
- COMPACT: VERDURMEN, WPR et al. (2015) Efficient cell-specific uptake of binding proteins into the cytoplasm through engineered modular transport systems, J CONTROL RELEASE, 200: 13-22, 10.1016/j.jconrel.2014.12.019

- DDMoRe: BENDER, BC et al. (2015) Population pharmacokinetic-pharmacodynamic modelling in oncology: a tool for predicting clinical response, BRIT J CLIN PHARMACO, 79: 56-71, 10.1111/bcp.12258
- DDMoRe: BUCHEL, F et al. (2013) Path2Models: large-scale generation of computational models from biochemical pathway maps, BMC SYST BIOL, 7: NULL, 10.1186/1752-0509-7-116
- DDMoRe: CHELLIAH, V et al. (2015) BioModels: ten-year anniversary, NUCLEIC ACIDS RES, 43: D542-D548, 10.1093/nar/gku1181
- DDMoRe: NIELSEN, EI et al. (2013) Pharmacokinetic-Pharmacodynamic Modeling of Antibacterial Drugs, PHARMACOL REV, 65: 1053-1090, 10.1124/pr.111.005769
- DIRECT: AHMAD, S et al. (2013) Gene x Physical Activity Interactions in Obesity: Combined Analysis of 111,421 Individuals of European Ancestry, PLOS GENET, 9: NULL, 10.1371/journal.pgen.1003607
- DIRECT: BREIER, M et al. (2014) Targeted Metabolomics Identifies Reliable and Stable Metabolites in Human Serum and Plasma Samples, PLOS ONE, 9: NULL, 10.1371/journal.pone.0089728
- DIRECT: NICA, AC et al. (2013) Cell-type, allelic, and genetic signatures in the human pancreatic beta cell transcriptome, GENOME RES, 23: 1554-1562, 10.1101/gr.150706.112
- DIRECT: PASQUALI, L et al. (2014) Pancreatic islet enhancer clusters enriched in type 2 diabetes risk-associated variants, NAT GENET, 46: 136-+, 10.1038/ng.2870
- DRIVE-AB: HARBARTH, S et al. (2015) Antibiotic research and development: business as usual?, J ANTIMICROB CHEMOTH, 70: 1604-1607, 10.1093/jac/dkv020
- EHR4CR: COOREVITS, P et al. (2013) Electronic health records: new opportunities for clinical research, J INTERN MED, 274: 547-560, 10.1111/joim.12119
- EHR4CR: DE MOOR, G et al. (2015) Using electronic health records for clinical research: The case of the EHR4CR project, J BIOMED INFORM, 53: 162-173, 10.1016/j.jbi.2014.10.006
- EHR4CR: DOODS, J et al. (2014) Piloting the EHR4CR Feasibility Platform across Europe, METHOD INFORM MED, 53: 264-268, 10.3414/ME13-01-0134
- ELF: BESNARD, J et al. (2015) The Joint European Compound Library: boosting precompetitive research, DRUG DISCOV TODAY, 20: 181-186, 10.1016/j.drudis.2014.08.014
- EMIF: BERTENS, D et al. (2015) Temporal evolution of biomarkers and cognitive markers in the asymptomatic, MCI, and dementia stage of Alzheimer's disease, ALZHEIMERS DEMENT, 11: 511-522, 10.1016/j.jalz.2014.05.1754
- EMIF: HYE, A et al. (2014) Plasma proteins predict conversion to dementia from prodromal disease, ALZHEIMERS DEMENT, 10: 799-807, 10.1016/j.jalz.2014.05.1749
- EMIF: HYYSALO, J et al. (2014) Circulating Triacylglycerol Signatures in Nonalcoholic Fatty Liver Disease Associated With the I148M Variant in PNPLA3 and With Obesity, DIABETES, 63: 312-322, 10.2337/db13-0774
- EMIF: LE BASTARD, N et al. (2015) Importance and Impact of Preanalytical Variables on Alzheimer Disease Biomarker Concentrations in Cerebrospinal Fluid, CLIN CHEM, 61: 734-743, 10.1373/clinchem.2014.236679
- EMIF: OSSENKOPPELE, R et al. (2015) Prevalence of Amyloid PET Positivity in Dementia Syndromes A Meta-analysis, JAMA-J AM MED ASSOC, 313: 1939-1949, 10.1001/jama.2015.4669
- EMIF: SATTAR, N et al. (2014) Type 2 diabetes as a disease of ectopic fat?, BMC MED, 12: NULL, 10.1186/s12916-014-0123-4
- EMIF: STRUYFS, H et al. (2015) Diagnostic Accuracy of Cerebrospinal Fluid Amyloid-beta Isoforms for Early and Differential Dementia Diagnosis, J ALZHEIMERS DIS, 45: 813-822, 10.3233/JAD-141986
- EMIF: SWERDLOW, DI et al. (2015) HMG-coenzyme A reductase inhibition, type 2 diabetes, and bodyweight: evidence from genetic analysis and randomised trials, LANCET, 385: 351-361, 10.1016/S0140-6736(14)61183-1
- EMIF: VOS, SJB et al. (2015) Prevalence and prognosis of Alzheimer's disease at the mild cognitive impairment stage, BRAIN, 138: 1327-1338, 10.1093/brain/awv029
- EMIF: VOS, SJB et al. (2013) Preclinical Alzheimer's disease and its outcome: a longitudinal cohort study, LANCET NEUROL, 12: 957-965, 10.1016/S1474-4422(13)70194-7
- EMIF: ZHOU, Y et al. (2015) Circulating triacylglycerol signatures and insulin sensitivity in NAFLD associated with the E167K variant in TM6SF2, J HEPATOL, 62: 657-663, NULL
- eTOX: ARIGHI, CN et al. (2011) Overview of the BioCreative III Workshop, BMC BIOINFORMATICS, 12: NULL, 10.1186/1471-2105-12-S8-S1
- eTOX: BAUER-MEHREN, A et al. (2010) DisGeNET: a Cytoscape plugin to visualize, integrate, search and analyze gene-disease networks, BIOINFORMATICS, 26: 2924-2926, 10.1093/bioinformatics/btq538
- eTOX: BENTO, AP et al. (2014) The ChEMBL bioactivity database: an update, NUCLEIC ACIDS RES, 42: D1083-D1090, 10.1093/nar/gkt1031

- eTOX: BRAVO, A et al. (2015) Extraction of relations between genes and diseases from text and large-scale data analysis: implications for translational research, BMC BIOINFORMATICS, 16: NULL, 10.1186/s12859-015-0472-9
- eTOX: CANZAR, S et al. (2013) Charge Group Partitioning in Biomolecular Simulation, J COMPUT BIOL, 20: 188-198, 10.1089/cmb.2012.0239
- eTOX: CARRIO, P et al. (2014) Applicability Domain Analysis (ADAN): A Robust Method for Assessing the Reliability of Drug Property Predictions, J CHEM INF MODEL, 54: 1500-1511, 10.1021/ci500172z
- eTOX: ENOCH, SJ et al. (2011) A review of the electrophilic reaction chemistry involved in covalent protein binding relevant to toxicity, CRIT REV TOXICOL, 41: 783-802, 10.3109/10408444.2011.598141
- eTOX: FURLONG, LI . (2013) Human diseases through the lens of network biology, TRENDS GENET, 29: 150-159, 10.1016/j.tig.2012.11.004
- eTOX: KJAERULFF, SK et al. (2013) ChemProt-2.0: visual navigation in a disease chemical biology database, NUCLEIC ACIDS RES, 41: D464-D469, 10.1093/nar/gks1166
- eTOX: KLEPSCH, F et al. (2011) Exhaustive Sampling of Docking Poses Reveals Binding Hypotheses for Propafenone Type Inhibitors of P-Glycoprotein, PLOS COMPUT BIOL, 7: NULL, 10.1371/journal.pcbi.1002036
- eTOX: KLEPSCH, F et al. (2014) Ligand and Structure-Based Classification Models for Prediction of P-Glycoprotein Inhibitors, J CHEM INF MODEL, 54: 218-229, 10.1021/ci400289j
- eTOX: OBIOL-PARDO, C et al. (2011) A Multiscale Simulation System for the Prediction of Drug-Induced Cardiotoxicity, J CHEM INF MODEL, 51: 483-492, 10.1021/ci100423z
- eTOX: VIDAL, D et al. (2010) In Silico Receptorome Screening of Antipsychotic Drugs, MOL INFORM, 29: 543-551, 10.1002/minf.201000055
- eTRIKS: AGUSTI, A et al. (2015) Personalized Respiratory Medicine: Exploring the Horizon, Addressing the Issues Summary of a BRN-AJRCCM Workshop Held in Barcelona on June 12, 2014, AM J RESP CRIT CARE, 191: 391-401, 10.1164/rccm.201410-1935PP
- eTRIKS: SHAW, DE et al. (2015) Clinical and inflammatory characteristics of the European U-BIOPRED adult severe asthma cohort, EUR RESPIR J, 46: 1308-1321, 10.1183/13993003.00779-2015
- EU-AIMS: BARON-COHEN, S et al. (2014) Attenuation of Typical Sex Differences in 800 Adults with Autism vs. 3,900 Controls, PLOS ONE, 9: NULL, 10.1371/journal.pone.0102251
- EU-AIMS: BAUDOUIN, SJ et al. (2012) Shared Synaptic Pathophysiology in Syndromic and Nonsyndromic Rodent Models of Autism, SCIENCE, 338: 128-132, 10.1126/science.1224159
- EU-AIMS: BUDRECK, EC et al. (2013) Neuroligin-1 controls synaptic abundance of NMDA-type glutamate receptors through extracellular coupling, P NATL ACAD SCI USA, 110: 725-730, 10.1073/pnas.1214718110
- EU-AIMS: DAGE, JL et al. (2014) Pharmacological characterisation of ligand- and voltage-gated ion channels expressed in human iPSC-derived forebrain neurons, PSYCHOPHARMACOLOGY, 231: 1105-1124, 10.1007/s00213-013-3384-2
- EU-AIMS: DELORME, R et al. (2013) Progress toward treatments for synaptic defects in autism, NAT MED, 19: 685-694, 10.1038/nm.3193
- EU-AIMS: DERE, E et al. (2014) Heterozygous Ambra1 deficiency in mice: a genetic trait with autism-like behavior restricted to the female gender, FRONT BEHAV NEUROSCI, 8: NULL, 10.3389/fnbeh.2014.00181
- EU-AIMS: DESRIVIERES, S et al. (2015) Single nucleotide polymorphism in the neuroplastin locus associates with cortical thickness and intellectual ability in adolescents, MOL PSYCHIATR, 20: 263-274, 10.1038/mp.2013.197
- EU-AIMS: ECKER, C et al. (2013) Translational approaches to the biology of Autism: false dawn or a new era?, MOL PSYCHIATR, 18: 435-442, 10.1038/mp.2012.102
- EU-AIMS: EL-KORDI, A et al. (2013) Development of an autism severity score for mice using Nlgn4 null mutants as a construct-valid model of heritable monogenic autism, BEHAV BRAIN RES, 251: 41-49, 10.1016/j.bbr.2012.11.016
- EU-AIMS: EY, E et al. (2013) The Autism ProSAP1/Shank2 mouse model displays quantitative and structural abnormalities in ultrasonic vocalisations, BEHAV BRAIN RES, 256: 677-689, 10.1016/j.bbr.2013.08.031
- EU-AIMS: GABRIELE, S et al. (2014) Blood serotonin levels in autism spectrum disorder: A systematic review and meta-analysis, EUR NEUROPSYCHOPHARM, 24: 919-929, 10.1016/j.euroneuro.2014.02.004
- EU-AIMS: GLIGA, T et al. (2015) Enhanced Visual Search in Infancy Predicts Emerging Autism Symptoms, CURR BIOL, 25: 1727-1730, 10.1016/j.cub.2015.05.011
- EU-AIMS: HSIA, YF et al. (2014) Psychopharmacological prescriptions for people with autism spectrum disorder (ASD): a multinational study, PSYCHOPHARMACOLOGY, 231: 999-1009, 10.1007/s00213-013-3263-x

- EU-AIMS: JEDLICKA, P et al. (2015) Neuroligin-1 regulates excitatory synaptic transmission, LTP and EPSP-spike coupling in the dentate gyrus in vivo, BRAIN STRUCT FUNCT, 220: 47-58, 10.1007/s00429-013-0636-1
- EU-AIMS: JOHNSON, MH et al. (2015) Annual Research Review: Infant development, autism, and ADHD - early pathways to emerging disorders, J CHILD PSYCHOL PSYC, 56: 228-247, 10.1111/jcpp.12328
- EU-AIMS: JONES, EJH et al. (2014) Developmental pathways to autism: A review of prospective studies of infants at risk, NEUROSCI BIOBEHAV R, 39: 12055, 10.1016/j.neubiorev.2013.12.001
- EU-AIMS: KAS, MJ et al. (2014) Assessing behavioural and cognitive domains of autism spectrum disorders in rodents: current status and future perspectives, PSYCHOPHARMACOLOGY, 231: 1125-1146, 10.1007/s00213-013-3268-5
- EU-AIMS: KLEIJER, KTE et al. (2014) Neurobiology of autism gene products: towards pathogenesis and drug targets, PSYCHOPHARMACOLOGY, 231: 1037-1062, 10.1007/s00213-013-3403-3
- EU-AIMS: KONG, A et al. (2012) Rate of de novo mutations and the importance of fathers age to disease risk, NATURE, 488: 471-475, 10.1038/nature11396
- EU-AIMS: LAI, MC et al. (2014) Autism, LANCET, 383: 896-910, 10.1016/S0140-6736(13)61539-1
- EU-AIMS: LAI, MC et al. (2013) Biological sex affects the neurobiology of autism, BRAIN, 136: 2799-2815, 10.1093/brain/awt216
- EU-AIMS: LOTH, E et al. (2014) Oxytocin Receptor Genotype Modulates Ventral Striatal Activity to Social Cues and Response to Stressful Life Events, BIOL PSYCHIAT, 76: 367-376, 10.1016/j.biopsych.2013.07.043
- EU-AIMS: MEYER-LINDENBERG, A et al. (2012) Neural mechanisms of social risk for psychiatric disorders, NAT NEUROSCI, 15: 663-668, 10.1038/nn.3083
- EU-AIMS: MURRAY, ML et al. (2014) Pharmacological treatments prescribed to people with autism spectrum disorder (ASD) in primary health care, PSYCHOPHARMACOLOGY, 231: 1011-1021, 10.1007/s00213-013-3140-7
- EU-AIMS: PERSICO, AM et al. (2013) Autism genetics, BEHAV BRAIN RES, 251: 95-112, 10.1016/j.bbr.2013.06.012
- EU-AIMS: PIRAS, IS et al. (2014) Anti-brain antibodies are associated with more severe cognitive and behavioral profiles in Italian children with Autism Spectrum Disorder, BRAIN BEHAV IMMUN, 38: 91-99, 10.1016/j.bbi.2013.12.020
- EU-AIMS: RICHIARDI, J et al. (2015) Correlated gene expression supports synchronous activity in brain networks, SCIENCE, 348: 1241-1244, 10.1126/science.1255905
- EU-AIMS: RUGGERI, B et al. (2014) Biomarkers in autism spectrum disorder: the old and the new, PSYCHOPHARMACOLOGY, 231: 1201-1216, 10.1007/s00213-013-3290-7
- EU-AIMS: SIDDIQUI, TJ et al. (2013) An LRRTM4-HSPG Complex Mediates Excitatory Synapse Development on Dentate Gyrus Granule Cells, NEURON, 79: 680-695, 10.1016/j.neuron.2013.06.029
- EU-AIMS: SPOOREN, W et al. (2012) Synapse dysfunction in autism: a molecular medicine approach to drug discovery in neurodevelopmental disorders, TRENDS PHARMACOL SCI, 33: 669-684, 10.1016/j.tips.2012.09.004
- EU-AIMS: STEIN, JL et al. (2012) Identification of common variants associated with human hippocampal and intracranial volumes, NAT GENET, 44: 552-+, 10.1038/ng.2250
- EU-AIMS: WEBB, SJ et al. (2014) The motivation for very early intervention for infants at high risk for autism spectrum disorders, INT J SPEECH-LANG PA, 16: 36-42, 10.3109/17549507.2013.861018
- EU-AIMS: WHELAN, R et al. (2012) Adolescent impulsivity phenotypes characterized by distinct brain networks, NAT NEUROSCI, 15: 920-U153, 10.1038/nn.3092
- EU-AIMS: WHELAN, R et al. (2014) Neuropsychosocial profiles of current and future adolescent alcohol misusers, NATURE, 512: 185-+, 10.1038/nature13402
- EU-AIMS: ZUKO, A et al. (2013) Contactins in the neurobiology of autism, EUR J PHARMACOL, 719: 63-74, 10.1016/j.ejphar.2013.07.016
- EUROPAIN: AASVANG, EK et al. (2010) Predictive Risk Factors for Persistent Postherniotomy Pain, ANESTHESIOLOGY, 112: 957-969, 10.1097/ALN.0b013e3181d31ff8
- EUROPAIN: ANDERSEN, KG et al. (2011) Persistent Pain After Breast Cancer Treatment: A Critical Review of Risk Factors and Strategies for Prevention, J PAIN, 12: 725-746, 10.1016/j.jpain.2010.12.005
- EUROPAIN: ANDREWS, N et al. (2012) Spontaneous burrowing behaviour in the rat is reduced by peripheral nerve injury or inflammation associated pain, EUR J PAIN, 16: 485-495, 10.1016/j.ejpain.2011.07.012
- EUROPAIN: BAASTRUP, C et al. (2010) Spinal-, brainstem- and cerebrally mediated responses at- and below-level of a spinal cord contusion in rats: Evaluation of pain-like behavior, PAIN, 151: 670-679, 10.1016/j.pain.2010.08.024

- EUROPAIN: BARON, R et al. (2012) Subgrouping of patients with neuropathic pain according to pain-related sensory abnormalities: a first step to a stratified treatment approach, LANCET NEUROL, 11: 999-1005, NULL
- EUROPAIN: CALVO, M et al. (2012) The role of the immune system in the generation of neuropathic pain, LANCET NEUROL, 11: 629-642, NULL
- EUROPAIN: DEMANT, DT et al. (2014) The effect of oxcarbazepine in peripheral neuropathic pain depends on pain phenotype: A randomised, double-blind, placebo-controlled phenotype-stratified study, PAIN, 155: 2263-2273, 10.1016/j.pain.2014.08.014
- EUROPAIN: DENK, F et al. (2013) HDAC inhibitors attenuate the development of hypersensitivity in models of neuropathic pain, PAIN, 154: 1668-1679, 10.1016/j.pain.2013.05.021
- EUROPAIN: DERRY, S et al. (2013) Topical capsaicin (high concentration) for chronic neuropathic pain in adults, COCHRANE DB SYST REV, NULL: NULL, 10.1002/14651858.CD007393.pub3
- EUROPAIN: EIJKELKAMP, N et al. (2013) A role for Piezo2 in EPAC1-dependent mechanical allodynia, NAT COMMUN, 4: NULL, 10.1038/ncomms2673
- EUROPAIN: FINNERUP, NB et al. (2012) Spinal Cord Injury Pain: Mechanisms and Management, CURR PAIN HEADACHE R, 16: 207-216, 10.1007/s11916-012-0259-x
- EUROPAIN: FINNERUP, NB et al. (2010) The evidence for pharmacological treatment of neuropathic pain, PAIN, 150: 573-581, 10.1016/j.pain.2010.06.019
- EUROPAIN: HAROUTIUNIAN, S et al. (2013) The neuropathic component in persistent postsurgical pain: A systematic literature review, PAIN, 154: 95-102, 10.1016/j.pain.2012.09.010
- EUROPAIN: HAUSER, W et al. (2012) The Role of Antidepressants in the Management of Fibromyalgia Syndrome A Systematic Review and Meta-Analysis, CNS DRUGS, 26: 297-307, NULL
- EUROPAIN: HUANG, WL et al. (2013) A clinically relevant rodent model of the HIV antiretroviral drug stavudine induced painful peripheral neuropathy, PAIN, 154: 560-575, 10.1016/j.pain.2012.12.023
- EUROPAIN: JENSEN, TS et al. (2014) Allodynia and hyperalgesia in neuropathic pain: clinical manifestations and mechanisms, LANCET NEUROL, 13: 924-935, NULL
- EUROPAIN: JOHNSON, RW et al. (2014) Postherpetic Neuralgia, NEW ENGL J MED, 371: 1526-1533, 10.1056/NEJMcp1403062
- EUROPAIN: LENZ, M et al. (2011) Bilateral somatosensory cortex disinhibition in complex regional pain syndrome type I, NEUROLOGY, 77: 1096-1101, 10.1212/WNL.0b013e31822e1436
- EUROPAIN: LUND, K et al. (2014) Randomised Controlled Trials May Underestimate Drug Effects: Balanced Placebo Trial Design, PLOS ONE, 9: NULL, 10.1371/journal.pone.0084104
- EUROPAIN: PETERSEN, GL et al. (2014) The magnitude of nocebo effects in pain: A meta-analysis, PAIN, 155: 1426-1434, 10.1016/j.pain.2014.04.016
- EUROPAIN: PHILLIPS, TJC et al. (2010) Pharmacological Treatment of Painful HIV-Associated Sensory Neuropathy: A Systematic Review and Meta-Analysis of Randomised Controlled Trials, PLOS ONE, 5: NULL, 10.1371/journal.pone.0014433
- EUROPAIN: QUICK, K et al. (2012) TRPC3 and TRPC6 are essential for normal mechanotransduction in subsets of sensory neurons and cochlear hair cells, OPEN BIOL, 2: NULL, 10.1098/rsob.120068
- EUROPAIN: RUTTEN, K et al. (2014) Burrowing as a non-reflex behavioural readout for analgesic action in a rat model of sub-chronic knee joint inflammation, EUR J PAIN, 18: 204-212, 10.1002/j.1532-2149.2013.00358.x
- EUROPAIN: RUTTEN, K et al. (2014) Pharmacological validation of a refined burrowing paradigm for prediction of analgesic efficacy in a rat model of sub-chronic knee joint inflammation, EUR J PAIN, 18: 213-222, 10.1002/j.1532-2149.2013.00359.x
- EUROPAIN: SEGERDAHL, AR et al. (2015) The dorsal posterior insula subserves a fundamental role in human pain, NAT NEUROSCI, 18: 499-+, 10.1038/nn.3969
- EUROPAIN: SERRA, J et al. (2012) Microneurographic identification of spontaneous activity in C-nociceptors in neuropathic pain states in humans and rats, PAIN, 153: 42-55, 10.1016/j.pain.2011.08.015
- EUROPAIN: SIKANDAR, S et al. (2013) Neural coding of nociceptive stimuli-from rat spinal neurones to human perception, PAIN, 154: 1263-1273, 10.1016/j.pain.2013.03.041
- EUROPAIN: SISIGNANO, M et al. (2014) TRP-channels as key integrators of lipid pathways in nociceptive neurons, PROG LIPID RES, 53: 93-107, 10.1016/j.plipres.2013.11.002
- EUROPAIN: WILDGAARD, K et al. (2011) Consequences of persistent pain after lung cancer surgery: a nationwide questionnaire study, ACTA ANAESTH SCAND, 55: 60-68, 10.1111/j.1399-6576.2010.02357.x
- IMIDIA: BROICHHAGEN, J et al. (2015) A red-shifted photochromic sulfonylurea for the remote control of pancreatic beta cell function, CHEM COMMUN, 51: 6018-6021, 10.1039/c5cc01224d
- IMIDIA: HOBOTH, P et al. (2015) Aged insulin granules display reduced microtubule-dependent mobility and are disposed within actin-positive multigranular bodies, P NATL ACAD SCI USA, 112: E667-E676, 10.1073/pnas.1409542112

