
imi
innovative
medicines
initiative
CARRYING THE
TORCH
FOR MEDICAL INNOVATION
efpia

CONTENTS

INTRODUCING THE INNOVATIVE MEDICINES INITIATIVE (IMI)

The Innovative Medicines Initiative (IMI) was launched in 2008 as a public-private partnership between the European Union and the European Federation of Pharmaceutical Industries and Associations (EFPIA).

We are working to improve health by speeding up the development of innovative medicines, particularly in areas where there is an unmet medical or social need. We do this by covering the full spectrum of drug discovery and development, from understanding the underlying causes of disease and identifying potential drugs and drug targets, through testing potential drugs for safety and efficacy, to clinical trial design, and monitoring the benefits and risks of medicines and vaccines once they are in use.

In our second phase, IMI2, we remain focused on the needs of patients and society, and on delivering tools and resources to speed up the development of urgently-needed treatments. In line with Horizon 2020, we also cover the later stages of drug development, and are working more closely with partners from other sectors (e.g. diagnostics, animal health, IT, imaging, etc.).

FUNDING

Our funding for the period 2008-2013 stood at €2 billion, with half coming from the EU's Seventh Framework Programme (FP7), and half coming through in-kind contributions by EFPIA companies.

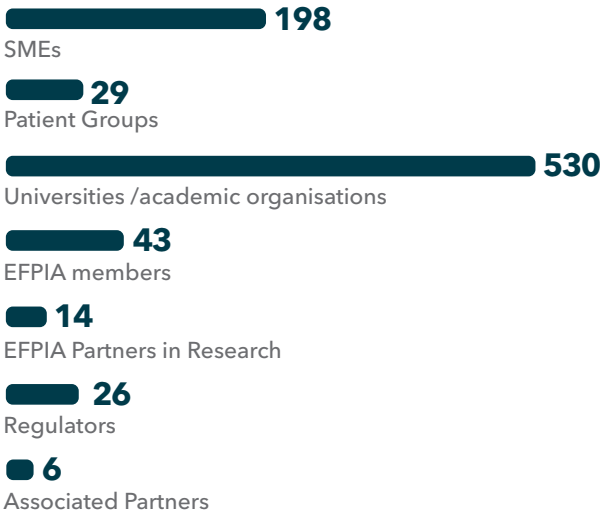
The IMI2 programme was launched in 2014 with a bigger budget: €3.276 billion. Half of this (€1.638 billion) comes from Horizon 2020; €1.425 billion is committed to the programme by EFPIA companies; and up to €213 million can be committed by other organisations that contribute to IMI2 as Associated Partners.

IMI IS BUILDING A NEW OPEN INNOVATION ECOSYSTEM FOR MEDICAL RESEARCH & DRUG DEVELOPMENT

THE IMI COMMUNITY

As of the end of 2016, the IMI community brought together 11 500 scientists and experts from across Europe and beyond working in 84 projects (59 from IMI1, and 25 from IMI2).

The graph below presents a snapshot of the IMI community, and demonstrates how IMI is increasingly open to different types of organisations; the Associated Partners include foundations such as the diabetes charity JDRF, while the EFPIA Partners in Research include companies working in areas like diagnostics, imaging or medical technology.



The major group of stakeholders driving the research projects in IMI are from academia, based in universities, national research organisations and research-active hospitals. Together, academia make up 65% of EU-funded participants.

For both IMI1 and IMI2, over half of all university participations involve organisations ranked in the top 150 universities worldwide.

Meanwhile, 29 of the 40 EFPIA companies involved in IMI1 projects, and 29 of the 34 EFPIA companies involved in IMI2, are in the top 100 of the Pharmaceutical and Biotechnology section of the R&D scoreboard World 2500 ranking.

SMEs are also an important component of the IMI community, with 189 participants in the 84 IMI1 and IMI2 projects. While most are from the biotech sector, some are from the data and IT sectors. Some projects also offer new opportunities for SMEs. For example, 14 SMEs have benefited from the European Lead Factory's world-class compound collection and screening centre for their early stage drug discovery projects. Elsewhere, the ENABLE project is creating a platform to help organisations, including SMEs, progress through the challenging early stages of antibiotic development. As of the end of 2016, there were 15 SMEs in ENABLE.

Patients are involved and/or represented in 75 % of relevant IMI projects as consortium partners, members of advisory boards, ethical advisory boards, or on a consultancy basis for topics of relevance. With their direct experience of disease, plus their contacts in the patient community, patients are well placed to advise on agenda setting, study design, communication, and ethics, for example.

Regulators are involved in 16.9% of all IMI1 projects and 20% of all IMI2 JU projects. They report that IMI is effective at breaking down the silos between academy, industry and patients, compared to other EU funding mechanisms.

THE POWER OF COLLABORATION

Many IMI projects bring together groups that would not normally work together, including pharmaceutical companies who are market competitors. What's more, the networks created in the projects are often maintained once the project has finished.

The added value of these collaborations is demonstrated by an analysis of the scientific publications produced by our projects.

- The number of publications is rising. In 2016 alone, IMI projects produced 796 publications, bringing the total number of publications produced by IMI projects to 2,690.
- The citation impact (which measures how many times a paper is cited in subsequent papers) for all IMI papers is 2.03 (compared to 1.14 for the EU and the baseline of 1 for the world). IMI's citation impact is therefore comparable to that of other organisations with a similar remit, namely the UK's Medical Research Council (2.01), the Wellcome Trust (2.05) and the US-based Foundation for the National Institutes of Health (FNIH) (1.96).
- 26.1% of papers from IMI projects are 'highly cited', meaning they are in the top 10 % of papers by journal category and year of publication.
- Almost two thirds (62.8%) of all IMI project papers are co-authored by people from different sectors (e.g. industry, academia, SME). What's more, these cross-sector papers have a higher citation index (2.17) than papers where all authors are from the same sector (1.80).

ATTRACTING NEW PARTNERS

The IMI community is growing, as 55 % of the participants in IMI2 projects were not involved in IMI1. Furthermore, the groups involved in many of the new IMI2 projects had never worked together before.

The community is also becoming more diverse, as IMI reaches out to companies outside the pharmaceutical sector. Many get involved by becoming EFPIA Partners in Research. As of the end of 2016, 14 EFPIA Partners in Research with expertise in fields such as diagnostics, medical technology, imaging and data analysis had committed € 18.2 million to new IMI Call topics.

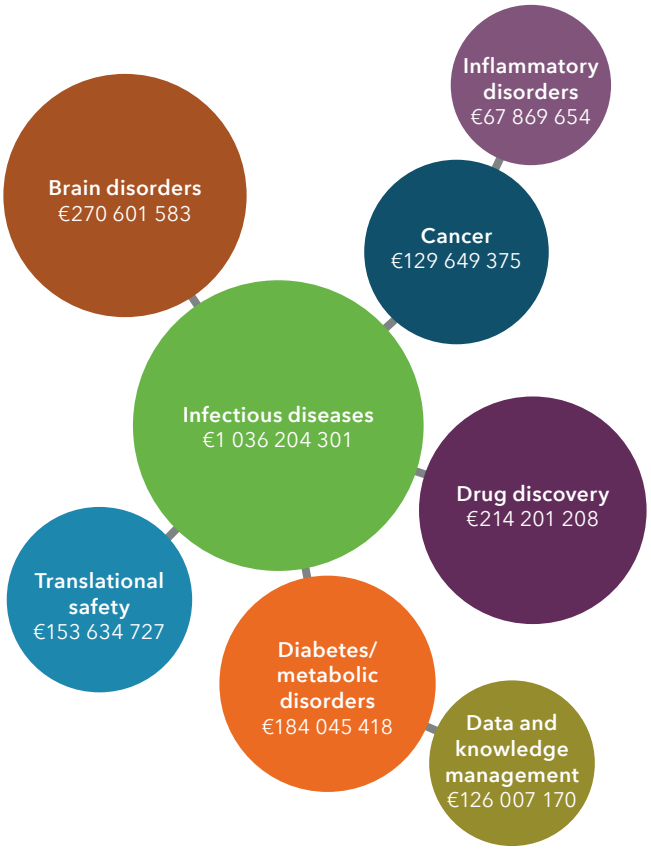
The IMI2 Associated Partner status is another route for organisations to take part in IMI. By the end of 2016, IMI had the following Associated Partners:

- Autism Speaks
- Bill and Melinda Gates Foundation
- International Diabetes Federation
- Diabetes charity JDRF
- Leona M. and Harry B. Helmsley Charitable Trust
- Simons Foundation Autism Research Initiative (SFARI)
- T1D Exchange

IMI PROJECTS ADDRESS THE MOST CHALLENGING DISEASE AREAS

As the graph below shows, IMI's efforts are focused on some of the most challenging disease areas, namely infectious diseases, neurodegeneration (including Alzheimer's disease), diabetes, and cancer. The projects are also working on cross-cutting issues such as data and knowledge management, as well as medicines safety. All IMI projects focus on challenges that are too great or too complex for any single organisation or even country to solve alone, and where a cross-sector, collaborative approach is essential for progress.

Current IMI investment in major disease/research areas



Delivering where it matters.

It's focused on patients. 75% of relevant IMI projects have involved patients. Some projects are already delivering direct benefits to patients.

IMI PROJECTS ARE ACCELERATING THE MEDICINES DEVELOPMENT PROCESS

By providing a unique model of collaboration, IMI projects are laying the foundations that are helping researchers across Europe, including many in SMEs, to advance their drug development programmes. These new, open partnerships enable the IMI-funded consortia to cover the entire value chain and contribute to more rapidly bringing new products or treatments to market for the benefit of patient populations.

DRUG DISCOVERY

Deciphering disease mechanisms – 193 novel definitions and mechanisms

Today, many diseases are still described on the basis of their symptoms. However, while two patients may share a diagnosis, the causes of their illness may be different. 32 IMI projects are directly studying the underlying causes of disease, such as genes that are mutated or molecular pathways that have gone wrong. Understanding these disease mechanisms is essential to developing new, more personalised treatments.