- IMIDIA: HODSON, DJ et al. (2014) ADCY5 Couples Glucose to Insulin Secretion in Human Islets, DIABETES, 63: 3009-3021, 10.2337/db13-1607
- IMIDIA: HODSON, DJ et al. (2014) Incretin-Modulated Beta Cell Energetics in Intact Islets of Langerhans, MOL ENDOCRINOL, 28: 860-871, 10.1210/me.2014-1038
- IMIDIA: HODSON, DJ et al. (2013) Lipotoxicity disrupts incretin-regulated human beta cell connectivity, J CLIN INVEST, 123: 4182-4194, 10.1172/JCI68459
- IMIDIA: HUCH, M et al. (2013) Unlimited in vitro expansion of adult bi-potent pancreas progenitors through the Lgr5/R-spondin axis, EMBO J, 32: 2708-2721, 10.1038/emboj.2013.204
- IMIDIA: KLEE, P et al. (2011) Connexins protect mouse pancreatic beta cells against apoptosis, J CLIN INVEST, 121: 4870-4879, 10.1172/JCI40509
- IMIDIA: MARSELLI, L et al. (2014) Are we overestimating the loss of beta cells in type 2 diabetes?, DIABETOLOGIA, 57: 362-365, 10.1007/s00125-013-3098-3
- IMIDIA: MITCHELL, RK et al. (2015) Selective disruption of Tcf7l2 in the pancreatic beta cell impairs secretory function and lowers beta cell mass, HUM MOL GENET, 24: 1390-1399, 10.1093/hmg/ddu553
- IMIDIA: RAVASSARD, P et al. (2011) A genetically engineered human pancreatic beta cell line exhibiting glucose-inducible insulin secretion, J CLIN INVEST, 121: 3589-3597, 10.1172/JCI58447
- IMIDIA: ROGGLI, E et al. (2010) Involvement of MicroRNAs in the Cytotoxic Effects Exerted by Proinflammatory Cytokines on Pancreatic beta-Cells, DIABETES, 59: 978-986, 10.2337/db09-0881
- IMIDIA: RUTTER, GA et al. (2015) Pancreatic beta-cell identity, glucose sensing and the control of insulin secretion, BIOCHEM J, 466: 203-218, 10.1042/BJ20141384
- IMIDIA: RUTTER, GA et al. (2015) SLC30A8 mutations in type 2 diabetes, DIABETOLOGIA, 58: 31-36, 10.1007/s00125-014-3405-7
- IMIDIA: RUTTER, GA et al. (2015) Beta cell connectivity in pancreatic islets: a type 2 diabetes target?, CELL MOL LIFE SCI, 72: 453-467, 10.1007/s00018-014-1755-4
- IMIDIA: SCHARFMANN, R et al. (2014) Development of a conditionally immortalized human pancreatic beta cell line, J CLIN INVEST, 124: 2087-2098, 10.1172/JCI72674
- K4DD: ARISTOTELOUS, T et al. (2013) Discovery of beta 2 Adrenergic Receptor Ligands Using Biosensor Fragment Screening of Tagged Wild-Type Receptor, ACS MED CHEM LETT, 4: 1005-1010, 10.1021/ml400312j
- MARCAR: BRAEUNING, A et al. (2014) Phenobarbital-Mediated Tumor Promotion in Transgenic Mice with Humanized CAR and PXR, TOXICOL SCI, 140: 259-270, 10.1093/toxsci/kfu099
- MARCAR: LEMPIAINEN, H et al. (2013) Identification of Dlk1-Dio3 Imprinted Gene Cluster Noncoding RNAs as Novel Candidate Biomarkers for Liver Tumor Promotion, TOXICOL SCI, 131: 375-386, 10.1093/toxsci/kfs303
- MARCAR: LUISIER, R et al. (2014) Phenobarbital Induces Cell Cycle Transcriptional Responses in Mouse Liver Humanized for Constitutive Androstane and Pregnane X Receptors, TOXICOL SCI, 139: 501-511, 10.1093/toxsci/kfu038
- MARCAR: MENG, H et al. (2015) MBD4 Interacts With and Recruits USP7 to Heterochromatic Foci, J CELL BIOCHEM, 116: 476-485, 10.1002/jcb.25001
- MARCAR: NESTOR, CE et al. (2015) Rapid reprogramming of epigenetic and transcriptional profiles in mammalian culture systems, GENOME BIOL, 16: NULL, 10.1186/s13059-014-0576-y
- MARCAR: REDDINGTON, JP et al. (2013) Redistribution of H3K27me3 upon DNA hypomethylation results in de-repression of Polycomb target genes, GENOME BIOL, 14: NULL, 10.1186/gb-2013-14-3-r25
- MARCAR: REDDINGTON, JP et al. (2013) Non-canonical functions of the DNA methylome in gene regulation, BIOCHEM J, 451: 13-23, 10.1042/BJ20121585
- MARCAR: SCHEER, N et al. (2014) Genetically humanized mouse models of drug metabolizing enzymes and transporters and their applications, XENOBIOTICA, 44: 96-108, 10.3109/00498254.2013.815831
- MARCAR: SPROUL, D et al. (2013) Genomic insights into cancer-associated aberrant CpG island hypermethylation, BRIEF FUNCT GENOMICS, 12: 174-190, 10.1093/bfgp/els063
- MARCAR: THOMSON, JP et al. (2013) Dynamic changes in 5-hydroxymethylation signatures underpin early and late events in drug exposed liver, NUCLEIC ACIDS RES, 41: 5639-5654, 10.1093/nar/gkt232
- MARCAR: THOMSON, JP et al. (2014) Epigenetic profiles as defined signatures of xenobiotic exposure, MUTAT RES-GEN TOX EN, 764: 42438, 10.1016/j.mrgentox.2013.08.007
- MARCAR: THOMSON, JP et al. (2012) Non-genotoxic carcinogen exposure induces defined changes in the 5-hydroxymethylome, GENOME BIOL, 13: NULL, 10.1186/gb-2012-13-10-R93
- MIP-DILI: IVANOV, M et al. (2012) Epigenomics and Interindividual Differences in Drug Response, CLIN PHARMACOL THER, 92: 727-736, 10.1038/clpt.2012.152
- MIP-DILI: IVANOV, M et al. (2013) Ontogeny, distribution and potential roles of 5-hydroxymethylcytosine in human liver function, GENOME BIOL, 14: NULL, 10.1186/gb-2013-14-8-r83

- MIP-DILI: IVANOV, M et al. (2014) Epigenetic mechanisms of importance for drug treatment, TRENDS PHARMACOL SCI, 35: 384-396, 10.1016/j.tips.2014.05.004
- NEWMEDS: ANACKER, C et al. (2013) Role for the kinase SGK1 in stress, depression, and glucocorticoid effects on hippocampal neurogenesis, P NATL ACAD SCI USA, 110: 8708-8713, 10.1073/pnas.1300886110
- NEWMEDS: ARTIGAS, F . (2013) Serotonin receptors involved in antidepressant effects, PHARMACOL THERAPEUT, 137: 119-131, 10.1016/j.pharmthera.2012.09.006
- NEWMEDS: ARTIGAS, F . (2015) Developments in the field of antidepressants, where do we go now?, EUR NEUROPSYCHOPHARM, 25: 657-670, 10.1016/j.euroneuro.2013.04.013
- NEWMEDS: BORTOLOZZI, A et al. (2012) Selective siRNA-mediated suppression of 5-HT1A autoreceptors evokes strong anti-depressant-like effects, MOL PSYCHIATR, 17: 612-623, 10.1038/mp.2011.92
- NEWMEDS: BRAUN, U et al. (2012) Test-retest reliability of resting-state connectivity network characteristics using fMRI and graph theoretical measures, NEUROIMAGE, 59: 1404-1412, 10.1016/j.neuroimage.2011.08.044
- NEWMEDS: BROWN, GW et al. (2013) SEROTONIN TRANSPORTER LENGTH POLYMORPHISM, CHILDHOOD MALTREATMENT, AND CHRONIC DEPRESSION: A SPECIFIC GENE-ENVIRONMENT INTERACTION, DEPRESS ANXIETY, 30: 42503, 10.1002/da.21982
- NEWMEDS: BUSSEY, TJ et al. (2012) New translational assays for preclinical modelling of cognition in schizophrenia: The touchscreen testing method for mice and rats, NEUROPHARMACOLOGY, 62: 1191-1203, 10.1016/j.neuropharm.2011.04.011
- NEWMEDS: CAO, H et al. (2014) Test-retest reliability of fMRI-based graph theoretical properties during working memory, emotion processing, and resting state, NEUROIMAGE, 84: 888-900, 10.1016/j.neuroimage.2013.09.013
- NEWMEDS: DOYLE, OM et al. (2013) Quantifying the Attenuation of the Ketamine Pharmacological Magnetic Resonance Imaging Response in Humans: A Validation Using Antipsychotic and Glutamatergic Agents, J PHARMACOL EXP THER, 345: 151-160, 10.1124/jpet.112.201665
- NEWMEDS: FEJGIN, K et al. (2014) A Mouse Model that Recapitulates Cardinal Features of the 15q13.3 Microdeletion Syndrome Including Schizophrenia- and Epilepsy-Related Alterations, BIOL PSYCHIAT, 76: 128-137, 10.1016/j.biopsych.2013.08.014
- NEWMEDS: GASTAMBIDE, F et al. (2012) Selective Remediation of Reversal Learning Deficits in the Neurodevelopmental MAM Model of Schizophrenia by a Novel mGlu5 Positive Allosteric Modulator, NEUROPSYCHOPHARMACOL, 37: 1057-1066, 10.1038/npp.2011.298
- NEWMEDS: GILMOUR, G et al. (2012) NMDA receptors, cognition and schizophrenia - Testing the validity of the NMDA receptor hypofunction hypothesis, NEUROPHARMACOLOGY, 62: 1401-1412, 10.1016/j.neuropharm.2011.03.015
- NEWMEDS: GODSIL, BP et al. (2013) The hippocampal-prefrontal pathway: The weak link in psychiatric disorders?, EUR NEUROPSYCHOPHARM, 23: 1165-1181, 10.1016/j.euroneuro.2012.10.018
- NEWMEDS: HORNER, AE et al. (2013) The touchscreen operant platform for testing learning and memory in rats and mice, NAT PROTOC, 8: 1961-1984, 10.1038/nprot.2013.122
- NEWMEDS: INGASON, A et al. (2011) Maternally Derived Microduplications at 15q11-q13: Implication of Imprinted Genes in Psychotic Illness, AM J PSYCHIAT, 168: 408-417, 10.1176/appi.ajp.2010.09111660
- NEWMEDS: JACQUEMONT, S et al. (2011) Mirror extreme BMI phenotypes associated with gene dosage at the chromosome 16p11.2 locus, NATURE, 478: 97-U111, 10.1038/nature10406
- NEWMEDS: KAPUR, S et al. (2012) Why has it taken so long for biological psychiatry to develop clinical tests and what to do about it?, MOL PSYCHIATR, 17: 1174-1179, 10.1038/mp.2012.105
- NEWMEDS: KEELER, JF et al. (2011) Translating cognition from animals to humans, BIOCHEM PHARMACOL, 81: 1356-1366, 10.1016/j.bcp.2010.12.028
- NEWMEDS: KIROV, G et al. (2012) De novo CNV analysis implicates specific abnormalities of postsynaptic signalling complexes in the pathogenesis of schizophrenia, MOL PSYCHIATR, 17: 142-153, 10.1038/mp.2011.154
- NEWMEDS: LLADO-PELFORT, L et al. (2012) 5-HT1A Receptor Agonists Enhance Pyramidal Cell Firing in Prefrontal Cortex Through a Preferential Action on GABA Interneurons, CEREB CORTEX, 22: 1487-1497, 10.1093/cercor/bhr220
- NEWMEDS: LUSTIG, C et al. (2013) CNTRICS final animal model task selection: Control of attention, NEUROSCI BIOBEHAV R, 37: 2099-2110, 10.1016/j.neubiorev.2012.05.009
- NEWMEDS: LYON, L et al. (2012) Spontaneous object recognition and its relevance to schizophrenia: a review of findings from pharmacological, genetic, lesion and developmental rodent models, PSYCHOPHARMACOLOGY, 220: 647-672, 10.1007/s00213-011-2536-5

- NEWMEDS: MARQUAND, AF et al. (2012) Dissociable effects of methylphenidate, atomoxetine and placebo on regional cerebral blood flow in healthy volunteers at rest: A multi-class pattern recognition approach, NEUROIMAGE, 60: 1015-1024, 10.1016/j.neuroimage.2012.01.058
- NEWMEDS: MCALLISTER, KAL et al. (2013) Dissociation between memory retention across a delay and pattern separation following medial prefrontal cortex lesions in the touchscreen TUNL task, NEUROBIOL LEARN MEM, 101: 120-126, 10.1016/j.nlm.2013.01.010
- NEWMEDS: MEYER-LINDENBERG, A et al. (2012) Neural mechanisms of social risk for psychiatric disorders, NAT NEUROSCI, 15: 663-668, 10.1038/nn.3083
- NEWMEDS: PLICHTA, MM et al. (2012) Test-retest reliability of evoked BOLD signals from a cognitive-emotive fMRI test battery, NEUROIMAGE, 60: 1746-1758, 10.1016/j.neuroimage.2012.01.129
- NEWMEDS: POWER, RA et al. (2015) Polygenic risk scores for schizophrenia and bipolar disorder predict creativity, NAT NEUROSCI, 18: 953-+, 10.1038/nn.4040
- NEWMEDS: SMITH, JW et al. (2011) A comparison of the effects of ketamine and phencyclidine with other antagonists of the NMDA receptor in rodent assays of attention and working memory, PSYCHOPHARMACOLOGY, 217: 255-269, 10.1007/s00213-011-2277-5
- NEWMEDS: STEFANSSON, H et al. (2014) CNVs conferring risk of autism or schizophrenia affect cognition in controls, NATURE, 505: 361-+, 10.1038/nature12818
- NEWMEDS: SULLIVAN, PF et al. (2013) A mega-analysis of genome-wide association studies for major depressive disorder, MOL PSYCHIATR, 18: 497-511, 10.1038/mp.2012.21
- NEWMEDS: TANSEY, KE et al. (2013) Contribution of Common Genetic Variants to Antidepressant Response, BIOL PSYCHIAT, 73: 679-682, 10.1016/j.biopsych.2012.10.030
- NEWMEDS: UHER, R et al. (2012) Self-report and clinician-rated measures of depression severity: can one replace the other?, DEPRESS ANXIETY, 29: 1043-1049, 10.1002/da.21993
- NEWMEDS: UHER, R et al. (2012) Depression symptom dimensions as predictors of antidepressant treatment outcome: replicable evidence for interest-activity symptoms, PSYCHOL MED, 42: 967-980, 10.1017/S0033291711001905
- NEWMEDS: UHER, R . (2014) Gene-environment interactions in common mental disorders: an update and strategy for a genome-wide search, SOC PSYCH PSYCH EPID, 49: 42443, 10.1007/s00127-013-0801-0
- NEWMEDS: WESSELING, H et al. (2015) A Targeted Multiplexed Proteomic Investigation Identifies Ketamine-Induced Changes in Immune Markers in Rat Serum and Expression Changes in Protein Kinases/Phosphatases in Rat Brain, J PROTEOME RES, 14: 411-421, 10.1021/pr5009493
- OncoTrack: ALGAR, WR et al. (2012) Quantum Dots as Simultaneous Acceptors and Donors in Time-Gated Forster Resonance Energy Transfer Relays: Characterization and Biosensing, J AM CHEM SOC, 134: 1876-1891, 10.1021/ja210162f
- OncoTrack: BETTERMANN, K et al. (2012) SUMOylation in carcinogenesis, CANCER LETT, 316: 113-125, 10.1016/j.canlet.2011.10.036
- OncoTrack: BUTCHER, LM et al. (2015) Probe Lasso: A novel method to rope in differentially methylated regions with 450K DNA methylation data, METHODS, 72: 21-28, 10.1016/j.ymeth.2014.10.036
- OncoTrack: CHARLTON, J et al. (2015) Comparative methylome analysis identifies new tumour subtypes and biomarkers for transformation of nephrogenic rests into Wilms tumour, GENOME MED, 7: NULL, 10.1186/s13073-015-0136-4
- OncoTrack: FEBER, A et al. (2014) Using high-density DNA methylation arrays to profile copy number alterations, GENOME BIOL, 15: NULL, 10.1186/gb-2014-15-2-r30
- OncoTrack: GEISSLER, D et al. (2014) Lanthanides and Quantum Dots as Forster Resonance Energy Transfer Agents for Diagnostics and Cellular Imaging, INORG CHEM, 53: 1824-1838, 10.1021/ic4017883
- OncoTrack: HILDEBRANDT, N . (2011) Biofunctional Quantum Dots: Controlled Conjugation for Multiplexed Biosensors, ACS NANO, 5: 5286-5290, 10.1021/nn2023123
- OncoTrack: HOTZER, B et al. (2012) Fluorescence in Nanobiotechnology: Sophisticated Fluorophores for Novel Applications, SMALL, 8: 2297-2326, 10.1002/smll.201200109
- OncoTrack: JIN, ZW et al. (2012) Semiconductor quantum dots for in vitro diagnostics and cellular imaging, TRENDS BIOTECHNOL, 30: 394-403, 10.1016/j.tibtech.2012.04.005
- OncoTrack: KE, RQ et al. (2013) In situ sequencing for RNA analysis in preserved tissue and cells, NAT METHODS, 10: 857-+, 10.1038/nmeth.2563
- OncoTrack: LECHNER, M et al. (2013) Identification and functional validation of HPV-mediated hypermethylation in head and neck squamous cell carcinoma, GENOME MED, 5: NULL, 10.1186/gm419
- OncoTrack: MORRIS, TJ et al. (2014) ChAMP: 450k Chip Analysis Methylation Pipeline, BIOINFORMATICS, 30: 428-430, 10.1093/bioinformatics/btt684

- OncoTrack: QIU, X et al. (2015) Rapid and Multiplexed MicroRNA Diagnostic Assay Using Quantum Dot-Based Forster Resonance Energy Transfer, ACS NANO, 9: 8449-8457, 10.1021/acsnano.5b03364
- OncoTrack: TAIWO, O et al. (2012) Methylome analysis using MeDIP-seq with low DNA concentrations, NAT PROTOC, 7: 617-636, 10.1038/nprot.2012.012
- OncoTrack: WEGNER, KD et al. (2014) Nanobodies and Nanocrystals: Highly Sensitive Quantum Dot-Based Homogeneous FRET Immunoassay for Serum-Based EGFR Detection, SMALL, 10: 734-740, 10.1002/smll.201302383
- OncoTrack: WEGNER, KD et al. (2013) Quantum-Dot-Based Forster Resonance Energy Transfer Immunoassay for Sensitive Clinical Diagnostics of Low-Volume Serum Samples, ACS NANO, 7: 7411-7419, 10.1021/nn403253y
- OncoTrack: WEGNER, KD et al. (2015) Quantum dots: bright and versatile in vitro and in vivo fluorescence imaging biosensors, CHEM SOC REV, 44: 4792-4834, 10.1039/c4cs00532e
- Open PHACTS: BENTO, AP et al. (2014) The ChEMBL bioactivity database: an update, NUCLEIC ACIDS RES, 42: D1083-D1090, 10.1093/nar/gkt1031
- Open PHACTS: DUMONTIER, M et al. (2014) The Semanticscience Integrated Ontology (SIO) for biomedical research and knowledge discovery, J BIOMED SEMANT, 5: NULL, 10.1186/2041-1480-5-14
- Open PHACTS: EKINS, S et al. (2012) Open Drug Discovery Teams: A Chemistry Mobile App for Collaboration, MOL INFORM, 31: 585-597, 10.1002/minf.201200034
- Open PHACTS: FURLONG, LI . (2013) Human diseases through the lens of network biology, TRENDS GENET, 29: 150-159, 10.1016/j.tig.2012.11.004
- Open PHACTS: GONZALEZ-BELTRAN, A et al. (2015) From Peer-Reviewed to Peer-Reproduced in Scholarly Publishing: The Complementary Roles of Data Models and Workflows in Bioinformatics, PLOS ONE, 10: NULL, 10.1371/journal.pone.0127612
- Open PHACTS: JUPP, S et al. (2014) The EBI RDF platform: linked open data for the life sciences, BIOINFORMATICS, 30: 1338-1339, 10.1093/bioinformatics/btt765
- Open PHACTS: KJAERULFF, SK et al. (2013) ChemProt-2.0: visual navigation in a disease chemical biology database, NUCLEIC ACIDS RES, 41: D464-D469, 10.1093/nar/gks1166
- Open PHACTS: LIZIO, M et al. (2015) Gateways to the FANTOM5 promoter level mammalian expression atlas, GENOME BIOL, 16: NULL, 10.1186/s13059-014-0560-6
- Open PHACTS: PINERO, J et al. (2015) DisGeNET: a discovery platform for the dynamical exploration of human diseases and their genes, DATABASE-OXFORD, NULL: NULL, 10.1093/database/bav028
- Open PHACTS: WILD, DJ et al. (2012) Systems chemical biology and the Semantic Web: what they mean for the future of drug discovery research, DRUG DISCOV TODAY, 17: 469-474, 10.1016/j.drudis.2011.12.019
- Open PHACTS: WILLIAMS, AJ et al. (2012) Towards a gold standard: regarding quality in public domain chemistry databases and approaches to improving the situation, DRUG DISCOV TODAY, 17: 685-701, NULL
- Open PHACTS: WILLIAMS, AJ et al. (2012) Open PHACTS: semantic interoperability for drug discovery, DRUG DISCOV TODAY, 17: 1188-1198, 10.1016/j.drudis.2012.05.016
- OrBiTo: AUGUSTIJNS, P et al. (2014) A review of drug solubility in human intestinal fluids: Implications for the prediction of oral absorption, EUR J PHARM SCI, 57: 322-332, 10.1016/j.ejps.2013.08.027
- OrBiTo: BERGSTROM, CAS et al. (2014) Early pharmaceutical profiling to predict oral drug absorption: Current status and unmet needs, EUR J PHARM SCI, 57: 173-199, 10.1016/j.ejps.2013.10.015
- OrBiTo: CVIJIC, S et al. (2014) Viscosity-mediated negative food effect on oral absorption of poorly-permeable drugs with an absorption window in the proximal intestine: In vitro experimental simulation and computational verification, EUR J PHARM SCI, 61: 40-53, 10.1016/j.ejps.2014.04.008
- OrBiTo: DAHLGREN, D et al. (2015) Direct In Vivo Human Intestinal Permeability (P-eff) Determined with Different Clinical Perfusion and Intubation Methods, J PHARM SCI-US, 104: 2702-2726, 10.1002/jps.24258
- OrBiTo: KOSTEWICZ, ES et al. (2014) PBPK models for the prediction of in vivo performance of oral dosage forms, EUR J PHARM SCI, 57: 300-321, 10.1016/j.ejps.2013.09.008
- OrBiTo: KOSTEWICZ, ES et al. (2014) In vitro models for the prediction of in vivo performance of oral dosage forms, EUR J PHARM SCI, 57: 342-366, 10.1016/j.ejps.2013.08.024
- OrBiTo: KOZIOLEK, M et al. (2015) Investigation of pH and Temperature Profiles in the GI Tract of Fasted Human Subjects Using the Intellicap((R)) System, J PHARM SCI-US, 104: 2855-2863, 10.1002/jps.24274
- OrBiTo: MARKOPOULOS, C et al. (2015) In-vitro simulation of luminal conditions for evaluation of performance of oral drug products: Choosing the appropriate test media, EUR J PHARM BIOPHARM, 93: 173-182, 10.1016/j.ejpb.2015.03.009

- OrBiTo: SJOGREN, E et al. (2014) In vivo methods for drug absorption - Comparative physiologies, model selection, correlations with in vitro methods (IVIVC), and applications for formulation/API/excipient characterization including food effects, EUR J PHARM SCI, 57: 99-151, 10.1016/j.ejps.2014.02.010
- PHARMA-COG: CARRILLO, MC et al. (2012) Worldwide Alzheimer's Disease Neuroimaging Initiative, ALZHEIMERS DEMENT, 8: 337-342, 10.1016/j.jalz.2012.04.007
- PHARMA-COG: DRAGO, V et al. (2011) Disease Tracking Markers for Alzheimer's Disease at the Prodromal (MCI) Stage, J ALZHEIMERS DIS, 26: 159-199, 10.3233/JAD-2011-0043
- PHARMA-COG: ENGELTER, ST et al. (2011) IV thrombolysis and statins, NEUROLOGY, 77: 888-895, 10.1212/WNL.0b013e31822c9135
- PHARMA-COG: FRISONI, GB et al. (2010) The clinical use of structural MRI in Alzheimer disease, NAT REV NEUROL, 6: 67-77, 10.1038/nrneurol.2009.215
- PHARMA-COG: LANGUILLE, S et al. (2012) The grey mouse lemur: A non-human primate model for ageing studies, AGEING RES REV, 11: 150-162, 10.1016/j.arr.2011.07.001
- PRECISESADS: ALVAREZ-ERRICO, D et al. (2015) Epigenetic control of myeloid cell differentiation, identity and function, NAT REV IMMUNOL, 15: 42568, 10.1038/nri3777
- PREDECT: DE JONG, M et al. (2014) Imaging preclinical tumour models: improving translational power, NAT REV CANCER, 14: 481-493, 10.1038/nrc3751
- PREDECT: HICKMAN, JA et al. (2014) Three-dimensional models of cancer for pharmacology and cancer cell biology: Capturing tumor complexity in vitro/ex vivo, BIOTECHNOL J, 9: 1115-1128, 10.1002/biot.201300492
- PREDECT: NIEMINEN, AI et al. (2013) Myc-induced AMPK-phospho p53 pathway activates Bak to sensitize mitochondrial apoptosis, P NATL ACAD SCI USA, 110: E1839-E1848, 10.1073/pnas.1208530110
- PreDiCT-TB: ATES, LS et al. (2015) Essential Role of the ESX-5 Secretion System in Outer Membrane Permeability of Pathogenic Mycobacteria, PLOS GENET, 11: NULL, 10.1371/journal.pgen.1005190
- PreDiCT-TB: MANINA, G et al. (2015) Stress and Host Immunity Amplify Mycobacterium tuberculosis Phenotypic Heterogeneity and Induce Nongrowing Metabolically Active Forms, CELL HOST MICROBE, 17: 32-46, 10.1016/j.chom.2014.11.016
- PreDiCT-TB: SISNIEGA, A et al. (2013) Monte Carlo study of the effects of system geometry and antiscatter grids on cone-beam CT scatter distributions, MED PHYS, 40: NULL, 10.1118/1.4801895
- PreDiCT-TB: SVENSSON, EM et al. (2015) Rifampicin and rifapentine significantly reduce concentrations of bedaquiline, a new anti-TB drug, J ANTIMICROB CHEMOTH, 70: 1106-1114, 10.1093/jac/dku504
- PREDICT-TB: ZUMLA, AI et al. (2014) New antituberculosis drugs, regimens, and adjunct therapies: needs, advances, and future prospects, LANCET INFECT DIS, 14: 327-340, 10.1016/S1473-3099(13)70328-1
- PROactive: DEMEYER, H et al. (2014) Standardizing the Analysis of Physical Activity in Patients With COPD Following a Pulmonary Rehabilitation Program, CHEST, 146: 318-327, 10.1378/chest.13-1968
- PROactive: GIMENO-SANTOS, E et al. (2014) Determinants and outcomes of physical activity in patients with COPD: a systematic review, THORAX, 69: 731-739, 10.1136/thoraxjnl-2013-204763
- PROactive: KORTIANOU, EA et al. (2015) Limitation in tidal volume expansion partially determines the intensity of physical activity in COPD, J APPL PHYSIOL, 118: 107-114, 10.1152/japplphysiol.00301.2014
- PROactive: RABINOVICH, RA et al. (2013) Validity of physical activity monitors during daily life in patients with COPD, EUR RESPIR J, 42: 1205-1215, 10.1183/09031936.00134312
- PROactive: VAN REMOORTEL, H et al. (2012) Validity of Six Activity Monitors in Chronic Obstructive Pulmonary Disease: A Comparison with Indirect Calorimetry, PLOS ONE, 7: NULL, 10.1371/journal.pone.0039198
- PROactive: VAN REMOORTEL, H et al. (2012) Validity of activity monitors in health and chronic disease: a systematic review, INT J BEHAV NUTR PHY, 9: NULL, 10.1186/1479-5868-9-84
- PROTECT: CANDORE, G et al. (2015) Comparison of Statistical Signal Detection Methods Within and Across Spontaneous Reporting Databases, DRUG SAFETY, 38: 577-587, 10.1007/s40264-015-0289-5
- PROTECT: LALMOHAMED, A et al. (2012) Causes of death in patients with multiple sclerosis and matched referent subjects: a population-based cohort study, EUR J NEUROL, 19: 1007-1014, 10.1111/j.1468-1331.2012.03668.x
- PROTECT: MT-ISA, S et al. (2014) Balancing benefit and risk of medicines: a systematic review and classification of available methodologies, PHARMACOEPIDEM DR S, 23: 667-678, 10.1002/pds.3636
- PROTECT: NOREN, GN et al. (2014) Zoo or Savannah? Choice of Training Ground for Evidence-Based Pharmacovigilance, DRUG SAFETY, 37: 655-659, 10.1007/s40264-014-0198-z

- PROTECT: RYAN, PB et al. (2013) Defining a Reference Set to Support Methodological Research in Drug Safety, DRUG SAFETY, 36: S33-S47, 10.1007/s40264-013-0097-8
- PROTECT: RYAN, PB et al. (2013) A Comparison of the Empirical Performance of Methods for a Risk Identification System, DRUG SAFETY, 36: S143-S158, 10.1007/s40264-013-0108-9
- PROTECT: VAN STAA, TP et al. (2012) Glucose-lowering agents and the patterns of risk for cancer: a study with the General Practice Research Database and secondary care data, DIABETOLOGIA, 55: 654-665, 10.1007/s00125-011-2390-3
- QUIC-CONCEPT: AERTS, HJWL et al. (2014) Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach, NAT COMMUN, 5: NULL, 10.1038/ncomms5006
- QUIC-CONCEPT: ASSELIN, MC et al. (2012) Quantifying heterogeneity in human tumours using MRI and PET, EUR J CANCER, 48: 447-455, 10.1016/j.ejca.2011.12.025
- QUIC-CONCEPT: COROLLER, TP et al. (2015) CT-based radiomic signature predicts distant metastasis in lung adenocarcinoma, RADIOTHER ONCOL, 114: 345-350, 10.1016/j.radonc.2015.02.015
- QUIC-CONCEPT: GUYADER, JM et al. (2015) Influence of image registration on apparent diffusion coefficient images computed from free-breathing diffusion MR images of the abdomen, J MAGN RESON IMAGING, 42: 315-330, 10.1002/jmri.24792
- QUIC-CONCEPT: LAMBIN, P et al. (2012) Radiomics: Extracting more information from medical images using advanced feature analysis, EUR J CANCER, 48: 441-446, 10.1016/j.ejca.2011.11.036
- QUIC-CONCEPT: LAMBIN, P et al. (2013) Predicting outcomes in radiation oncology-multifactorial decision support systems, NAT REV CLIN ONCOL, 10: 27-40, 10.1038/nrclinonc.2012.196
- QUIC-CONCEPT: LAMBIN, P et al. (2013) Rapid Learning health care in oncology - An approach towards decision support systems enabling customised radiotherapy, RADIOTHER ONCOL, 109: 159-164, 10.1016/j.radonc.2013.07.007
- QUIC-CONCEPT: LEIJENAAR, RTH et al. (2013) Stability of FDG-PET Radiomics features: An integrated analysis of test-retest and inter-observer variability, ACTA ONCOL, 52: 1391-1397, 10.3109/0284186X.2013.812798
- QUIC-CONCEPT: PANTH, KM et al. (2015) Is there a causal relationship between genetic changes and radiomics-based image features? An in vivo preclinical experiment with doxycycline inducible GADD34 tumor cells, RADIOTHER ONCOL, 116: 462-466, 10.1016/j.radonc.2015.06.013
- QUIC-CONCEPT: PARMAR, C et al. (2014) Robust Radiomics Feature Quantification Using Semiautomatic Volumetric Segmentation, PLOS ONE, 9: NULL, 10.1371/journal.pone.0102107
- QUIC-CONCEPT: PEETERS, SGJA et al. (2015) TH-302 in Combination with Radiotherapy Enhances the Therapeutic Outcome and Is Associated with Pretreatment [F-18]HX4 Hypoxia PET Imaging, CLIN CANCER RES, 21: 2984-2992, 10.1158/1078-0432.CCR-15-0018
- QUIC-CONCEPT: PEETERS, SGJA et al. (2015) Current preclinical and clinical applications of hypoxia PET imaging using 2-nitroimidazoles, Q J NUCL MED MOL IM, 59: 39-57, NULL
- QUIC-CONCEPT: ROELOFS, E et al. (2014) International data-sharing for radiotherapy research: An open-source based infrastructure for multicentric clinical data mining, RADIOTHER ONCOL, 110: 370-374, 10.1016/j.radonc.2013.11.001
- QUIC-CONCEPT: SOLOVIEV, D et al. (2012) [F-18]FLT: An imaging biomarker of tumour proliferation for assessment of tumour response to treatment, EUR J CANCER, 48: 416-424, 10.1016/j.ejca.2011.11.035
- QUIC-CONCEPT: VAN DER HEIDE, UA et al. (2012) Functional MRI for radiotherapy dose painting, MAGN RESON IMAGING, 30: 1216-1223, 10.1016/j.mri.2012.04.010
- RAPP-ID: AFSHARI, A et al. (2012) Bench-to-bedside review: Rapid molecular diagnostics for bloodstream infection - a new frontier?, CRIT CARE, 16: NULL, 10.1186/cc11202
- RAPP-ID: KNEZ, K et al. (2014) Emerging technologies for hybridization based single nucleotide polymorphism detection, ANALYST, 139: 353-370, 10.1039/c3an01436c
- RAPP-ID: LANDELLE, C et al. (2013) Is patient isolation the single most important measure to prevent the spread of multidrug-resistant pathogens?, VIRULENCE, 4: 163-171, 10.4161/viru.22641
- SAFE-T: ROBLES-DIAZ, M et al. (2014) Use of Hys Law and a New Composite Algorithm to Predict Acute Liver Failure in Patients With Drug-Induced Liver Injury, GASTROENTEROLOGY, 147: 109-U204, 10.1053/j.gastro.2014.03.050
- SAFE-T: SUADES, R et al. (2014) Circulating CD45(+)/CD3(+) lymphocyte-derived microparticles map lipid-rich atherosclerotic plaques in familial hypercholesterolaemia patients, THROMB HAEMOSTASIS, 111: 111-121, 10.1160/TH13-07-0612
- SPRINTT: MARZETTI, E et al. (2014) Shorter telomeres in peripheral blood mononuclear cells from older persons with sarcopenia: results from an exploratory study, FRONT AGING NEUROSCI, 6: NULL, 10.3389/fnagi.2014.00233
- StemBANCC: BADGER, JL et al. (2014) Parkinson's disease in a dish - Using stem cells as a molecular tool, NEUROPHARMACOLOGY, 76: 88-96, 10.1016/j.neuropharm.2013.08.035

- StemBANCC: KAYE, J et al. (2015) Dynamic consent: a patient interface for twenty-first century research networks, EUR J HUM GENET, 23: 141-146, 10.1038/ejhg.2014.71
- StemBANCC: KEMPF, H et al. (2014) Controlling Expansion and Cardiomyogenic Differentiation of Human Pluripotent Stem Cells in Scalable Suspension Culture, STEM CELL REP, 3: 1132-1146, 10.1016/j.stemcr.2014.09.017
- StemBANCC: RACHDI, L et al. (2014) Dyrk1a haploinsufficiency induces diabetes in mice through decreased pancreatic beta cell mass, DIABETOLOGIA, 57: 960-969, 10.1007/s00125-014-3174-3
- SUMMIT: BOEKHOLDT, SM et al. (2012) Association of LDL Cholesterol, Non-HDL Cholesterol, and Apolipoprotein B Levels With Risk of Cardiovascular Events Among Patients Treated With Statins A Meta-analysis, JAMA-J AM MED ASSOC, 307: 1302-1309, 10.1001/jama.2012.366
- SUMMIT: BONI, E et al. (2012) A Reconfigurable and Programmable FPGA-Based System for Nonstandard Ultrasound Methods, IEEE T ULTRASON FERR, 59: 1378-1385, 10.1109/TUFFC.2012.2338
- SUMMIT: FALL, T et al. (2013) The Role of Adiposity in Cardiometabolic Traits: A Mendelian Randomization Analysis, PLOS MED, 10: NULL, 10.1371/journal.pmed.1001474
- SUMMIT: FERRONI, P et al. (2012) Platelet Function in Health and Disease: from Molecular Mechanisms, Redox Considerations to Novel Therapeutic Opportunities, ANTIOXID REDOX SIGN, 17: 1447-1485, 10.1089/ars.2011.4324
- SUMMIT: PATRONO, C . (2013) Low-dose aspirin in primary prevention: cardioprotection, chemoprevention, both, or neither?, EUR HEART J, 34: 3403-U17, 10.1093/eurheartj/eht058
- SUMMIT: POSTMUS, I et al. (2014) Pharmacogenetic meta-analysis of genome-wide association studies of LDL cholesterol response to statins, NAT COMMUN, 5: NULL, 10.1038/ncomms6068
- SUMMIT: RICCI, S et al. (2013) ACCURACYAND REPRODUCIBILITY OF A NOVEL DYNAMIC VOLUME FLOW MEASUREMENT METHOD, ULTRASOUND MED BIOL, 39: 1903-1914, 10.1016/j.ultrasmedbio.2013.04.017
- SUMMIT: ROCCA, B et al. (2012) The recovery of platelet cyclooxygenase activity explains interindividual variability in responsiveness to low-dose aspirin in patients with and without diabetes, J THROMB HAEMOST, 10: 1220-1230, 10.1111/j.1538-7836.2012.04723.x
- SUMMIT: SANDHOLM, N et al. (2012) New Susceptibility Loci Associated with Kidney Disease in Type 1 Diabetes, PLOS GENET, 8: NULL, 10.1371/journal.pgen.1002921
- U-BIOPRED: ANTO, JM et al. (2012) Understanding the complexity of IgE-related phenotypes from childhood to young adulthood: A Mechanisms of the Development of Allergy (MeDALL) Seminar, J ALLERGY CLIN IMMUN, 129: 943-U421, 10.1016/j.jaci.2012.01.047
- U-BIOPRED: AUFFRAY, C et al. (2010) An Integrative Systems Biology Approach to Understanding Pulmonary Diseases, CHEST, 137: 1410-1416, 10.1378/chest.09-1850
- U-BIOPRED: BEL, EH et al. (2011) Diagnosis and definition of severe refractory asthma: an international consensus statement from the Innovative Medicine Initiative (IMI), THORAX, 66: 910-917, 10.1136/thx.2010.153643
- U-BIOPRED: BOUSQUET, J et al. (2011) Systems medicine and integrated care to combat chronic noncommunicable diseases, GENOME MED, 3: NULL, 10.1186/gm259
- U-BIOPRED: BRANNAN, JD et al. (2015) The Effect of Omega-3 Fatty Acids on Bronchial Hyperresponsiveness, Sputum Eosinophilia, and Mast Cell Mediators in Asthma, CHEST, 147: 397-405, 10.1378/chest.14-1214
- U-BIOPRED: CARRARO, S et al. (2013) Asthma severity in childhood and metabolomic profiling of breath condensate, ALLERGY, 68: 110-117, 10.1111/all.12063
- U-BIOPRED: CHUNG, KF . (2014) Defining Phenotypes in Asthma: A Step Towards Personalized Medicine, DRUGS, 74: 719-728, 10.1007/s40265-014-0213-9
- U-BIOPRED: HARRIS, JR et al. (2012) Toward a roadmap in global biobanking for health, EUR J HUM GENET, 20: 1105-1111, 10.1038/ejhg.2012.96
- U-BIOPRED: LAMBRECHT, BN et al. (2014) Allergens and the airway epithelium response: Gateway to allergic sensitization, J ALLERGY CLIN IMMUN, 134: 499-507, 10.1016/j.jaci.2014.06.036
- U-BIOPRED: MONTUSCHI, P et al. (2013) The Electronic Nose in Respiratory Medicine, RESPIRATION, 85: 72-84, 10.1159/000340044
- U-BIOPRED: SANTONICO, M et al. (2012) Electronic noses calibration procedure in the context of a multicentre medical study, SENSOR ACTUAT B-CHEM, 173: 555-561, 10.1016/j.snb.2012.07.042
- U-BIOPRED: WHEELOCK, CE et al. (2013) Application of omics technologies to biomarker discovery in inflammatory lung diseases, EUR RESPIR J, 42: 802-825, 10.1183/09031936.00078812
- U-BIOPRED: WOLKENHAUER, O et al. (2013) The road from systems biology to systems medicine, PEDIATR RES, 73: 502-507, 10.1038/pr.2013.4
- TRANSLOCATION: CHA, HJ et al. (2014) Switch-Loop Flexibility Affects Transport of Large Drugs by the Promiscuous AcrB Multidrug Efflux Transporter, ANTIMICROB AGENTS CH, 58: 4767-4772, 10.1128/AAC.02733-13

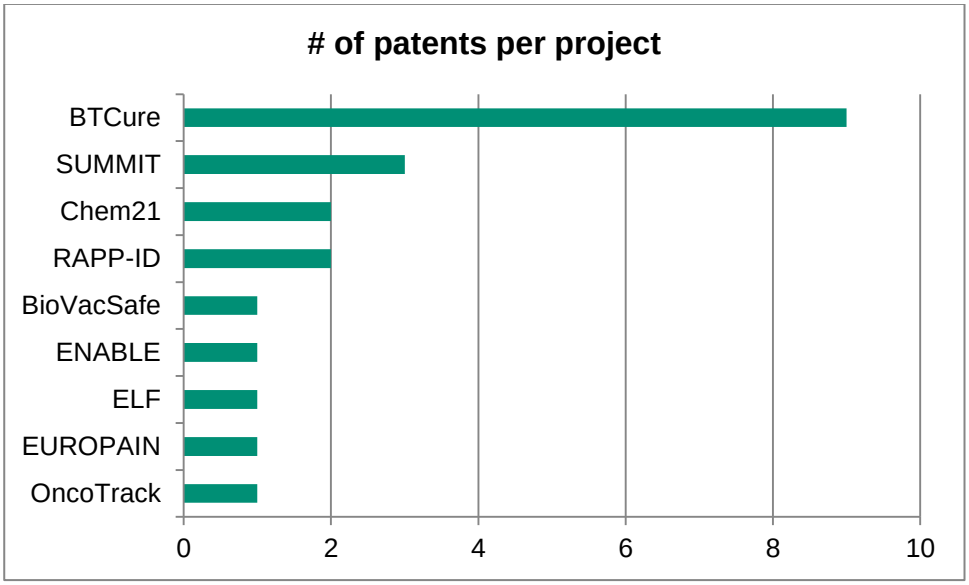
- TRANSLOCATION: DAVIN-REGLI, A et al. (2015) Enterobacter aerogenes and Enterobacter cloacae, versatile bacterial pathogens confronting antibiotic treatment, FRONT MICROBIOL, 6: NULL, 10.3389/fmicb.2015.00392
- TRANSLOCATION: MISLIN, GLA et al. (2014) Siderophore-dependent iron uptake systems as gates for antibiotic Trojan horse strategies against Pseudomonas aeruginosa, METALLOMICS, 6: 408-420, 10.1039/c3mt00359k
- TRANSLOCATION: RUGGERONE, P et al. (2013) RND Efflux Pumps: Structural Information Translated into Function and Inhibition Mechanisms, CURR TOP MED CHEM, 13: 3079-3100, NULL
- Uassigned: AMELINK, M et al. (2013) Three phenotypes of adult-onset asthma, ALLERGY, 68: 674-680, 10.1111/all.12136
- Uassigned: AMELINK, M et al. (2013) Severe adult-onset asthma: A distinct phenotype, J ALLERGY CLIN IMMUN, 132: 336-341, 10.1016/j.jaci.2013.04.052
- Uassigned: ATKINSON, RW et al. (2013) Long-Term Exposure to Outdoor Air Pollution and Incidence of Cardiovascular Diseases, EPIDEMIOLOGY, 24: 44-53, 10.1097/EDE.0b013e318276ccb8
- Uassigned: BOEKHOLDT, SM et al. (2014) Very Low Levels of Atherogenic Lipoproteins and the Risk for Cardiovascular Events A Meta-Analysis of Statin Trials, J AM COLL CARDIOL, 64: 485-494, 10.1016/j.jacc.2014.02.615
- Uassigned: BOGGON, R et al. (2013) Cancer recording and mortality in the General Practice Research Database and linked cancer registries, PHARMACOEPIDEM DR S, 22: 168-175, 10.1002/pds.3374
- Uassigned: BOUSQUET, J et al. (2012) Allergic Rhinitis and its Impact on Asthma (ARIA): Achievements in 10 years and future needs, J ALLERGY CLIN IMMUN, 130: 1049-1062, 10.1016/j.jaci.2012.07.053
- Uassigned: BUMANN, D . (2015) Heterogeneous Host-Pathogen Encounters: Act Locally, Think Globally, CELL HOST MICROBE, 17: 14-20, 10.1016/j.chom.2014.12.006
- Uassigned: CAREY, IM et al. (2013) Mortality Associations with Long-Term Exposure to Outdoor Air Pollution in a National English Cohort, AM J RESP CRIT CARE, 187: 1226-1233, 10.1164/rccm.201210-1758OC
- Uassigned: COLHOUN, HM et al. (2012) Hospitalised hip fracture risk with rosiglitazone and pioglitazone use compared with other glucose-lowering drugs, DIABETOLOGIA, 55: 2929-2937, 10.1007/s00125-012-2668-0
- Uassigned: CRAVEN, P et al. (2015) Design, synthesis and decoration of molecular scaffolds for exploitation in the production of alkaloid-like libraries, BIOORGAN MED CHEM, 23: 2629-2635, 10.1016/j.bmc.2014.12.048
- Uassigned: DE KEYSER, CE et al. (2014) The SLCO1B1 c.521T > C polymorphism is associated with dose decrease or switching during statin therapy in the Rotterdam Study, PHARMACOGENET GENOM, 24: 43-51, 10.1097/FPC.0000000000000018
- Uassigned: DUIJNHOVEN, RG et al. (2013) Number of Patients Studied Prior to Approval of New Medicines: A Database Analysis, PLOS MED, 10: NULL, 10.1371/journal.pmed.1001407
- Uassigned: EPPENGA, WL et al. (2014) Risk of Lactic Acidosis or Elevated Lactate Concentrations in Metformin Users With Renal Impairment: A Population-Based Cohort Study, DIABETES CARE, 37: 2218-2224, 10.2337/dc13-3023
- Uassigned: FARSANI, SF et al. (2013) Global trends in the incidence and prevalence of type 2 diabetes in children and adolescents: a systematic review and evaluation of methodological approaches, DIABETOLOGIA, 56: 1471-1488, 10.1007/s00125-013-2915-z
- Uassigned: FERNANDES, P et al. (2014) Synthesis, characterization and antibacterial studies of a copper(II) lomefloxacin ternary complex, J INORG BIOCHEM, 131: 21-29, 10.1016/j.jinorgbio.2013.10.013
- Uassigned: FRANZINI, RM et al. (2015) Identification of Structure-Activity Relationships from Screening a Structurally Compact DNA-Encoded Chemical Library, ANGEW CHEM INT EDIT, 54: 3927-3931, 10.1002/anie.201410736
- Uassigned: HERRETT, E et al. (2013) Completeness and diagnostic validity of recording acute myocardial infarction events in primary care, hospital care, disease registry, and national mortality records: cohort study, BMJ-BRIT MED J, 346: NULL, 10.1136/bmj.f2350
- Uassigned: HOFFMANN, C et al. (2015) Ligand Residence Time at G-protein-Coupled Receptors-Why We Should Take Our Time To Study It, MOL PHARMACOL, 88: 552-560, 10.1124/mol.115.099671
- Uassigned: HUANG, L et al. (2015) Ductal pancreatic cancer modeling and drug screening using human pluripotent stem cell- and patient-derived tumor organoids, NAT MED, 21: 1364-1371, 10.1038/nm.3973
- Uassigned: JANSEN, WJ et al. (2015) Prevalence of Cerebral Amyloid Pathology in Persons Without Dementia A Meta-analysis, JAMA-J AM MED ASSOC, 313: 1924-1938, 10.1001/jama.2015.4668

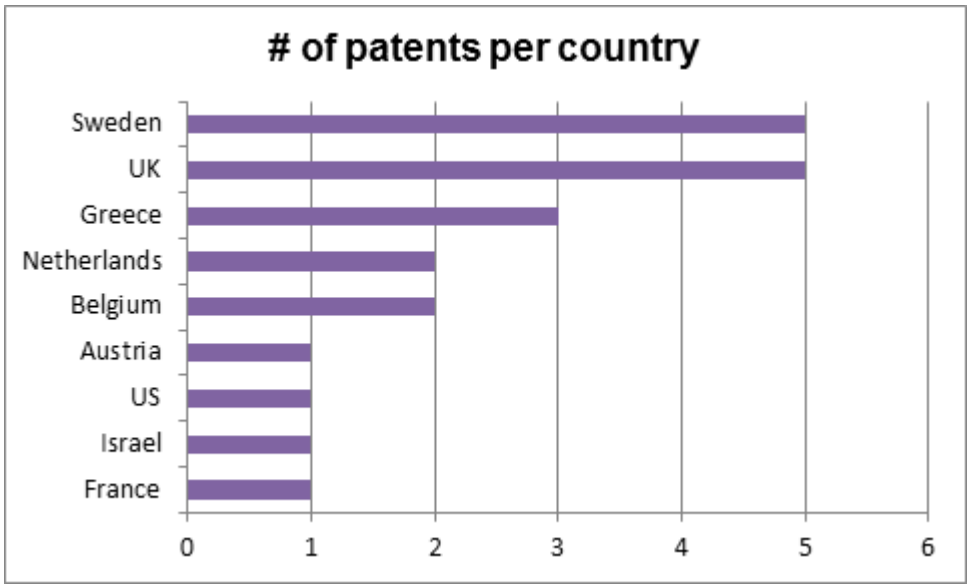
- Uassigned: JARRETT, C et al. (2015) Strategies for addressing vaccine hesitancy - A systematic review, VACCINE, 33: 4180-4190, 10.1016/j.vaccine.2015.04.040
- Uassigned: JOHANSSON, H et al. (2014) A Meta-Analysis of the Association of Fracture Risk and Body Mass Index in Women, J BONE MINER RES, 29: 223-233, 10.1002/jbmr.2017
- Uassigned: KOREVAAR, DA et al. (2015) Diagnostic accuracy of minimally invasive markers for detection of airway eosinophilia in asthma: a systematic review and meta-analysis, LANCET RESP MED, 3: 290-300, 10.1016/S2213-2600(15)00050-8
- Uassigned: LISZEWSKI, MK et al. (2013) Intracellular Complement Activation Sustains T Cell Homeostasis and Mediates Effector Differentiation, IMMUNITY, 39: 1143-1157, 10.1016/j.immuni.2013.10.018
- Uassigned: LIU, YW et al. (2010) Analysis of regional MRI volumes and thicknesses as predictors of conversion from mild cognitive impairment to Alzheimers disease, NEUROBIOL AGING, 31: 1375-1385, 10.1016/j.neurobiolaging.2010.01.022
- Uassigned: LIVINGSTONE, SJ et al. (2012) Risk of Cardiovascular Disease and Total Mortality in Adults with Type 1 Diabetes: Scottish Registry Linkage Study, PLOS MED, 9: NULL, 10.1371/journal.pmed.1001321
- Uassigned: MAHMOUDPOUR, SH et al. (2013) Pharmacogenetics of ACE inhibitor-induced angioedema and cough: a systematic review and meta-analysis, PHARMACOGENOMICS, 14: 249-260, 10.2217/PGS.12.206
- Uassigned: MANGIALASCHE, F et al. (2012) Tocopherols and tocotrienols plasma levels are associated with cognitive impairment, NEUROBIOL AGING, 33: 2282-2290, 10.1016/j.neurobiolaging.2011.11.019
- Uassigned: MINETT, MS et al. (2014) Pain without Nociceptors? Nav1.7-Independent Pain Mechanisms, CELL REP, 6: 301-312, 10.1016/j.celrep.2013.12.033
- Uassigned: MULDER, ER et al. (2014) Hippocampal volume change measurement: Quantitative assessment of the reproducibility of expert manual outlining and the automated methods FreeSurfer and FIRST, NEUROIMAGE, 92: 169-181, 10.1016/j.neuroimage.2014.01.058

- Uassigned: NEOCHORITIS, CG et al. (2015) Efficient Isocyanide-less Isocyanide-Based Multicomponent Reactions, ORG LETT, 17: 2002-2005, 10.1021/acs.orglett.5b00759
- Uassigned: PEETERS, PJHL et al. (2015) The Risk of Colorectal Cancer in Patients With Type 2 Diabetes: Associations With Treatment Stage and Obesity, DIABETES CARE, 38: 495-502, 10.2337/dc14-1175
- Uassigned: PETERSEN, MA et al. (2015) Synthesis of 1,4,5 trisubstituted gamma-lactams via a 3-component cascade reaction, BIOORGAN MED CHEM, 23: 2695-2698, 10.1016/j.bmc.2015.01.041
- Uassigned: PICAZO, E et al. (2015) Small molecule inhibitors of ebola virus infection, DRUG DISCOV TODAY, 20: 277-286, 10.1016/j.drudis.2014.12.010
- Uassigned: ROSTAMI-HODJEGAN, A . (2012) Physiologically Based Pharmacokinetics Joined With In Vitro-In Vivo Extrapolation of ADME: A Marriage Under the Arch of Systems Pharmacology, CLIN PHARMACOL THER, 92: 50-61, 10.1038/clpt.2012.65
- Uassigned: SCHUIJS, MJ et al. (2015) ALLERGY Farm dust and endotoxin protect against allergy through A20 induction in lung epithelial cells, SCIENCE, 349: 1106-1110, 10.1126/science.aac6623
- Uassigned: STEINBERG, S et al. (2014) Common variant at 16p11.2 conferring risk of psychosis, MOL PSYCHIATR, 19: 108-114, 10.1038/mp.2012.157
- Uassigned: STURKENBOOM, MCJM . (2015) The narcolepsy-pandemic influenza story: Can the truth ever be unraveled?, VACCINE, 33: B6-B13, 10.1016/j.vaccine.2015.03.026
- Uassigned: VERMEER, NS et al. (2013) Traceability of Biopharmaceuticals in Spontaneous Reporting Systems: A Cross-Sectional Study in the FDA Adverse Event Reporting System (FAERS) and EudraVigilance Databases, DRUG SAFETY, 36: 617-625, 10.1007/s40264-013-0073-3
- Uassigned: ZUMLA, AI et al. (2014) New antituberculosis drugs, regimens, and adjunct therapies: needs, advances, and future prospects, LANCET INFECT DIS, 14: 327-340, 10.1016/S1473-3099(13)70328-1

Annex 4 Patents from projects

IMI projects are already patenting developed technologies. The statistics below encompass 21 patent applications filed from the beginning of IMI until December 31 2015. Interestingly, patent applications are mostly filed by public participants in IMI consortia, such as academia, SMEs, and research organisations. Pharmaceutical industry partners have filed or co-filed only 2 out of 21 patents.

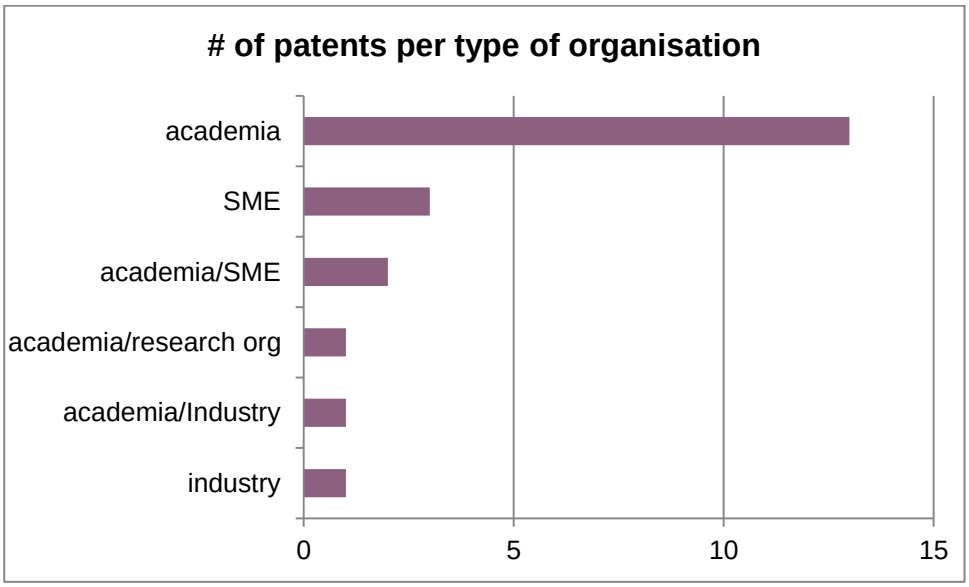




The patents filed and/or already awarded covered the following areas:

- ENABLE - novel inhibitors of bacterial DNA enzymes with a potential to treat bacterial infections.
- SUMMIT:
  - imaging technology for non-invasive atherosclerosis assessment;
  - animal model for diabetic vascular complications;
  - predictors of rapid decline in renal function in diabetes.
- BTCURE
  - novel peptides for the treatment of rheumatoid arthritis and other forms of arthritis;
  - novel stable scaffolds enabling modulation of immune responses;
  - novel compound for treating diseases mediated by inhibition of tumour necrosis factor (TNF), such as inflammatory or autoimmune diseases;

    - novel effective inhibitor of TNF for the treatment of autoimmune diseases, such as rheumatoid arthritis;
    - methods for inhibiting the trimerisation of ligands belonging to the TNF superfamily, to treat disorders related to bone loss;
    - quinolinone derivatives for use in the treatment of an autoimmune disease and/or an inflammatory disease;
    - method for diagnosing Immunoglobulin G4 related diseases;
    - method for diagnosing rheumatoid arthritis in the pre-clinical phase;
    - compositions and methods relating to C5L2.
- BioVacSafe – diagnosis of systemic lupus erythematosus using protein, peptide and oligonucleotide antigens.
- OncoTrack - *in vitro* assay for miRNA.
- RAPP-ID:
    - system for coupling radiation into a waveguide;
    - patent for OprM approach to *P. aeruginosa*-specific diagnostic.
- CHEM21:
    - green fluorination - process for producing fluorocytosine and fluorocytosine derivatives;
    - synthetic biology - compact and optimised metabolic pathway design in *P. pastoris*.
- ELF
    - Potential drug target for multidrug resistance in bacterial infections.
- EUROPAIN – mouse model.



Annex 5 Scoreboard of H2020 common KPIs

TABLE I[37]

Horizon 2020 Key Performance Indicators common to all JTI JUs

	Correspondence to general Annex 1	Key Performance Indicator	Definition/Responding to question	Type of data required	Target at the end of H2020	Results in 2015
INDUSTRIAL LEADERSHIP	12	SME - Share of participating SMEs introducing innovations new to the company or the market (covering the period of the project plus three years);	Based on Community Innovation Survey (?). Number and % of participating SMEs that have introduced innovations to the company or to the market;	Number of SMEs that have introduced innovations;	50 %	N/A in 2015 as no reporting for IMI2 was received yet
	13	SME - Growth and job creation in participating SMEs	Turnover of company, number of employees	Turnover of company, number of employees;	to be developed based on FP7 ex-post evaluation and /or first H2020 project results	N/A in 2015 as no reporting for IMI2 was received
SOCIETAL CHALLENGES	14	Publications in peer-reviewed high impact journals	The percentage of papers published in the top 10 % impact ranked journals by subject category.	Publications from relevant funded projects (DOI: Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases.	[On average, 20 publications per EUR10 million funding (for all societal challenges)]	N/A in 2015 as no reporting for IMI2 was received

[37] Table I shows the H2020 KPIs which apply to JTI JUs, both under Industrial Leadership and Societal Challenges (H2020 Key Performance Indicators ,Annex II - Council Decision 2013/743/EU). In tables I and II, the numbers attributed to the indicators correspond with those in the H2020 indicators approved by the RTD Director-General and agreed by all the research family DGs (according to Annexes II and III - Council Decision 2013/743/EU). The missing numbers correspond to KPIs not applicable to the JUs.

KPIs and indicators that correspond to those approved by the RTD Director-General are presented with a white background in the tables. They are aligned to what has been discussed between the Common Support Centre and the JUs. KPIs and monitoring indicators in tables I and II which do not correspond to those approved by the RTD Director-General are presented with a green background in the tables.

	Correspondence to general Annex 1	Key Performance Indicator	Definition/Responding to question	Type of data required	Target at the end of H2020	Results in 2015
	15	Patent applications and patents awarded in the area of the JTI	Number of patent applications by theme; Number of awarded patents by theme	Patent application number	On average, 2 per EUR10 million funding (2014 - 2020) RTD A6	N/A in 2015 as no reporting for IMI2 was received
	16	Number of prototypes testing activities and clinical trials[38]	Number of prototypes, testing (feasibility/demo) activities, clinical trials	Reports on prototypes, and testing activities, clinical trials	[To be developed on the basis of first Horizon 2020 results]	N/A in 2015 as no reporting for IMI2 was received
	17	Number of joint public-private publications in projects	Number and share of joint public-private publications out of all relevant publications.	Properly flagged publications data (DOI) from relevant funded projects	[To be developed on the basis of first Horizon 2020 results]	N/A in 2015 as no reporting for IMI2 was received
	18*	New products, processes, and methods launched into the market	Number of projects with new innovative products, processes, and methods,	Project count and drop down list allowing to choose the type processes, products, methods,	[To be developed on the basis of first Horizon 2020 results]	N/A in 2015 as no reporting for IMI2 was received

[38] Clinical trials are IMI specific

	Correspondence to general Annex 1	Key Performance Indicator	Definition/Responding to question	Type of data required	Target at the end of H2020	Results in 2015
EVALUATION	NA	Time to inform (TTI) all applicants of the outcome of the evaluation of their application from the final date for submission of completed proposals	To provide applicants with high quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process	Number and % of information letters sent to applicants within target Average TTI (calendar days) Maximum TTI (calendar days)	153 calendar days	No. of Short Proposal information letters: 66 (100 % on time) _____ No. information letters for Full Proposals: 13 (100 % on time) _____ Average TTI: 75 days
	NA	Redress after evaluations	To provide applicants with high quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process	Number of redresses requested		5
GRANTS	NA	Time to grant (TTG) measured (average) from call deadline to signature of grants	To minimise the duration of the granting process aiming at ensuring a prompt implementation of the Grant Agreements through a simple and transparent grant preparation process	Number and % of grants signed within target Average TTG in calendar days Maximum TTG in calendar days	TTG < 243 days (as % of GAs signed)	135
	NA	Time to sign (TTS) grant agreements from the date of informing successful applicants (information letters)		Number and % of grants signed within target Average TTG in calendar days Maximum TTG in calendar days	TTS 92 calendar days	69

	Correspondence to general Annex 1	Key Performance Indicator	Definition/Responding to question	Type of data required	Target at the end of H2020	Results in 2015
PAYMENTS	NA	Time to pay (TTP) (% made on time) -pre-financing - interim payment -final payment	To optimize the operational payments circuits	Average number of days for Grants pre-financing, interim payments and final payments;	-pre-financing (30 days) - interim payment (90 days) -final payment (90days)	-Pre-financing: 13 days -Interim payment: 90 days -Final payment: n/a (for 2015)
HR	NA	Vacancy rate (%)		% of post filled in, composition of the JU staff		Vacancy rate: 22.73 % (11.43 % TA, 66.67 % CA)
JU EFFICIENCY	NA	Budget implementation/execution:	realistic yearly budget proposal, possibility to monitor and report on its execution, both in commitment (CA) and payments (PA), in line with sound financial management principle	% of CA and PA	100 % in CA and PA	91.04 % CA to total budget 72.68 % PA to total budget
	NA	Administrative Budget: Number and % of total of late payments	realistic yearly budget proposal, possibility to monitor and report on its execution in line with sound financial management principle	Number of delayed payments % of delayed payments (of the total)		1 220 payments of which 311 were late (25 %)

NOTES:

18* This indicator is not a legally compulsory one, but it covers several additional specific indicators requested for more societal challenges by the EC services in charge.

Annex 6 Indicators for monitoring cross-cutting issues

TABLE II[39]

Indicators for monitoring H2020 Cross-Cutting Issues common to all JTI JUs

Correspondence in the general Annex	Cross-cutting issue	Definition/Responding to question	Type of data required	Direct contribution to ERA	Results in 2015
2	Widening the participation	2.1 Total number of participations by EU-28 Member State	Nationality of H2020 applicants & beneficiaries (number of)	YES	840
		2.2 Total amount of EU financial contribution requested by EU-28 Member State (EUR millions)	Nationality of H2020 beneficiaries and corresponding EU financial contribution	YES	Austria= 250,000 ; Belgium= 2,998,272 ; Czech Republic = 361,750; Denmark = 2,447,875; Finland = 2,086,250 ; France = 18,825,385 ; Germany = 6,097,495 ; Ireland = 11,805,208 ; Italy = 4,950,925 ; Luxembourg = 212,000 ; Netherlands = 6,827,893 ; Poland = 271,000 ; Slovenia = 207,000 ; Spain = 648,000 ; Sweden = 1,323,666 ; United Kingdom = 68,866,431 [40]

[39] Table II presents all indicators for monitoring of cross-cutting issues which apply to JTI JUs (Annex III - Council Decision 2013/743/EU).
In tables I and II, the numbers attributed to the indicators correspond with those in the H2020 indicators approved by the RTD Director-General and agreed by all the Research family DGs (according to Annexes II and III - Council Decision 2013/743/EU). The missing numbers correspond to KPIs not applicable to the JUs.
KPIs and Indicators that correspond to those approved by the RTD Director-General are presented with a white background in the tables. They are aligned to what has been discussed between the Common Support Centre and the JUs. KPIs and monitoring indicators in tables I and II, which do not correspond to those approved by the RTD Director-General, are presented with a green background in the tables.

[40] Nationality of H2020 beneficiaries receiving funds and budget by country (cut-off date 31/12/2015)

Correspondence in the general Annex	Cross-cutting issue	Definition/Responding to question	Type of data required	Direct contribution to ERA	Results in 2015
NA		Total number of participations by Associated Countries	Nationality of H2020 applicants & beneficiaries (number of)	YES	Total number of participations from Associated Countries: 70
NA		Total amount of EU financial contribution by Associated Country (EUR millions)	Nationality of H2020 beneficiaries and corresponding EU financial contribution	YES	Total amount of EU financial contribution from Associated Countries: 0.4 million EUR
3	SMEs participation	3.1 Share of EU financial contribution going to SMEs (Enabling & industrial tech and Part III of Horizon 2020)	Number of H2020 beneficiaries flagged as SME; % of EU contribution going to beneficiaries flagged as SME		EUR 67.7 million
6	Gender	6.1 Percentage of women participants in H2020 projects	Gender of participants in H2020 projects	YES	Not applicable in 2015 as no reporting for IMI2 was received
		6.2 Percentage of women project coordinators in H2020	Gender of MSC fellows, ERC principle investigators and scientific coordinators in other H2020 activities	YES	Not applicable in 2015 as no reporting for IMI2 was received
		6.3 Percentage of women in EC advisory groups, expert groups, evaluation panels, individual experts, etc.	Gender of memberships in advisory groups, panels, etc.	YES	SRG: 15 representatives out of 28 delegations of the EU Members States and 5 representatives out of 12 delegations of the Candidate & Associated countries SC: 6 out of 12 Expert evaluators: 80 out of 108 Interim review experts: 15 out of 38

Correspondence in the general Annex	Cross-cutting issue	Definition/Responding to question	Type of data required	Direct contribution to ERA	Results in 2015
7	International cooperation	7.1 Share of third-country participants in Horizon 2020	Nationality of H2020 beneficiaries	YES	17 out of 143 beneficiaries from: Burkina Faso, Norway, Senegal, Switzerland, United States
		7.2 Percentage of EU financial contribution attributed to third country participants	Nationality of H2020 beneficiaries and corresponding EU financial contribution	YES	7,52%
9	Bridging from discovery to market[41]	9.1 Share of projects and EU financial contribution allocated to Innovation Actions (IAs)	Number of IA proposals and projects properly flagged in the WP; follow up at grant level.		N/A
		9.2 Within the innovation actions, share of EU financial contribution focussed on demonstration and first-of-a-kind activities	Topics properly flagged in the WP; follow-up at grant level		N/A
NA		Scale of impact of projects (High Technology Readiness Level)	Number of projects addressing TRL[42] between…(4-6, 5-7)?		N/A
11	Private sector participation	11.1 Percentage of H2020 beneficiaries from the private for profit sector	Number of and % of the total H2020 beneficiaries classified by type of activity and legal status		38.8%
		11.2 Share of EU financial contribution going to private for profit entities (Enabling & industrial tech and Part III of Horizon 2020)	H2020 beneficiaries classified by type of activity; corresponding EU contribution		EUR 21 477 187
12	Funding for	12.1 EU financial contribution for PPP (Art 187)	EU contribution to PPP (Art 187)		EUR 62.690 million (2015 cash contribution for running and operational

[41] This indicator (9.2) is initially intended to monitor the Digital Agenda (its applicability could be only partial)

[42] TRL: Technology Readiness Level

Correspondence in the general Annex	Cross-cutting issue	Definition/Responding to question	Type of data required	Direct contribution to ERA	Results in 2015
					costs)
		12.2 PPPs leverage: total amount of funds leveraged through Art. 187 initiatives, including additional activities, divided by the EU contribution	Total funding made by private actors involved in PPPs - in-kind contribution already committed by private members in project selected for funding - additional activities (i.e. research expenditures/investment of industry in the sector, compared to previous year)		IMI1: EUR 106 million in-kind contribution committed IMI2: EUR 123.5 million in-kind contribution committed
13	Communication and dissemination	13.3 Dissemination and outreach activities other than peer-reviewed publications - [Conferences, workshops, press releases, publications, flyers, exhibitions, trainings, social media, web-sites, communication campaigns (e.g. radio, TV)]	A drop down list allows to choose the type of dissemination activity. Number of events, funding amount and number of persons reached thanks to the dissemination activities	YES	Not applicable in 2015 as no H2020 reporting received
14	Participation patterns of independent experts	14.2 Proposal evaluators by country	Nationality of proposal evaluators		29 different countries[43] (108 experts)
		14.3 Proposal evaluators by organisations' type of activity	Type of activity of evaluators' organisations	YES	106 Academia and research institutes 13 Consultants 11 Regulators 17 Governmental or non-governmental organisations (NGOs) 17 Private (non-EFPIA)

[43] Australia (1), Belgium (7), Bosnia and Herzegovina (1), Canada (1), Cyprus (1) Czech Republic (2), Denmark (2), Finland (3), France (8), Germany (8), Greece (3), Hungary (4), Iceland (1), Ireland (6), Israel (2), Italy (6), Lithuania (2), Netherlands (4), Norway (1), Poland (3), Portugal (2), Romania (2), Spain (10), Sweden (1), Slovenia (2), Turkey (1), United Kingdom (14), United States (10)

Correspondence in the general Annex	Cross-cutting issue	Definition/Responding to question	Type of data required	Direct contribution to ERA	Results in 2015
NA	Participation of RTOs and	Participation of RTO[44]s and Universities in PPPs (Art 187 initiatives)	Number of participations of RTOs to funded projects and % of the total Number of participations of Universities to funded projects and % of the total % of budget allocated to RTOs and to Universities	YES	N/A
NA	Ethics	The objective is ensuring that research projects funded are compliant with provisions on ethics efficiently	% of proposals not granted because non-compliance with ethical rules/proposals invited to grant (target 0%); time to ethics clearance (target 45 days)[45]		0 %
NA	Audit	Error rates:	% of common representative error; % residual error		Representative error rate: 1.99 % Residual error rate: 1.50 %
NA		Implementation:	Number of cases implemented; in total EUR million; ´of cases implemented/total cases		Number of cases implemented: 57 in total EUR million: 0.46 ´of cases implemented/total cases 57/83 = 69 % ´of cases implemented/total cases (In MEUR) 0.458 MEUR/0.543 MEUR = 84 %

Notes:

* H2020 applicants - all those who submitted H2020 proposals

*H2020 beneficiaries - all those who have signed a H2020 Grant Agreement

*Responsible Directorate - DG RTD Directorates and R&I DGs family in charge with management of H2020 activities

*Services -Executive Agencies and other external bodies in charge with H2020 activities

*Project officer - is in charge of managing H2020 projects in Responsible Directorate/Service including Executive Agencies

[44] RTO: Research and Technology Organisation

[45] Data relates to pre-granting ethics review. This time span runs in parallel to granting process.

Annex 7 - Scoreboard of KPIs specific to IMI

TABLE III[46]

KPIs specific to each single JU

#	Key Performance Indicator	Objective	2015 Target	Results in 2015
1	**IMI2 KPI 1:** Target number of priority areas defined in IMI2 JU's annual scientific priorities for year n that are addressed by IMI's Calls for proposals launched in year n	Measure the IMI2 portfolio	Annual target: ≥4 priority areas from IMI2 JU's annual scientific priorities	7
2	**IMI2 KPI 2:** Percentage of IMI projects that are assessed by the Programme Office as having achieved at least 90 % of pre-set deliverables by the last reviewed reporting period by the end of the year	Measure the scientific output	Annual target: ≥80 % of IMI JU projects	35 % of projects completed at least 90 % of pre-set deliverables Average deliverable completion rate: 78 %
3	**IMI2 KPI 3:** Average number of IMI publications per EUR10 million of total IMI funding requested by the projects	Measure the scientific output	≥20 publications	1 678publications total per EUR 299 million IMI funding 56.12 publications per EUR 10 million of IMI funding

[46] Table III presents the KPI specific for each JU, as transmitted by the Programme Offices or the operational services.

#	Key Performance Indicator	Objective	2015 Target	Results in 2015
4	**IMI2 KPI 4:** Extent to which the IMI's average impact factor of journals in which IMI publications have been published is higher than the EU average	Measure the scientific output	Annual target: ≥10 % higher than EU average	5.97% IMI vs. 3.26 % EU (83% above the EU average)
5	**IMI2 KPI 5:** Extent to which the citation impact of IMI publications is higher than the EU average	Measure the scientific output	Annual target: ≥20 % higher than EU average	1.93 % IMI vs. 1.11 % EU IMI is 74 % higher
6	**IMI2 KPI 6.1**: Compare the citation impact of IMI publications with the one of other international funding bodies	Measure the scientific output	Annual target: ≥15 % higher than the average of sampled institutions	1.94 % IMI vs. 1.75 % average of comparators IMI is 11 % higher
7	**IMI2 KPI 6.2**: Compare the percentage of highly cited papers of IMI programme with the one of other international funding bodies	Measure the scientific output	Annual target: ≥5 % higher than the average of sampled institutions	IMI 23.5 % vs. 21 % average of comparators IMI is 11.9 % higher
8	**IMI2 KPI 7:** Number of scientific advice and qualified opinions initiated by IMI projects at the EMA and FDA	Measure impact on regulatory framework and standardisation	Target to measure the number of scientific advice and qualified opinions initiated/or completed by the IMI projects at the EMA and FDA: ≥ 5	8
9	**IMI2 KPI 8:** Number of regulatory guidelines derived from IMI projects	Measure impact on regulatory framework and standardisation	N/A	Not possible to report on. IMI project might only inform regulatory guideline development. IMI is not informed of that.

#	Key Performance Indicator	Objective	2015 Target	Results in 2015
10	**IMI2 KPI 9**:Number of new standards and best practices derived from IMI projects	Measure impact on regulatory framework and standardisation	N/A	46
11	**IMI2 KPI 10:** Number of patent applications filed and/or awarded to those IMI projects which have been reimbursed at least for the third year of implementation	Measure business development and sustainability	≥2 patent applications per EUR 10 million of costs accepted and reimbursed by IMI2 JU	9 patents 1.84 per 10 million of costs accepted and reimbursed by IMI2 JU
12	**IMI2 KPI 11:** Impact on EU competitiveness	Measure business development and sustainability	N/A	Methodology was not yet developed
13	**IMI2 KPI 12:** Creation of spin-off companies or foundations created as a result of IMI projects	Measure business development and sustainability	Annual target: 25% of finalised projects	33%
14	**IMI2 KPI 13:** Estimated number of reported Full-Time Equivalents (FTEs) based in the EU that can be considered as directly related to the IMI programme	Measure business development and sustainability	Annual target: ≥ 1500	2 666 (cumulative since beginning of IMI, based on Person Months listed in description of work)
15	**IMI2 KPI 14:** Percentage of participants in signed Grant Agreements that are SMEs	Measure business development and sustainability	20%	15.6%
16	**IMI2 KPI 15:** Percentage of overall budget for projects that has been allocated to SMEs	Measure business development and sustainability	20%	14%
17	**IMI2 KPI 16:** Percentage of projects involving patient organisations as consortium partners, members of advisory boards, ethical advisory boards or on consultancy basis for topics of relevance	Measure patient participation	Annual target: 100 %	86 %

#	Key Performance Indicator	Objective	2015 Target	Results in 2015
18	**IMI2 KPI 17**: Impact for patients	Measure patient participation	N/A	Methodology was not yet developed
19	**IMI2 KPI 18:** Additional impact on society	Measure impact on society	N/A	Methodology was not yet developed
20	**IMI2 KPI 19:** Number of average monthly visitors to the IMI website	Measure information, communication and dissemination	Target: ≥10 000	12 946
21	**IMI2 KPI 20:** Performance of communication activities	Measure information, communication and dissemination	N/A	Methodology for capturing the information and baseline data for establishing the target will be determined

Annex 8 - Final annual accounts

In accordance with the IMI2 JU Financial Rules (Article 20, paragraph 1), information on the accounts and the report on budgetary and financial management should be included in the Annual Activity Report.

The following tables have been extracted from the IMI2 JU final accounts 2015.

BALANCE SHEET

EUR '000

	Note	31.12.2015	31.12.2014
NON-CURRENT ASSETS			
Intangible assets	*2.1*	*31*	*34*
Property, plant and equipment	*2.2*	*131*	*157*
Pre-financing	*2.3*	*200 748*	*239 995*
		200 910	**240 185**
CURRENT ASSETS			
Pre-financing	*2.3*	*50 939*	*20 171*
Exchange receivables and non-exchange recoverables	*2.4*	*69 090*	*1 414*
Cash and cash equivalents	*2.5*	*–*	*50 819*
		120 029	**72 404**
TOTAL ASSETS		**320 939**	**312 589**
CURRENT LIABILITIES			
Payables and other liabilities	*2.6*	*(260 042)*	*(10)*
Accrued charges and deferred income	*2.7*	*(135 950)*	*(223 388)*
		(395 992)	**(223 399)**
TOTAL LIABILITIES		**(395 992)**	**(223 399)**
NET ASSETS			
Contribution from Members	*2.8*	*985 676*	*770 446*
Accumulated deficit		*(681 256)*	*(452 247)*
Economic result of the year		*(379 473)*	*(229 009)*
NET ASSETS		**(75 053)**	**89 190**

CASHFLOW STATEMENT[47]

EUR '000

	2015	2014
Economic result of the year	*(379 473)*	*(229 009)*
Operating activities		
Amortisation and depreciation	*101*	*166*
Non-cash expenses in-kind	*65 432*	*132 186*
(Increase)/decrease in pre-financing	*8 479*	*(52 973)*
(Increase)/decrease in exchange receivables and non-exchange recoverables	*(67 676)*	*(1 204)*
Increase/(decrease) in pension and employee benefits		
Increase/(decrease) in provisions	*–*	*(48)*
Increase/(decrease) in accounts payable and other liabilities	*260 031*	*(132 666)*
Increase/(decrease) in accrued charges and deferred income	*(87 438)*	*155 390*
Investing activities		
(Increase)/decrease in intangible assets and property, plant and equipment	*(73)*	*(41)*
Financing activities		
Cash contribution from the Members	*149 797*	*168 982*
NET CASHFLOW	**(50 819)**	**40 782**
Net increase/(decrease) in cash and cash equivalents	*(50 819)*	*40 782*
Cash and cash equivalents at the beginning of the year	*50 819*	*10 037*
Cash and cash equivalents at year-end	*–*	*50 819*

[47] Following the appointment of the Accounting Officer of the Commission as the Accounting Officer of IMI JU, the treasury of IMI JU was integrated into the Commission's treasury system. Because of this, IMI JU does not have any bank accounts of its own in 2015. All payments and receipts are processed via the Commission's treasury system system and registered on intercompany accounts, which are presented under the heading exchange receivables.

STATEMENT OF CHANGES IN NET ASSETS

EUR '000

	Contribution from Members	Accumulated Surplus/ (Deficit)	Economic result of the year	Net Assets
BALANCE AS AT 31.12.2013	**469 278**	**(218 438)**	**(233 808)**	**17 031**
Allocation 2013 economic result	*–*	*(233 808)*	*233 808*	*–*
Cash contribution	*168 982*	*–*	*–*	*168 982*
Contribution in-kind	*132 186*	*–*	*–*	*132 186*
Economic result of the year	*–*	*–*	*(229 009)*	*(229 009)*
BALANCE AS AT 31.12.2014	**770 446**	**(452 247)**	**(229 009)**	**89 190**
Allocation 2014 economic result	*–*	*(229 009)*	*229 009*	*–*
Cash contribution	*149 797*	*–*	*–*	*149 797*
Contribution in-kind	*65 432*	*–*	*–*	*65 432*
Economic result of the year	*–*	*–*	*(379 473)*	*(379 473)*
BALANCE AS AT 31.12.2015	**985 676**	**(681 256)**	**(379 473)**	**(75 053)**

IMPLEMENTATION OF BUDGET REVENUE

EUR '000

Item		Income appropriations		Entitlements established			Revenue				Outstanding
		Initial	Final	Current year	Carried over	Total	Current year	Carried over	Total	% of budget	
Detail Title 2 : Miscellaneous revenue											
Chapter 2001 : European Commission subsidy											
2001	*European Commission subsidy for operational expenditure*	–	–	*147 440*	–	*147 440*	*147 440*	–	*147 440*	–	–
Total Chapter 2001		**–**	**–**	**147 440**	**–**	**147 440**	**147 440**	**–**	**147 440**	**–**	**–**
Chapter 2002 : EFPIA Running costs											
2002	*EFPIA Running costs*	–	–	*3 705*	*1 356*	*5 061*	*2 357*	*1 356*	*3 713*	–	*1 348*
Total Chapter 2002		**–**	**–**	**3 705**	**1 356**	**5 061**	**2 357**	**1 356**	**3 713**	**–**	**1 348**
Chapter 2003 : Miscellaneous revenues											
2003	*Miscellaneous revenue*	–	–	*7 503*	–	*7 503*	*7 037*	–	*7 037*	–	*467*
Total Chapter 2003		**–**	**–**	**7 503**	**–**	**7 503**	**7 037**	**–**	**7 037**	**–**	**467**
Total Title 2		**–**	**–**	**158 648**	**1 356**	**160 005**	**156 834**	**1 356**	**158 190**	**–**	**1 815**
TOTAL IMI JU		**–**	**–**	**158 648**	**1 356**	**160 005**	**156 834**	**1 356**	**158 190**	**–**	**1 815**

IMPLEMENTATION OF COMMITMENT APPROPRIATIONS BY BUDGET LINE

EUR '000

Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		1	2	3=1+2	4	5=4/3	6	7	8=3+6	9=4+7	10=9/8
Title 1 : STAFF EXPENDITURE											
CHAPTER 11 : STAFF IN ACTIVE EMPLOYMENT											
1100	*Staff in active employment and costs linked to emp*	*3 163*	*(217)*	*2 946*	*2 473*	*84 %*	*–*	*–*	*2 946*	*2 473*	*84 %*
1101	*Family Allowances*	*250*	*10*	*260*	*260*	*100 %*	*–*	*–*	*260*	*260*	*100 %*
1102	*Transfer and expatriation allowance*	*300*	*30*	*330*	*330*	*100 %*	*–*	*–*	*330*	*330*	*100 %*
1110	*Contract Agents*	*370*	*–*	*370*	*273*	*74 %*	*–*	*–*	*370*	*273*	*74 %*
1130	*Insurance against sickness*	*85*	*–*	*85*	*84*	*99 %*	*–*	*–*	*85*	*84*	*99 %*
1131	*Insurance against accidents and occupational disea*	*15*	*–*	*15*	*12*	*83 %*	*–*	*–*	*15*	*12*	*83 %*
1132	*Unemployment insurance for temporary staff*	*34*	*–*	*34*	*33*	*97 %*	*–*	*–*	*34*	*33*	*97 %*
1140	*Birth and death allowance*	*10*	*–*	*10*	*–*	*0 %*	*–*	*–*	*10*	*–*	*0 %*
1141	*Annual travel costs from the place of employment t*	*55*	*–*	*55*	*21*	*38 %*	*–*	*–*	*55*	*21*	*38 %*
1144	*Fixed local travel allowances*	*1*	*2*	*3*	*2*	*67 %*	*–*	*–*	*3*	*2*	*67 %*
1172	*Cost of organizing traineeships within IMI*	*30*	*–*	*30*	*–*	*0 %*	*–*	*–*	*30*	*–*	*0 %*
1177	*Other services rendered*	*5*	*–*	*5*	*–*	*0 %*	*–*	*–*	*5*	*–*	*0 %*
1178	*PMO fees*	*40*	*–*	*40*	*30*	*76 %*	*5*	*–*	*45*	*30*	*67 %*
1181	*Travelling expenses (taking up duty)*	*5*	*–*	*5*	*2*	*48 %*	*–*	*–*	*5*	*2*	*48 %*
1182	*Installation allowance*	*10*	*15*	*25*	*15*	*62 %*	*–*	*–*	*25*	*15*	*62 %*
1183	*Moving expenses*	*15*	*–*	*15*	*9*	*60 %*	*–*	*–*	*15*	*9*	*60 %*
1184	*Temporary daily allowance*	*5*	*9*	*14*	*14*	*100 %*	*–*	*–*	*14*	*14*	*100 %*
1190	*Weightings (Correction coefficients)*	*–*	*0*	*0*	*0*	*100 %*	*–*	*–*	*0*	*0*	*100 %*
Total Chapter 11		**4 393**	**(151)**	**4 241**	**3 560**	**84 %**	**5**	**–**	**4 247**	**3 560**	**84 %**
CHAPTER 12 : MISCELLANEOUS EXPENDITURE ON STAFF RECRUITMENT AND											
1200	*Miscellaneous expenditure on staff recruitment and*	*20*	*–*	*20*	*20*	*100 %*	*–*	*–*	*20*	*20*	*100 %*
Total Chapter 12		**20**	**–**	**20**	**20**	**100 %**	**–**	**–**	**20**	**20**	**100 %**
CHAPTER 13 : MISSIONS											
1300	*Mission expenses*	*190*	*–*	*190*	*190*	*100 %*	*0*	*–*	*190*	*190*	*100 %*
Total Chapter 13		**190**	**–**	**190**	**190**	**100 %**	**0**	**–**	**190**	**190**	**100 %**
CHAPTER 14 : SOCIO-MEDICAL STRUCTURE											
1410	*TRAININGS LANGUAGE C*	*60*	*–*	*60*	*60*	*100 %*	*–*	*–*	*60*	*60*	*100 %*
1430	*Medical service*	*5*	*–*	*5*	*5*	*100 %*	*–*	*–*	*5*	*5*	*100 %*

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Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		1	2	3=1+2	4	5=4/3	6	7	8=3+6	9=4+7	10=9/8
1440	*Internal training (SLA)*	*6*	*–*	*6*	*6*	*100 %*	*–*	*–*	*6*	*6*	*100 %*
1490	*OTHER INTERVENTIONS*	*159*	*151*	*310*	*247*	*80 %*	*–*	*–*	*310*	*247*	*80 %*
Total Chapter 14		**230**	**151**	**381**	**318**	**83 %**	**–**	**–**	**381**	**318**	**83 %**
CHAPTER 17 : ENTERTAINMENT AND REPRESENTATION EXPENSES											
1700	*Entertainment and representation expenses*	*20*	*–*	*20*	*6*	*30 %*	*–*	*–*	*20*	*6*	*30 %*
Total Chapter 17		**20**	**–**	**20**	**6**	**30 %**	**–**	**–**	**20**	**6**	**30 %**
Total Title 1		**4 853**	**–**	**4 853**	**4 094**	**84 %**	**6**	**–**	**4 859**	**4 094**	**84 %**
Title 2 : BUILDING EQUIPMENT AND MISCELLANEOUS EXPENDITURE											
CHAPTER 20 : INVESTMENTS IN IMMOVABLE PROPERTY RENTAL OF BUILDINGS											
2000	*Rentals*	*402*	*144*	*546*	*754*	*138 %*	*1*	*1*	*547*	*755*	*138 %*
2020	*Water gas electricity and heating charges*	*110*	*0*	*110*	*110*	*100 %*	*–*	*–*	*110*	*110*	*100 %*
2040	*Furnishing of premises (works)*	*150*	*–*	*150*	*133*	*89 %*	*–*	*–*	*150*	*133*	*89 %*
Total Chapter 20		**662**	**144**	**806**	**997**	**124 %**	**1**	**1**	**807**	**998**	**124 %**
CHAPTER 21 : INFORMATION TECHNOLOGY PURCHASES											
2101	*Data processing equipment*	*168*	*30*	*198*	*196*	*99 %*	*5*	*–*	*203*	*196*	*97 %*
2102	*Software development and purchase*	*393*	*(96)*	*297*	*297*	*100 %*	*–*	*–*	*297*	*297*	*100 %*
Total Chapter 21		**561**	**(66)**	**495**	**494**	**100 %**	**5**	**–**	**500**	**494**	**99 %**
CHAPTER 22 : MOVABLE PROPERTY (OFFICE EQUIPMENT)											
2200	*Purchase*	*123*	*(123)*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
2201	*Rentals*	*10*	*(10)*	*0*	*–*	*0 %*	*–*	*–*	*0*	*–*	*0 %*
2202	*Maintenance utilisation and repair*	*20*	*(19)*	*1*	*0*	*36 %*	*–*	*–*	*1*	*0*	*36 %*
Total Chapter 22		**153**	**(152)**	**1**	**0**	**23 %**	**–**	**–**	**1**	**0**	**23 %**
CHAPTER 23 : CURRENT ADMINISTRTATIVE EXPENDITURE											
2300	*Stationery and office supply*	*40*	*(4)*	*36*	*36*	*100 %*	*–*	*–*	*36*	*36*	*100 %*
2350	*Other operating expenditure*	*13*	*2*	*15*	*15*	*100 %*	*–*	*–*	*15*	*15*	*100 %*
2360	*Library stocks purchase of books and subsciptions*	*44*	*(0)*	*44*	*43*	*99 %*	*–*	*–*	*44*	*43*	*99 %*
2370	*Translation interpretation*	*26*	*(18)*	*8*	*8*	*98 %*	*1*	*–*	*9*	*8*	*87 %*
Total Chapter 23		**123**	**(21)**	**102**	**102**	**100 %**	**1**	**–**	**103**	**102**	**99%**
CHAPTER 24 : POSTAGE AND TELECOMMUNICATIONS											
2400	*Correspondence and communication expenses*	*67*	*(27)*	*40*	*40*	*100 %*	*–*	*–*	*40*	*40*	*100 %*
Total Chapter 24		**67**	**(27)**	**40**	**40**	**100 %**	**–**	**–**	**40**	**40**	**100 %**

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Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		1	2	3=1+2	4	5=4/3	6	7	8=3+6	9=4+7	10=9/8
CHAPTER 25 : EXPENDITURE ON FORMAL MEETINGS											
2500	*Formal meetings*	*158*	*(48)*	*110*	*110*	*100 %*	*–*	*–*	*110*	*110*	*100 %*
Total Chapter 25		**158**	**(48)**	**110**	**110**	**100 %**	**–**	**–**	**110**	**110**	**100 %**
CHAPTER 26 : EXP IN CONNECTION WITH OPERATIONAL ACTIVITIES											
2600	*Running costs in Connection with operational activ*	*200*	*(97)*	*103*	*50*	*49 %*	*–*	*–*	*103*	*50*	*49 %*
2602	*Workshops*	*250*	*133*	*383*	*276*	*72 %*	*–*	*–*	*383*	*276*	*72 %*
2603	*Knowledge Management*	*50*	*–*	*50*	*–*	*0 %*	*–*	*–*	*50*	*–*	*0 %*
Total Chapter 26		**500**	**36**	**536**	**326**	**61 %**	**–**	**–**	**536**	**326**	**61 %**
CHAPTER 27 : EXTERNAL COMMUNICATION INFORMATION AND PUBLICITY											
2700	*External communication*	*225*	*(161)*	*64*	*4*	*6 %*	*–*	*–*	*64*	*4*	*6 %*
2701	*Events (Stakeholders Forum Infoday)*	*300*	*(24)*	*276*	*109*	*39 %*	*1*	*–*	*277*	*109*	*39 %*
2702	*Material*	*100*	*(46)*	*54*	*26*	*48 %*	*–*	*–*	*54*	*26*	*48 %*
Total Chapter 27		**625**	**(230)**	**395**	**138**	**35 %**	**1**	**–**	**396**	**138**	**35 %**
CHAPTER 28 : STUDIES											
2800	*Ex-post Audits*	*500*	*364*	*864*	*745*	*86 %*	*–*	*–*	*864*	*745*	*86 %*
2801	*Studies*	*80*	*–*	*80*	*51*	*64 %*	*–*	*–*	*80*	*51*	*64 %*
Total Chapter 28		**580**	**364**	**944**	**796**	**84 %**	**–**	**–**	**944**	**796**	**84 %**
CHAPTER 29 : EXPERT CONTRACTS AND MEETINGS											
2900	*Evaluation Experts meetings*	*500*	*–*	*500*	*500*	*100 %*	*–*	*–*	*500*	*500*	*100 %*
2901	*Evaluation Facilities*	*100*	*–*	*100*	*100*	*100 %*	*–*	*–*	*100*	*100*	*100 %*
Total Chapter 29		**600**	**–**	**600**	**600**	**100 %**	**–**	**–**	**600**	**600**	**100 %**
Total Title 2		**4 029**	**–**	**4 029**	**3 603**	**89 %**	**8**	**1**	**4 036**	**3 604**	**89 %**
Title 3 : OPERATIONAL ACTIVITIES DIRECTLY LINKED TO THE REGULATION											
CHAPTER 30 : IMPLEMENTING THE RESEARCH AGENDA OF IMI JU											
3000	*Implementing the research agenda of IMI JU*	*–*	*–*	*–*	*–*	*0 %*	*5 575*	*130*	*5 575*	*130*	*2 %*
3001	*Call 1*	*–*	*–*	*–*	*–*	*0 %*	*55*	*–*	*55*	*–*	*0 %*
3002	*Call 2*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3003	*Call 3*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3004	*Call 4*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3005	*Call 5*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3006	*Call 6*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3007	*Call 7*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3008	*Call 8*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3009	*Call 9*	*–*	*–*	*–*	*–*	*0 %*	*23 872*	*23 872*	*23 872*	*23 872*	*100 %*
3010	*Call 10*	*–*	*–*	*–*	*–*	*0 %*	*6 100*	*6 100*	*6 100*	*6 100*	*100 %*
3011	*Call 11*	*–*	*–*	*–*	*–*	*0 %*	*38 452*	*38 452*	*38 452*	*38 452*	*100 %*

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Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		1	2	3=1+2	4	5=4/3	6	7	8=3+6	9=4+7	10=9/8
3013	*ENSO 2013*	–	–	–	–	*0 %*	–	–	–	–	*0 %*
3020	*IMI2 Implementing the research agenda of IMI JU*	*217 594*	*(196 051)*	*21 542*	–	*0 %*	–	–	*21 542*	–	*0 %*
3021	*IMI2 Call 1*	–	–	–	–	*0 %*	–	–	–	–	*0 %*
3022	*IMI2 Call 2*	–	–	–	–	*0 %*	–	–	–	–	*0 %*
3023	*IMI2 Call 3*	–	–	–	–	*0 %*	–	–	–	–	*0 %*
3024	*IMI2 Call 4*	–	–	–	–	*0 %*	–	–	–	–	*0 %*
3025	*IMI2 Call 5*	–	*47 477*	*47 477*	*47 477*	*100 %*	–	–	*47 477*	*47 477*	*100 %*
3026	*IMI2 Call 6*	–	*46 500*	*46 500*	*46 500*	*100 %*	–	–	*46 500*	*46 500*	*100 %*
3027	*IMI2 Call 7*	–	*46 802*	*46 802*	*46 802*	*100 %*	–	–	*46 802*	*46 802*	*100 %*
3028	*IMI2 Call 8*	–	*55 272*	*55 272*	*55 272*	*100 %*	*14 728*	*14 728*	*70 000*	*70 000*	*100 %*
Total Chapter 30		**217 594**	**–**	**217 594**	**196 051**	**90 %**	**88 781**	**83 281**	**306 375**	**279 332**	**91 %**
Total Title 3		**217 594**	**–**	**217 594**	**196 051**	**90 %**	**88 781**	**83 281**	**306 375**	**279 332**	**91 %**
TOTAL IMI JU		**226 475**	**–**	**226 475**	**203 748**	**90 %**	**88 795**	**83 282**	**315 270**	**287 030**	**91 %**

IMPLEMENTATION OF PAYMENT APPROPRIATIONS BY BUDGET LINE

EUR '000

Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		11	12	13=11+12	14	15=14/13	16	17	18=13+16	19=14+17	20=19/18
Title 1 : STAFF EXPENDITURE											
CHAPTER 11 : STAFF IN ACTIVE EMPLOYMENT											
1100	*Staff in active employment and costs linked to emp*	*3 163*	*(217)*	*2 946*	*2 473*	*84 %*	*–*	*–*	*2 946*	*2 473*	*84 %*
1101	*Family Allowances*	*250*	*10*	*260*	*260*	*100 %*	*–*	*–*	*260*	*260*	*100 %*
1102	*Transfer and expatriation allowance*	*300*	*30*	*330*	*330*	*100 %*	*–*	*–*	*330*	*330*	*100 %*
1110	*Contract Agents*	*370*	*–*	*370*	*273*	*74 %*	*–*	*–*	*370*	*273*	*74 %*
1130	*Insurance against sickness*	*85*	*–*	*85*	*84*	*99 %*	*–*	*–*	*85*	*84*	*99 %*
1131	*Insurance against accidents and occupational disea*	*15*	*–*	*15*	*12*	*83 %*	*–*	*–*	*15*	*12*	*83 %*
1132	*Unemployment insurance for temporary staff*	*34*	*–*	*34*	*33*	*97 %*	*–*	*–*	*34*	*33*	*97 %*
1140	*Birth and death allowance*	*10*	*–*	*10*	*–*	*0 %*	*–*	*–*	*10*	*–*	*0 %*
1141	*Annual travel costs from the place of employment t*	*55*	*–*	*55*	*21*	*38 %*	*–*	*–*	*55*	*21*	*38 %*
1144	*Fixed local travel allowances*	*1*	*2*	*3*	*2*	*67 %*	*–*	*–*	*3*	*2*	*67 %*
1172	*Cost of organizing traineeships within IMI*	*30*	*–*	*30*	*–*	*0 %*	*–*	*–*	*30*	*–*	*0 %*
1177	*Other services rendered*	*5*	*–*	*5*	*–*	*0 %*	*–*	*–*	*5*	*–*	*0 %*
1178	*PMO fees*	*40*	*–*	*40*	*30*	*76 %*	*5*	*–*	*45*	*30*	*67 %*
1181	*Travelling expenses (taking up duty)*	*5*	*–*	*5*	*2*	*48 %*	*–*	*–*	*5*	*2*	*48 %*
1182	*Installation allowance*	*10*	*15*	*25*	*15*	*62 %*	*–*	*–*	*25*	*15*	*62 %*
1183	*Moving expenses*	*15*	*–*	*15*	*9*	*60 %*	*–*	*–*	*15*	*9*	*60 %*
1184	*Temporary daily allowance*	*5*	*9*	*14*	*14*	*100 %*	*–*	*–*	*14*	*14*	*100 %*
1190	*Weightings (Correction coefficients)*	*–*	*0*	*0*	*0*	*100 %*	*–*	*–*	*0*	*0*	*100 %*
Total Chapter 11		**4 393**	**(151)**	**4 241**	**3 560**	**84 %**	**5**	**–**	**4 247**	**3 560**	**84 %**
CHAPTER 12 : MISCELLANEOUS EXPENDITURE ON STAFF RECRUITMENT AND											
1200	*Miscellaneous expenditure on staff recruitment and*	*20*	*–*	*20*	*20*	*100 %*	*1*	*1*	*21*	*21*	*100 %*
Total Chapter 12		**20**	**–**	**20**	**20**	**100 %**	**1**	**1**	**21**	**21**	**100 %**
CHAPTER 13 : MISSIONS											
1300	*Mission expenses*	*190*	*–*	*190*	*81*	*43 %*	*27*	*27*	*217*	*108*	*50 %*
Total Chapter 13		**190**	**–**	**190**	**81**	**43 %**	**27**	**27**	**217**	**108**	**50 %**
CHAPTER 14 : SOCIO-MEDICAL STRUCTURE											
1410	*TRAININGS LANGUAGE C*	*60*	*–*	*60*	*4*	*6 %*	*85*	*8*	*145*	*12*	*8 %*

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Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		11	12	13=11+12	14	15=14/13	16	17	18=13+16	19=14+17	20=19/18
1430	*Medical service*	*5*	*–*	*5*	*4*	*77 %*	*4*	*3*	*9*	*7*	*80 %*
1440	*Internal training (SLA)*	*6*	*–*	*6*	*5*	*87 %*	*4*	*1*	*10*	*6*	*58 %*
1490	*OTHER INTERVENTIONS*	*159*	*151*	*310*	*183*	*59 %*	*25*	*25*	*336*	*209*	*62 %*
Total Chapter 14		**230**	**151**	**381**	**196**	**51%**	**118**	**37**	**499**	**233**	**47 %**
CHAPTER 17 : ENTERTAINMENT AND REPRESENTATION EXPENSES											
1700	*Entertainment and representation expenses*	*20*	*–*	*20*	*8*	*40 %*	*8*	*1*	*28*	*8*	*30 %*
Total Chapter 17		**20**	**–**	**20**	**8**	**40 %**	**8**	**1**	**28**	**8**	**30 %**
Total Title 1		**4 853**	**–**	**4 853**	**3 865**	**80 %**	**159**	**65**	**5 012**	**3 930**	**78 %**
Title 2 : BUILDING EQUIPMENT AND MISCELLANEOUS EXPENDITURE											
CHAPTER 20 : INVESTMENTS IN IMMOVABLE PROPERTY RENTAL OF BUILDINGS											
2000	*Rentals*	*402*	*144*	*546*	*753*	*138 %*	*3*	*3*	*548*	*755*	*138 %*
2020	*Water gas electricity and heating charges*	*110*	*0*	*110*	*110*	*100 %*	*–*	*–*	*110*	*110*	*100 %*
2040	*Furnishing of premises (works)*	*150*	*–*	*150*	*133*	*89 %*	*–*	*–*	*150*	*133*	*89 %*
Total Chapter 20		**662**	**144**	**806**	**996**	**124 %**	**3**	**3**	**809**	**999**	**123 %**
CHAPTER 21 : INFORMATION TECHNOLOGY PURCHASES											
2101	*Data processing equipment*	*168*	*30*	*198*	*64*	*32 %*	*84*	*72*	*282*	*136*	*48 %*
2102	*Software development and purchase*	*393*	*(96)*	*297*	*174*	*58 %*	*152*	*130*	*449*	*304*	*68 %*
Total Chapter 21		**561**	**(66)**	**495**	**237**	**48 %**	**235**	**202**	**731**	**440**	**60 %**
CHAPTER 22 : MOVABLE PROPERTY (OFFICE EQUIPMENT)											
2200	*Purchase*	*123*	*(123)*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
2201	*Rentals*	*10*	*(10)*	*0*	*0*	*100 %*	*0*	*–*	*1*	*0*	*50 %*
2202	*Maintenance utilisation and repair*	*20*	*(19)*	*1*	*1*	*100 %*	*5*	*4*	*5*	*5*	*93 %*
Total Chapter 22		**153**	**(152)**	**1**	**1**	**100 %**	**5**	**4**	**6**	**5**	**88 %**
CHAPTER 23 : CURRENT ADMINISTRTATIVE EXPENDITURE											
2300	*Stationery and office supply*	*40*	*(4)*	*36*	*30*	*83 %*	*7*	*7*	*43*	*37*	*86 %*
2350	*Other operating expenditure*	*13*	*2*	*15*	*5*	*36 %*	*1*	*1*	*16*	*7*	*41 %*
2360	*Library stocks purchase of books and subsciptions*	*44*	*(0)*	*44*	*29*	*67 %*	*29*	*15*	*73*	*44*	*60 %*
2370	*Translation interpretation*	*26*	*(18)*	*8*	*3*	*34 %*	*2*	*–*	*10*	*3*	*28 %*
Total Chapter 23		**123**	**(21)**	**102**	**67**	**65 %**	**40**	**23**	**142**	**90**	**64 %**
CHAPTER 24 : POSTAGE AND TELECOMMUNICATIONS											
2400	*Correspondence and communication expenses*	*67*	*(27)*	*40*	*34*	*84 %*	*35*	*23*	*75*	*57*	*76 %*
Total Chapter 24		**67**	**(27)**	**40**	**34**	**84 %**	**35**	**23**	**75**	**57**	**76 %**

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Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		11	12	13=11+12	14	15=14/13	16	17	18=13+16	19=14+17	20=19/18
CHAPTER 25 : EXPENDITURE ON FORMAL MEETINGS											
2500	*Formal meetings*	*158*	*(48)*	*110*	*72*	*66 %*	*31*	*31*	*141*	*104*	*73 %*
Total Chapter 25		**158**	**(48)**	**110**	**72**	**66 %**	**31**	**31**	**141**	**104**	**73 %**
CHAPTER 26 : EXP IN CONNECTION WITH OPERATIONAL ACTIVITIES											
2600	*Running costs in Connection with operational activ*	*200*	*(97)*	*103*	*20*	*19 %*	*72*	*32*	*175*	*52*	*30 %*
2602	*Workshops*	*250*	*133*	*383*	*156*	*41 %*	*43*	*43*	*426*	*199*	*47 %*
2603	*Knowledge Management*	*50*	*–*	*50*	*–*	*0 %*	*–*	*–*	*50*	*–*	*0 %*
Total Chapter 26		**500**	**36**	**536**	**175**	**33 %**	**115**	**75**	**651**	**251**	**38 %**
CHAPTER 27 : EXTERNAL COMMUNICATION INFORMATION AND PUBLICITY											
2700	*External communication*	*225*	*(161)*	*64*	*58*	*90 %*	*251*	*50*	*315*	*108*	*34 %*
2701	*Events (Stakeholders Forum Infoday)*	*300*	*(24)*	*276*	*106*	*38 %*	*12*	*11*	*288*	*116*	*40 %*
2702	*Material*	*100*	*(46)*	*54*	*54*	*100 %*	*51*	*23*	*105*	*76*	*73 %*
Total Chapter 27		**625**	**(230)**	**395**	**217**	**55 %**	**313**	**84**	**708**	**301**	**43 %**
CHAPTER 28 : STUDIES											
2800	*Ex-post Audits*	*500*	*364*	*864*	*494*	*57 %*	*562*	*147*	*1 426*	*641*	*45 %*
2801	*Studies*	*80*	*–*	*80*	*31*	*39 %*	*36*	*36*	*116*	*67*	*58 %*
Total Chapter 28		**580**	**364**	**944**	**525**	**56 %**	**597**	**182**	**1 541**	**708**	**46 %**
CHAPTER 29 : EXPERT CONTRACTS AND MEETINGS											
2900	*Evaluation Experts meetings*	*500*	*–*	*500*	*474*	*95 %*	*33*	*33*	*533*	*507*	*95 %*
2901	*Evaluation Facilities*	*100*	*–*	*100*	*100*	*100 %*	*37*	*24*	*137*	*124*	*90 %*
Total Chapter 29		**600**	**–**	**600**	**574**	**96 %**	**70**	**57**	**670**	**631**	**94 %**
Total Title 2		**4 029**	**–**	**4 029**	**2 899**	**72 %**	**1 445**	**685**	**5 474**	**3 584**	**65 %**
Title 3 : OPERATIONAL ACTIVITIES DIRECTLY LINKED TO THE REGULATION											
CHAPTER 30 : IMPLEMENTING THE RESEARCH AGENDA OF IMI JU											
3000	*Implementing the research agenda of IMI JU*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3001	*Call 1*	*7 000*	*(933)*	*6 067*	*2 356*	*39 %*	*5*	*5*	*6 072*	*2 361*	*39 %*
3002	*Call 2*	*5 600*	*933*	*6 533*	*6 442*	*99 %*	*–*	*–*	*6 533*	*6 442*	*99 %*
3003	*Call 3*	*24 000*	*–*	*24 000*	*13 536*	*56 %*	*–*	*–*	*24 000*	*13 536*	*56 %*
3004	*Call 4*	*20 000*	*–*	*20 000*	*7 913*	*40 %*	*–*	*–*	*20 000*	*7 913*	*40 %*
3005	*Call 5*	*4 369*	*10 844*	*15 214*	*15 214*	*100 %*	*–*	*–*	*15 214*	*15 214*	*100 %*
3006	*Call 6*	*–*	*9 184*	*9 184*	*8 679*	*95 %*	*–*	*–*	*9 184*	*8 679*	*95 %*
3007	*Call 7*	*1 600*	*1 413*	*3 013*	*3 013*	*100 %*	*–*	*–*	*3 013*	*3 013*	*100 %*
3008	*Call 8*	*11 800*	*(1 413)*	*10 387*	*8 111*	*78 %*	*–*	*–*	*10 387*	*8 111*	*78 %*
3009	*Call 9*	*2 880*	*–*	*2 880*	*1 397*	*48 %*	*7 639*	*7 639*	*10 519*	*9 036*	*86 %*
3010	*Call 10*	*1 952*	*–*	*1 952*	*–*	*0 %*	*1 952*	*1 952*	*3 904*	*1 952*	*50 %*

EUR '000

Budget line		Budget appropriations					Additional appropriations		Total		
		Voted budget	Changes	Total	Execution	%	Appropr.	Execution	Appropr.	Execution	%
		11	12	13=11+12	14	15=14/13	16	17	18=13+16	19=14+17	20=19/18
3011	*Call 11*	*8 640*	*–*	*8 640*	*–*	*0 %*	*12 305*	*12 305*	*20 945*	*12 305*	*59 %*
3013	*ENSO 2013*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3020	*IMI2 Implementing the research agenda of IMI JU*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3021	*IMI2 Call 1*	*3 919*	*(904)*	*3 015*	*2 519*	*84 %*	*–*	*–*	*3 015*	*2 519*	*84 %*
3022	*IMI2 Call 2*	*39 840*	*(20 028)*	*19 812*	*19 812*	*100 %*	*20 025*	*20 025*	*39 837*	*39 837*	*100 %*
3023	*IMI2 Call 3*	*11 400*	*–*	*11 400*	*2 693*	*24 %*	*–*	*–*	*11 400*	*2 693*	*24 %*
3024	*IMI2 Call 4*	*–*	*904*	*904*	*904*	*100 %*	*–*	*–*	*904*	*904*	*100 %*
3025	*IMI2 Call 5*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3026	*IMI2 Call 6*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3027	*IMI2 Call 7*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
3028	*IMI2 Call 8*	*–*	*–*	*–*	*–*	*0 %*	*–*	*–*	*–*	*–*	*0 %*
Total Chapter 30		**143 000**	**–**	**143 000**	**92 589**	**65 %**	**41 926**	**41 926**	**184 926**	**134 515**	**73 %**
Total Title 3		**143 000**	**–**	**143 000**	**92 589**	**65 %**	**41 926**	**41 926**	**184 926**	**134 515**	**73 %**
TOTAL IMI JU		**151 881**	**–**	**151 881**	**99 353**	**65 %**	**43 530**	**42 676**	**195 411**	**142 029**	**73 %**

Annex 9 - Materiality criteria

The ‘materiality’ concept provides the Executive Director with a basis for assessing the significance of any weaknesses or risks identified and thus whether those weaknesses should be subject to a formal reservation in the annual declaration of assurance. This annex provides an explanation of the materiality threshold that was applied as a basis for this assessment.

The control objective is to ensure that the residual error rate of payments made to beneficiaries, i.e. the level of errors which remain undetected and uncorrected, does not exceed 2 % by the end of the research programme. The guidance of the European Court of Auditors as well as the applicable European Commission standards were taken in account for defining the 2 % threshold. In addition, a qualitative and quantitative judgment was applied to assess and quantify any significant weaknesses:

- in qualitative terms, the following factors are considered as part of the materiality criteria:;
  - • the nature and scope of the weakness;
  - • the duration of the weakness;
  - • the existence of mitigating controls which reduce the impact of the weakness;
  - • the existence of effective corrective actions to correct the weaknesses (action plans and financial corrections) which have had a measurable impact.
- in quantitative terms, the potential financial impact is taken into account.

The assessment of weaknesses was made by identifying their potential impact and judging whether any weakness was material enough that its non-disclosure could influence the decisions or conclusions of the users of the declaration of assurance.

The following considerations were, therefore, taken into account:

- Due to its multiannual nature, the effectiveness of IMI JU’s control strategy can only be fully measured and assessed at the final stages in the life of the IMI JU programme, once the ex post audit strategy has been fully implemented and systematic errors regarding beneficiaries have been detected and corrected.
- As the control objective is set to be achieved in the future, it is therefore not sufficient to assess the effectiveness of controls only by looking at the error rate determined during the year under review. The analysis must also include an assessment of whether (1) the scope and results of the audits carried out until the end of the reporting year were sufficient and adequate to meet the multi-annual control strategy goals; and (2) whether the preventive and remedial measures in place are being deemed to be adequately effective in order lead to the expected reduction in the error rate by the end of the programme.

Effectiveness of controls

The main legality and regularity indicators for payments made to beneficiaries, as defined in the IMI JU ex-post audit strategy approved by the Governing Board in December 2010, are the representative and residual error rates detected by ex-post audits measured with respect to the amounts accepted after ex-ante controls:

- The ***representative error rate*** **(RepER)** is the error rate resulting from the representative audits. It provides a reasonable estimate of the level of error in the population relating to the accepted IMI JU contributions on completion of the audits, but does not take into account the corrections and follow-up undertaken by IMI JU. It is calculated as the average error rate (AER) according to the following formula:

$$AER\% = \frac{\sum (err)}{n} = RepER\%$$

Where:

∑ **(err)** = sum of all individual error rates of the sample (in %). Only errors in favour of the JU (i.e. overstated amounts) are taken into consideration.

n = sample size (i.e. number of audited financial statements)

- The ***residual error rate*** (**ResER**) is the level of error remaining in the population after deducting corrections and recoveries made by IMI JU. This includes the extension of audit results to non-audited financial statements of the audited beneficiaries to correct systematic errors. The formula for the residual error rate is:

$$\text{ResER\%} = \frac{\text{(RepER\% * (P-A) – (RepERsys\% * E)}}{\text{P}}$$

Where:

ResER% = residual error rate, expressed as a percentage.

RepER% = representative error rate, or error rate detected in the representative sample, in the form of the Average Error Rate, expressed as a percentage and calculated as described above (AER%).

RepERsys% = systematic portion of the RepER% (the RepER% is composed of complementary portions reflecting the proportion of systematic and non-systematic errors detected) expressed as a percentage.

P = total amount in euros of the auditable population relating to accepted IMI JU contribution.

A = total value of audited IMI JU contribution, expressed in euros.

E = total non-audited amounts of IMI JU contributions of all audited beneficiaries. This will consist of the total JU's share, expressed in euros, of all non-audited cost statements received for all audited beneficiaries.

The calculation of the error rates is performed on a point-in-time basis, i.e. all the figures are provided as of a certain date.

In addition, due to its multiannual nature, the effectiveness of IMI JU's ex-post audit strategy can only be fully measured and assessed during the final stages of IMI JU, once the ex-post control strategy has been fully implemented and systematic errors have been detected and corrected in the relevant claims. For this purpose, the weighted average residual error rate for the entire cumulative period covered by *ex post* audits during the execution of the IMI JU programme will be applied once sufficient audits from each representative sample have been concluded.

Annex 10 - Media highlights

- PharmaPhorum (UK), 31 December 2015
  20 people who shaped healthcare in 2015: part 1
- Lëtzebuerger Journal (Luxembourg), 22 December 2015
  Innovation, wo sie besonders gebraucht wird (Innovation where it is most needed)
- Yahoo News (France), 8 December 2015
  Ebola : recherche volontaires pour un essai vaccinal (Ebola: volunteers search for a vaccine trial)
- La Tribune (France), 8 December 2015
  Nosopharm intègre un projet européen sur les antibiotiques (Nosopharm integrates a European project on antibiotics)
- Svenska Dagbladet (Sweden), 29 November 2015
  'Resistenta bakterier kan döda fler än cancer' ('Resistant bacteria can kill more than cancer')
- 2. program Radia Slovenija (Slovenia), 26 November 2015
  Antibiotik ni za vsak primer (The antibiotic is not for every case)
- The Guardian (UK), 24 November 2015
  Ebola will always return unless we develop the tools to end it
- Politiken Weekly (Denmark), 19 November 2015
  Debat: Kom nu ind i kampen mod de resistente superbakterier (Debate: Come into the fight against resistant superbugs)
- Il Sole 24 Ore (Italy), 23 October 2015
  L' Europa spinge sui farmaci innovativi, lotta al cancro e all'Alzheimer (Europe pushes on innovative medicines, fight cancer and Alzheimer's)
- Diário Siglo XXI (Spain), 22 October 2015
  Comienza a probarse en voluntarios de Sierra Leona una vacuna contra el virus (Tests on vaccine against Ebola have been started on volunteers in Sierra Leone)
- Politico (European), 6 October 2015
  IMI boss: Public gets good return on investment
- Nieuws.nl (the Netherlands), 22 September 2015
  EU stelt 15 miljoen euro beschikbaar voor artrose onderzoek (15 million EU funding for research on osteoarthritis)
- La Voz de Galicia (Spain), 20 September 2015
  Galicia reclutará a 1.000 pacientes en el mayor ensayo para tratar la artrosis (Galicia will recruit 1,000 patients in the largest trial to treat osteoarthritis)
- Corriere della Sera (Italy), 10 September 2015
  La Statale nello sviluppo di nuovi antibiotici contro fibrosi cistica e bronchiectasie (University of Milan for the development of new antibiotics against cystic fibrosis and bronchiectasis)
- RTE (Ireland), 7 September 2015
  New drugs to help patients with cystic fibrosis & bronchiectasis
- Nature Reviews Drug Discovery (international), 31 July 2015
  An audience with Pierre Meulien
- Politico (European), 15 June 2015
  EU drugs partnership gets new chief
- Science Business (European), 15 June 2015
  Irish national Pierre Meulien appointed to run Innovative Medicines Initiative
- Knack (Belgium), 21 May 2015
  Antibioticacrisis: worden banale infecties binnenkort opnieuw dodelijk? (Antibiotics crisis: will common infections become deadly again soon?)
- Luxemburger Wort (Luxembourg), 29 April 2015
  Spitzenforschung in Luxemburg : Biomarker anstelle von Biopsien (Cutting-edge research in Luxembourg: biomarkers instead of biopsies)
- 20 Minutos (Spain), 27 April 2015
  Investigadores del Virgen Macarena y Virgen del Rocío participan en el proyecto europeo Combacte Care(Researchers at the Virgen del Rocío and Virgen Macarena participate in the European project Combacte Care)
- EuropaPress (Spain), 27 April 2015
  Investigadores del Virgen Macarena y Virgen del Rocío participan en el proyecto europeo Combacte Care(Researchers at the Virgen del Rocío and Virgen Macarena participate in the European project Combacte Care)
- The Pharmaceutical Journal (UK), 23 April 2015
  Clinical trials and tribulations

- Die Welt (Germany), 22 April 2015
  Impfstoff könnte im Herbst zugelassen werden (Ebola vaccine could be approved in autumn)
- Berliner Morgenpost (Germany), 22 April 2015
  Impfstoff könnte im Herbst zugelassen werden (Ebola vaccine could be approved in autumn)
- Irish Times (Ireland), 21 April 2015
  Educating advocates: how patients and parents can speak for change
- BioCentury Innovations (international), 16 April 2015
  IMI's innovation ecosystem
- Medical News Today (UK), 15 April 2015
  IMI and World Anti-Doping Agency to collaborate
- ANSA (Italy), 14 April 2015
  Un esame del sangue rivela tumore ed evita la biopsia (A blood test shows the presence of a cancer and avoid the biopsy)
- Pan European Networks (European), 14 April 2015
  IMI and anti-doping agency to collaborate
- Il Sole 24 Ore (Italy), 12 April 2015
  Antibiotici, la ricerca punta su vecchi farmaci (Antibiotics, research bets on old drugs)
- European Biotechnology News (European), 10 April 2015
  Industry vet heads IMI
- L'Espresso (Italy), 3 April 2015
  Influenza, ecco perché il vaccino ha fatto flop (Flu: here it is explained why the vaccine was a flop)
- Ideal (Spain), 3 April 2015
  350 granadinos prestan su cuerpo para crear el primer mapa molecular contra enfermedades raras (350 people from Granada 'lend' their body to create the first molecular map for rare diseases)
- EyeForPharma (UK), 1 April 2015
  Partnership: The Game Changer in Alzheimer's Research
- Forbes (international), 31 March 2015
  From Hunting to Farming, Medicines Development Takes a Big Leap Forward
- Industrie Pharma (France), 30 March 2015
  Marc de Garidel nommé président d'IMI (Marc de Garidel appointed President of IMI)
- Le Monde (France), 27 March 2015
  Ebola : la course aux vaccins s'accélère (Ebola: the race for the vaccine is accelerating)
- Research Professional (international), 26 March 2015
  My winning proposal: public-private partnerships for health
- The Herald (UK), 19 March 2015
  Stirling-based scientists pioneering role in battle against Ebola
- Elsevier (The Netherlands), 19 March 2015
  Waarschuwing voor resistente bacteriën onderweg naar Nederland (Warning of resistant bacteria on route to the Netherlands)
- De Morgen (Belgium), 12 March 2015
  Efficiëntere griepvaccins dankzij beter evaluatie (More effective influenza vaccines through better evaluation)
- Het Laatste Nieuws (Belgium), 12 March 2015
  Efficiëntere griepvaccins dankzij beter evaluatie (More effective influenza vaccines through better evaluation)
- Les Echos (France), 10 March 2015
  Ebola : comment industriels et pouvoirs publics ont collaboré pour contrer l'épidémie (Ebola: how industry and government have collaborated to the epidemic)
- Yle (Finland), 24 February 2015
  Antibiotika slutar verka innan vi får nya läkemedel (When antibiotics fail, new drugs are needed)
- European Voice (Europe), 20 February 2015
  A stand-in at the controls of the Innovative Medicines Initiative
- Scrip Regulatory Affairs (international), 18 February 2015
  Summer launch forecast for EU platform to co-ordinate early drug licensing pathways
- Il Sole 24 Ore – ed. Sanità (Italy), 11 February 2015
  Terapie 'su misura' per le malattie autoimmuni: Policlinico tra i capofila del progetto europeo PreciseSads('Tailored' therapies for autoimmune diseases: Policlinico of Milan among the leaders of the European project PreciseSads)
- SciDev.Net (international), 4 February 2015
  Mobile phones to help Ebola vaccine trials

- Yle (Finland), 28 January 2015
  Suomalaistutkijat kehittämään ebolan kenttädiagnostiikkaa (Finnish researchers develop Ebola field diagnostics)
- Diário Económico (Portugal), 27 January 2015
  UE lança oito projectos de ¡nvesügação na área do ébola (EU launches eight projects to fight Ebola) (in print)
- Delo (Slovenia), 25 January 2015
  Evropa proti eboli (Europe against Ebola)
- European Biotechnology News (Europe), 20 January 2015
  IMI funds Ebola vaccine projects
- Wallstreet online (Germany), 19 January 2015
  Johnson & Johnson kündigt die Gründung der Konsortien für die Entwicklung eines Ebolaimpfstoffs an (Johnson & Johnson announced the creation of consortia for the development of an Ebola vaccine)
- Sunday Independent (Ireland), 18 January 2015
  World Vision Ireland's Ebola initiative (in print)
- MedNouse, 17 January 2015
  IMI launches Ebola projects
- Blikk (Hungary), 17 January 2015
  Az EU új kutatási projektekkel segíti az ebola elleni küzdelmet (The EU is helping new research projects to combat Ebola)
- Daily Mail (UK), 17 January 2015
  J&J Ebola vaccine gets 100 million euros to speed development
- Europa Press (Spain), 17 January 2015
  Johnson & Johnson anuncia la formación del consorcio de desarrollo de la vacuna contra el Ébola, con fondos de Innovative Medicines Initiative (Johnson & Johnson announced the formation of the consortium developing a vaccine against Ebola, funded by Innovative Medicines Initiative)
- Világgazdaság (Hungary), 16 January 2015
  Kétszázmillió euróval segíti az EU az ebola elleni küzdelmet (Two hundred million Euros will help the EU to combat Ebola)
- Reuters (UK), 16 January 2015
  J&J Ebola vaccine gets 100 million euros to speed development
- NewEurope (Europe), 16 January 2015
  EU research efforts at front line of fight against Ebola
- Pan European Networks (Europe), 16 January 2015
  IMI launches eight projects tackling Ebola
- Irish Examiner (Ireland), 16 January 2015
  Irish group working to develop Ebola vaccine
- Irish Examiner (Ireland), 16 January 2015
  Research programme bids to defuse dementia time bomb
- Politiken (Denmark), 16 January 2015
  Bavarians ebola-program henter finansiering fra EU (Bavarian's Ebola programme retrieves financing from EU funds)
- Il Sole 24 Ore - ed. Sanità (Italy), 16 January 2015
  Ebola: Siena studia uno dei tre vaccini giudicati più promettenti dall'Oms (Ebola: Siena studying one of the three most promising vaccines)
- The Malta Independent (Malta), 16 January 2015
  EU announced eight research projects into Ebola; EUR215 million in funding allocated
- Canarias7 (Spain), 15 January 2015
  35 instituciones europeas se alían para investigar la prevención del Alzheimer (35 European institutions join forces to investigate the prevention of Alzheimer)
- Europa Press (Spain), 15 January 2015
  35 instituciones europeas se alían para investigar la prevención del Alzheimer (35 European institutions join forces to investigate the prevention of Alzheimer)
- La Vanguardia (Spain), 15 January 2015
  35 instituciones europeas se alían para investigar la prevención del Alzheimer (35 European institutions join forces to investigate the prevention of Alzheimer)
- Le Figaro (France), 13 January 2015
  Les laboratoires s'intéressent à nouveau aux antibiotiques (Laboratories are interested in new antibiotics)

- Diario Medico.com (Spain), 13 January 2015
  Antoni Esteve, presidente de Farmaindustria, pide más colaboración público-privada durante la inauguración del IMI-2 Info Day (Antoni Esteve, president of Farmaindustria, calls for more public-private partnerships at the opening of IMI-2 Info Day)
- TeleCinco (Spain), 13 January 2015
  Farmaindustria destaca la colaboración público-privada en el desarrollo de medicamentos más efectivos y seguros (Farmaindustria highlights the public-private partnership in the development of more effective and safe medicines)

Annex 11 - List of acronyms

Acronym	Meaning
AAR 2015	Annual Activity Report 2015
ABAC	Accrual Based Accounting System
ACE Program	Autism Centres of Excellence Program
AD	Alzheimer's disease
ADC	Apparent diffusion coefficient
AER	Average error rate
API	Application Programming Interface
ASD	autism spectrum disorder
AWP2014	Annual Work Plan 2014
BIT	Booking of IT material application
CASMI	Centre for the Advancement of Sustainable Medical Innovation
CDER	Centre for Drug Evaluation and Research
CDISC	Clinical Data Interchange Standards Consortium
CEDEFOP	European Centre for the Development of Vocational Training
CEOi	Global CEO Initiative
CFAST	Coalition for Accelerating Standards and Therapies
CFS	Certificates on Financial Statements
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
C-Path	Critical Path Institute
CPD	Continuing professional development
CPTR	Critical Path to TB Drug Regimens
CRC	Australian Cooperative Research Centres
CRO	Contract research organisation
DG HR	European Commission Human Resources and Security Directorate General
DG Internal Market and Services	European Commission Directorate General for Internal Market and Services
DIGIT	European Commission Directorate-General for Informatics
DG RTD	European Commission Directorate-General for Research and Innovation
DILI	Drug-induced liver injury
DIVI	Drug-induced vascular injury
DORA	Document Registry Application
DoW	Description of Work
DPO	Data protection officer
DPUK	Dementia Platform UK
E&T	Education & Training
EC	European Commission
ECA	European Court of Auditors
eCDR	electronic Career Development Report application
EDPS	European Data Protection Supervisor
EEG	Electroencephalograph

EFPIA	European Federation of Pharmaceutical Industries and Associations
EHR	electronic health record
ELF	European Lead Factory
EMA	European Medicines Agency
eMA	Electronic Missions Application
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ENSO	Exploring New Scientific Opportunities
EoI	Expression of Interest
eTOXdb	eTOX rich preclinical database
eTOXsys	eTOX *in silico* toxicology prediction system
EU	European Union
FDA	Food and Drug Administration
FLT	Fluorothymidine
fNIH	Foundation for the National Institute of Health
FP	Full Proposal
FP7	Seventh Framework Programme
FPP	Full Project Proposal
GA	Grant Agreeement
GAP	Global Alzheimer's Platform
GSK	GlaxoSmithKline
GWAS	genome-wide association study
H2020	Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. For more information, click here: http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020
Helmsley Charitable Trust	Leona M. and Harry B. Helmsley Charitable Trust
HR	Human resources
HTA	Health Technology Assessment
IAC	Internal Audit Capability
IAC	Internal Audit Capability
IAPO	International Alliance of Patients' Organisations
IAS	Internal Audit Service of the European Commission
IBS	Irritable bowel disease
ICC	Internal Control Coordinator
ICH S 1	International Conference on Harmonisation's Safety (S) 1
ICS	Internal Control Standards
ILG	Industry Liaison Group
IMI 1 JU	Innovative Medicines Initiative 1Joint Undertaking
IMI 2 JU	Innovative Medicines Initiative 2Joint Undertaking
IMI JU	Innovative Medicines Initiative Joint Undertaking
iPS cells	Induced pluripotent stem cells
ISA	Information System for Absences
ITF	EMA Innovation Task Force
ITI-PF&S	Innovative therapeutic interventions against physical frailty and sarcopenia

JDRF	Juvenile Diabetes Research Foundation
JUs	Joint Undertakings
KPI	Key performance indicator
LEAP	Longitudinal European Autism Project
MAPPs	Medicines adaptive pathways to patients
MIT	Massachusetts Institute of Technology
MRI	Magnetic resonance imaging
MS	Multiple sclerosis
MTA	material transfer agreement
ND4BB	New Drugs for Bad Bugs
ND4BB	New Drugs for Bad Bugs
NEWDIGS	New Drug Development ParadIGmS
NIMH	National Institute of Mental Health
NMDA-Receptor	N-methyl-D-aspartate receptor
OECD	Organisation for Economic Co-operation and Development
OLAF	European Anti-Fraud Office
PAGE	Population Approach Group in Europe
PET	Positron emission tomography
PM	Person month
PMDA	Pharmaceuticals and Medical Devices Agency
PONDS	Province of Ontario Neurodevelopmental Disorders
PPP	Public-private partnership
PRO	Patient reported outcomes
PSTC	Predictive Safety Testing Consortium
QST	Quantitative sensory testing
R&D	Research and development
RA	Rheumatoid arthritis
RAE	Risk assessment exercise
RCSA	Risk and control self-assessment
RepER	Representative error rate
ResER	Residual error rate
SEND	CDISC SEND Controlled Terminology
SGGs	Strategic Governing Groups
SMEs	Small and medium-sized enterprises
SOFIA	Submission of Information Application
SOP	Standard operating procedure
SP	Short Proposal
SRG	States Representatives Group
SRG	States Representatives Group
T1D	Type 1 diabetes
T2D	Type 2 diabetes
TB	Tuberculosis
TSD	Total sleep deprivation

TTI	Time to inform
TTG	Time to Grant
TTP	Time to Pay
UPSA	Ultrasound-based plaque structure analysis
VC	Venture capital
WHO	World Health Organisation
WP(s)	Work Package(s)

Annex 12 - Table of IMI projects

(overview on 31 December 2015)

Project acronym	Full project title	Website	Subject area
ABIRISK	Anti-biopharmaceutical immunization: prediction and analysis of clinical relevance to minimize the risk	www.abirisk.eu	drug safety
ADVANCE	Accelerated development of vaccine benefit-risk collaboration in Europe	www.advance-vaccines.eu	vaccines
AETIONOMY	Organising mechanistic knowledge about neurodegenerative diseases for the improvement of drug development and therapy	www.aetionomy.eu	Alzheimer's disease and Parkinson's disease
APPROACH	Applied public-private research enabling osteoarthritis clinical headway	www.approachproject.eu	osteoarthritis
BioVacSafe	Biomarkers for enhanced vaccine safety	www.biovacsafe.eu	vaccines
BTCURE	Be the cure	www.btcure.eu	rheumatoid arthritis
CANCER-ID	Cancer treatment and monitoring through identification of circulating tumour cells and tumour related nucleic acids in blood	www.cancer-id.eu	cancer
CHEM21	Chemical manufacturing methods for the 21st century pharmaceutical industries	www.chem21.eu	green chemistry
COMBACTE	Combatting bacterial resistance in Europe	www.combacte.com	antimicrobial resistance
COMBACTE-CARE	Combatting bacterial resistance in Europe - carbapenem resistance	www.combacte.com/combacte-care	antimicrobial resistance
COMBACTE-MAGNET	Combatting bacterial resistance in Europe - molecules against Gram negative infections	www.combacte.com/combacte-magnet	antimicrobial resistance
COMPACT	Collaboration on the optimisation of macromolecular pharmaceutical access to cellular targets	www.compact-research.org	drug delivery
DDMoRe	Drug disease model resources	www.ddmore.eu	knowledge management
DIRECT	Diabetes research on patient stratification	www.direct-diabetes.org	diabetes
DRIVE-AB	Driving re-investment in R&D and responsible antibiotic use	http://drive-ab.eu/	infectious diseases
EBiSC	European bank for induced pluripotent stem cells	http://www.ebisc.org/	stem cells

Project acronym	Full project title	Website	Subject area
EHR4CR	Electronic health record systems for clinical research	www.ehr4cr.eu	knowledge management
ELF	European Lead Factory	www.europeanleadfactory.eu	drug discovery
EMIF	European medical information framework	www.emif.eu	knowledge management, Alzheimer's disease, metabolic syndromes
EMTRAIN	European medicines research training network	www.emtrain.eu	education and training
ENABLE	European Gram negative antibacterial engine	www.nd4bb-enable.eu	antimicrobial resistance
EPAD	European prevention of Alzheimer's dementia consortium	ep-ad.org	Alzheimer's disease
eTOX	Integrating bioinformatics and chemoinformatics approaches for the development of expert systems allowing the *in silico* prediction of toxicities	www.e-tox.net	knowledge management, drug safety
eTRIKS	Delivering European translational information & knowledge management services	www.etriks.org	knowledge management
EU2P	European programme in pharmacovigilance and pharmacoepidemiology	www.eu2p.org	education and training
EU-AIMS	European autism interventions - a multicentre study for developing new medications	www.eu-aims.eu	autism
EUPATI	European patients' academy on therapeutic innovation	www.patientsacademy.eu	education and training
EUROPAIN	Understanding chronic pain and improving its treatment	www.imieuropain.org	chronic pain
FLUCOP	Standardization and development of assays for assessment of influenza vaccines correlates of protection	www.flucop.eu	vaccines
GetReal	Incorporating real-life clinical data into drug development	www.imi-getreal.eu	relative effectiveness
iABC	Inhaled antibiotics in bronchiectasis and cystic fibrosis	www.qub.ac.uk/sites/iABC	antimicrobial resistance
IMIDIA	Improving beta-cell function and identification of diagnostic biomarkers for treatment monitoring in diabetes	www.imidia.org	diabetes
iPiE	Intelligent assessment of pharmaceutical in the environment	i-pie.org	green chemistry

Project acronym	Full project title	Website	Subject area
K4DD	Kinetics for drug discovery	www.k4dd.eu	drug discovery
MARCAR	Biomarkers and molecular tumor classification for non-genotoxic carcinogenesis	www.imi-marcar.eu	safety, cancer
MIP-DILI	Mechanism-based integrated systems for the prediction of drug-induced liver injury	www.mip-dili.eu	drug safety
NEWMEDS	Novel methods leading to new medications in depression and schizophrenia	www.newmeds-europe.com	schizophrenia, depression
OncoTrack	Methods for systematic next generation oncology biomarker development	www.oncotrack.eu	cancer
Open PHACTS	The open pharmacological concepts triple store	www.openphacts.org	knowledge management
OrBiTo	Oral biopharmaceutics tools	www.orbitoproject.eu	drug delivery
PHARMA-COG	Prediction of cognitive properties of new drug candidates for neurodegenerative diseases in the early clinical development	www.alzheimer-europe.org/Research/PharmaCog	Alzheimer's disease
PharmaTrain	Pharmaceutical medicine training programme	www.pharmatrain.eu	education and training
PRECISESADS	Molecular reclassification to find clinically useful biomarkers for systemic autoimmune diseases	http://www.precisesads.eu/	rheumatoid arthritis and lupus
PREDECT	New models for preclinical evaluation of drug efficacy in common solid tumours	www.predect.eu	cancer
PreDiCT-TB	Model-based preclinical development of anti-tuberculosis drug combinations	www.predict-tb.eu	tuberculosis
PROactive	Physical activity as a crucial patient reported outcome in COPD	www.proactivecopd.com	chronic obstructive pulmonary disease (COPD)
PROTECT	Pharmacoepidemiolocal research on outcomes of therapeutics by a European consortium	www.imi-protect.eu	pharmacovigilance
QUIC-CONCEPT	Quantitative imaging in cancer: connecting cellular processes with therapy	www.quic-concept.eu	cancer
RAPP-ID	Development of rapid point-of-care test platforms for infectious diseases	www.rapp-id.eu	infectious diseases
SafeSciMET	European modular education and training programme in safety sciences for medicines	www.safescimet.eu	education and training

Project acronym	Full project title	Website	Subject area
SAFE-T	Safer and faster evidence-based translation	www.imi-safe-t.eu	drug safety
SPRINTT	Sarcopenia and Physical fRailty IN older people: multi-componenT Treatment strategies	http://www.mysprintt.eu/	geriatrics
StemBANCC	Stem cells for biological assays of novel drugs and predictive toxicology	www.stembancc.org	stem cells
SUMMIT	Surrogate markers for vascular micro- and macrovascular hard endpoints for innovative diabetes tools	www.imi-summit.eu	diabetes
TRANSLOCATION	Molecular basis of the outer membrane permeability	www.translocation.eu	antimicrobial resistance
U-BIOPRED	Unbiased biomarkers for the prediction of respiratory disease outcomes	www.ubiopred.eu	asthma
ULTRA-DD	Unrestricted Leveraging of Targets for Research Advancement and Drug Discovery	www.ultra-dd.org	drug development
WEB-RADR	Recognising adverse drug reactions	web-radr.eu	pharmacovigilance
ZAPI	Zoonotic Anticipation and Preparedness Initiative	zapi-imi.eu	infectious diseases

IMI2 projects

Project acronym	Full project title	Website	Subject area
ADAPT-SMART	Accelerated development of appropriate patient therapies: a sustainable, multi stakeholder approach from research to treatment-outcomes	adaptsmart.eu	MAPPs
EBODAC	Communication strategy and tools for optimizing the impact of Ebola vaccination deployment (Compliance with vaccine regimens)	www.ebovac.org/ebodac	Ebola and related diseases
EbolaMoDRAD	Ebola virus: modern approaches for developing bedside rapid diagnostics	www.ebolamodrad.eu	Ebola and related diseases
EBOMAN	Manufacturing and development for rapid access Ebola vaccine	www.ebovac.org/eboman	Ebola and related diseases
EBOVAC1	Development of a prophylactic Ebola vaccine using an heterologous prime-boost regimen	www.ebovac.org	Ebola and related diseases

Project acronym	Full project title	Website	Subject area
EBOVAC2	Development of a prophylactic Ebola vaccine using an heterologous prime-boost regimen: Phase II	www.ebovac2.com	Ebola and related diseases
FILODIAG	Ultra-fast molecular filovirus diagnostics	www.filodiag.eu	Ebola and related diseases
INNODIA	Translational approaches to disease modifying therapy of type I diabetes: an innovative approach towards understanding and arresting type I diabetes	innodia.eu	diabetes
MOFINA	Mobile filovirus nucleic acid test	no web-site yet available	Ebola and related diseases
PRISM	Psychiatric ratings using intermediate stratified markers: providing quantitative biological measures to facilitate the discovery and development of new treatments for social and cognitive deficits in AD, SZ and MD	no web-site yet available	Neurological disorders
VSV-EBOVAC	Vaccine safety and immunogenicity signatures of human responses to VSV-ZEBOV	www.vsv-ebovac.eu	Ebola and related diseases

Annex 13 - Assessment of the consolidated Annual Activity Report by the IMI2 JU Governing Board

Legal basis

Article 20 (1) of the IMI2 JU Financial Rules states that *'The authorizing officer shall report annually to the Governing Board on the performance of his or her duties in the form of a consolidated annual activity report […]* (which) *shall be submitted to the Governing Board for assessment and approval'* (Article 20(1)).

Article 20 (2) of the IMI2 JU Financial Rules further specifies that *'No later than 1 July each year the consolidated annual activity report together with its assessment shall be sent by the Executive Director to the Court of Auditors, to the Commission, to the European Parliament and the Council'* (Article 20(2)).

Analysis

The Innovative Medicines Initiative Annual Activity Report 2015 (Authorising Officer's report) was presented to the IMI2 JU Governing Board on March 2016 and it is planned to have it approved by the Governing Board in June 2016.

The Governing Board is of the opinion that the IMI2 JU AAR 2015 covers well the main activities and achievements of the IMI2 JU in 2015 in relation to the objectives set; clearly identifies the risks associated with the IMI2 JU operations; duly reports on the use made of the IMI JU resources provided; and indicates the efficiency and effectiveness of the IMI2 JU internal control system.

The Governing Board recognises the progress made by the IMI2 JU towards achieving the objectives set for year 2015 and notes in particular that:

- IMI2 JU officially started on 9 July 2014 and is running in parallel two programs with different rules: actions initiated under Framework Programme 7, and those under Horizon 2020.
- The Joint Undertaking has its discharge separated from the Commission.
- The Annual Work Plan 2015 together with the draft Budget 2015 was approved by the Governing Board on 21 January 2015 (Decision IMI2-GB-DEC-2015-01).
- In 2015, the JU implemented the final stages of the IMI2 Calls for proposals 1, 2, 3 and 4 initiated under the Horizon 2020 Framework Programme.
- In 2015, the JU launched 4 new Calls under Horizon 2020, IMI2 Calls 5, 6, 7, and 8. The calls 5, 6, and 7 represent the commitment of: €140,779,000 of IMI2 JU financial contribution; €138,928,000 of contribution from EFPIA companies; and €1,851,000 of contribution from Associated Partners. Call 8 represents the commitment of: €70,000,000 of IMI2 JU financial contribution; and at least €46,666,666 of contribution from EFPIA companies and Associated Partners.
- In 2015, the JU signed 16 new grant agreements, of which 5 from IMI1 Calls 9, 10 and 11 initiated under Framework Programme 7, and 11 from IMI2 Calls 1, 2, 3 and 4 initiated under Horizon 2020.
- With an average of 135 days in 2015, the "Time To Grant" is similar to year 2014 (average of 123 days) and remains well below the requirement of maximum 240 days for the Horizon 2020 Programme.
- As at 31.12.2015, the IMI portfolio of projects represented a total of 59 projects from the first phase of IMI (initiated under Framework Programme 7), as well as 11 Grant Agreements signed from IMI2 Calls 1, 2, 3 and 4 (initiated under Horizon 2020).
- With these new Calls for proposals and new projects selected, IMI2 JU continued to implement key strategic objectives of its Scientific Research Agenda. This has been possible thanks to efficient collaboration between the European Commission and the European Federation of Pharmaceutical Industries and Associations (EFPIA), with the support from IMI Scientific Committee, the States Representatives Group, and the entire JU Programme Office.
- The IMI2 JU continued to promote SME participation in projects. By the end of 2015 SMEs account for 15.6% of all IMI2 beneficiaries receiving 14% of the IMI2 JU funding.
- The analysis of projects deliverables indicates outstanding scientific performance, with uptake of results in research processes, regulatory and clinical practice. Projects have in particular delivered in: (a) The identification and validation of new drug targets and novel hit and lead discovery; (b) The establishment of robust, validated tools for preclinical drug development; (c) The development of biomarkers and tools predictive of clinical outcomes (efficacy and safety); (d) Improved design and process of clinical trials; (e) 'Big data' solutions to leverage knowledge; (f) The implementation of data standards; (g) Impact on the regulatory framework; (h) The implementation of results inside industry; (i) Education and training for a new generation of R&D scientists.

- By 31 December 2015, IMI projects have led to 21 patents filled, and produced 1749 publications in peer reviewed journals, 35% of which were published in year 2015. The latest bibliometric analysis demonstrated that the citation impact of papers associated with IMI projects was maintained almost twice the world average (1.94) between 2010 and 2015, and higher than the world and EU's average, which confirms, like for previous year 2014, the scientific excellence of IMI projects.
- In 2015, the IMI2 JU States Representatives Group met 3 times. The IMI2 JU Scientific Committee held two meetings and one teleconference. The six Strategic Governing Groups (in the areas of Immunology, Diabetes and metabolic disorders, Neuro-degeneration, Translational safety, Data and Knowledge management, and Infections control) regularly met and held teleconferences, each 3 to 7 times.
- In 2015, communication activities were focused on continuing to raise awareness of IMI2 JU, promoting new IMI2 JU Calls for proposals, and increasing IMI's outreach to policymakers.
- The 2015 edition of the Stakeholders Forum attracted over 300 registrations, compared to 200 in 2014. It was successful in enabling the public assessment of the progress of the IMI2 JU Programme towards its objectives. It was in particular the occasion to showcase highly successful projects but also exchange views on new potential IMI2 JU actions in the domains of advanced therapies, and better health outcomes through big data.
- IMI2 JU continued fostering cross-project interactions and collaboration, in particular in drug discovery platforms, taxonomy of diseases, Alzheimer's disease, autism, antimicrobial resistance, Ebola disease, stem cell research and vaccines, as well as creating new relationships beyond IMI and Europe to achieve global impact.
- The execution of projects was adequately followed up, including ex-ante and ex-post financial and scientific verifications. In 2015, as was expected, IMI2 JU conducted 12 interim reviews of projects from the IMI1 Calls 2, 3, 4, 5, 7 and 8 initiated under Framework Programme 7. Overall, the reviewers were satisfied with the progress made by these projects.
- In total 166 ex-post audits of beneficiaries have been launched since 2011, out of which a total of 144 have been finalised, of which 59 during the year 2015 alone. This represents a very significant progress for year 2015. In addition, by the end of 2015, six ex-post reviews and financial audits (risk-based audits) on the declared in-kind contribution of EFPIA companies participating in IMI projects had been finalised, and a further seven reviews and financial audits were ongoing, altogether covering 92% of total in-kind contributions.
- In 2015, the cumulative residual error rate from the finalised audits was 1.50%, down from 1.98% in 2014, and again below the materiality threshold of 2%.
- The JU continued implementing preventive and corrective measures to mitigate the risk of errors in financial statements submitted by beneficiaries (e.g. guidance related to financial rules).
- Actions have been taken by the IMI2 JU to address the remarks provided by the European Court of Auditors in its report on the financial year 2014, and on following up on the recommendations resulting from the second interim evaluation of the IMI JU.
- In relation to the use of human resources, the IMI2 JU staff assigned to the activities carried out in 2015 has been used for their intended purpose. The Staff Establishment Plan and organigram of the IMI2 JU Programme Office were amended, with the creation of a Head of Scientific Operations (grade AD 12) and a Head of Communication and Institutional Relations (grade AD 9). On 16 September 2015, the new Executive Director, Mr. Pierre Meulien, replaced the Acting Executive Director, Ms. Irene Norstedt, who had been temporarily seconded from the European Commission since 16 December 2014. 9 positions were filled during 2015 (a Human Resources Manager, an IT Manager and an IT Assistant, an Audit Manager and an ex-Post Audit Officer, a Budget/Finance Officer and two Financial Officers, a Legal/IP Officer).

During 2015 the monitoring tools were fully operational and the IMI2 JU AAR 2015 provides information on the effectiveness of the internal controls implemented and on the main results of monitoring and supervision controls.

Based on the information provided, the key objectives set up for 2015 have been met in compliance with legality, regularity and sound financial management.

The technical and operational information provided in the report reflects the situation at the end of 2015 in a realistic way.

However, the Governing Board considers that the following aspects require improvements:

- In 2015, the budget execution of both commitment and payment appropriations decreased to 91.04% and 72.68%, from previous year (92.38% and 73.90% respectively).
- In the second semester of 2016, the IMI2 JU should report monthly to the Governing Board on budget execution.
- IMI2 JU Programme Office is encouraged to continue measuring and reporting on the impacts of its projects.
- Migration towards the Horizon 2020 IT tools, with consideration for specific IMI2 JU features, needs to progress and be fully effective by the end of year 2016.

Assessment

The declaration of the Acting Executive Director and the IMI2 JU AAR 2015 gives a good assessment (clear, unambiguous, congruous) of operational and financial management in relation to the achievement of objectives, and the legality and regularity of the financial operations of the IMI2 JU in the year 2015.

The Governing Board notes that the management of the IMI2 JU has reasonable assurance that, overall, suitable controls are in place and working as intended, risks are being properly monitored and mitigated and necessary improvements and reinforcements detected by the auditors are being implemented.

Therefore, the IMI2 JU Governing Board hereby adopts this analysis and assessment of the IMI2 JU AAR 2015 of the authorizing officer. This analysis and assessment will be included into the IMI2 JU AAR 2015.

Brussels, on 28 JUIN 2016,

For the Governing Board of the Innovative Medicines Initiative 2

Robert-Jan Smits
Chair of the IMI2 JU Governing Board

Tel +32 (0)2 221 81 81 • Fax +32 (0)2 221 81 74 | infodesk@imi.europa.eu • www.imi.europa.eu • twitter: @IMI_JU
Postal address: IMI JU • TO56 • 1049 Brussels • Belgium | Visiting address: Ave de la Toison d'Or 56-60 • 1060 Brussels • Belgium