Neurodegenerative diseases

AETIONOMY discovered 180 putative disease mechanisms for Alzheimer's and Parkinson's diseases, of which 6 have been selected for further validation.

69 novel drug targets – 35 validated drug targets

Once researchers have identified a new disease mechanism, their next task is to zoom in on the gene(s) or molecular pathways involved and identify points where a drug could potentially stop the disease in its tracks by stopping the activity of a molecule in the body, for example. These drug targets can then be used by researchers to identify 'hits' – molecules that could interact with the drug targets and stop them from causing disease. These 'hits' are then further studied and refined to create 'leads', molecules which could eventually become drugs if further tests prove that they are safe and effective.

Cancer

ULTRA-DD showed that a protein called PRMT5 could be a drug target for new treatments for glioblastoma, a highly aggressive type of brain tumour.

Infectious diseases

ZAPI has identified vaccine candidates for a number of zoonoses (diseases that are transmitted to humans from animals), namely Rift Valley fever, Schmallenberg virus, and Middle East Respiratory Syndrome.

Antimicrobial resistance

ENABLE has identified a new way of targeting drug-resistant bacteria. More broadly, the New Drugs for Bad Bugs (ND4BB) programme has delivered screening data on the antimicrobial activity and toxicity of several compounds.

Throughout the earlier stages of drug development, researchers deploy a range of tests and tools to determine whether a potential drug will actually be effective and safe in humans. As they cannot test drugs directly in humans at this stage, researchers rely heavily on 'models' of the disease they are studying.

These models can be samples of cells or tissues (these are known as '*in vitro*' models), animals with the disease ('*in vivo*' models), or computer-based virtual models of the disease ('*in silico*' models). However, all too often, these models do not accurately mimic the disease under investigation and so fail to accurately predict how a potential drug will behave in humans.

Many IMI projects are therefore working to both assess existing tools, to see which work and which do not, and to develop new, better tools.

34 *in vitro* models and tools

Tools for predicting & monitoring safety

MIP-DILI developed a three-dimensional model of liver tissue that allows scientists to study how the liver works, and whether a drug is likely to harm the liver, among other things. These tools are supported by European and US regulators.

Tools for predicting & monitoring efficacy

ORBITO has designed a new tool based on an artificial membrane for predicting how a drug will be absorbed in the body. Several companies have successfully integrated ORBITO tools into their R&D routine.

70 animal models

Cancer

PREDECT developed the first animal model of a common form of breast cancer that faithfully replicates the human disease. The model has been hailed as 'a potential game-changer for breast cancer research.'

Autism

EU-AIMS established & validated behavioural tests (including touch-screen tests) to assess autism-related behaviour in rodents.

316 *in silico* models

Big data and knowledge management

The DDMoRe model repository contains 105 in silico models covering a range of disease areas. It is indexed, searchable, publicly available, and free-to-use. DDMoRe tools have been successfully integrated into diabetes research.

Tools for predicting & monitoring safety

eTOX drew on existing toxicity data to generate 200 '*in silico*' models for predicting the toxicity of medicines in the early stages of development. eTOX's toxicology database and models have been implemented in all 13 industry partners and used to predict the toxicity of drug candidate molecules.

12 novel imaging techniques

Psychiatric diseases

NEWMEDS developed three new methodologies for measuring neurotransmitters (the molecules that transmit nerve signals from one nerve cell to another) using positron emission tomography (PET).

Osteoarthritis

APPROACH is optimising, introducing and validating the next generation imaging methodologies for diagnosis and treatment of osteoarthritis (OA) patients.

95 novel robust assays, over 1 500 stem cell lines and 37 other tools

Pain

EUROPAIN demonstrated that electrophysiology (using fine needles to measure pain) can help identify whether a potential pain drug works in animals and humans. The findings have been acknowledged by the EMA and set standards for the clinical development of pain medicines.

Pain

EUROPAIN characterised an inflammatory pain model induced by UVB radiation – an important step towards better understanding pain.

Tools for predicting & monitoring safety

MARCAR developed a non-invasive imaging technique to allow researchers to scan mice for carcinogenicity studies. This will reduce number of animals used. Data from MARCAR are being used for upcoming discussions on carcinogenicity assessment at the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH).

Stem cells

There are currently 424 cell lines, covering 29 diseases and conditions, in the EBISC online catalogue of induced pluripotent stem cell (iPSC) lines.

Stem cells

STEMBANCC has generated 1 500 induced pluripotent stem cell lines from participants including healthy people and people with diseases.

DRUG DEVELOPMENT

326 biomarkers in development – 198 candidates, 136 validated

How do you know which patients are on the path to recovery and which are not? How can you identify patients who may be at greater risk of developing complications? How do you know which medicine will be safe and effective for which patients? Answering these questions is a key part of drug development, and requires an understanding of which biological markers ('biomarkers') could provide clues to help researchers answer these questions. Ideally, these biomarkers should be easily obtainable, for example through a simple blood test, scan, or patient-reported outcome (PRO). Ultimately, more reliable predictive tests will help to eliminate ineffective or unsafe compounds earlier in the development process, thereby avoiding unnecessary patient exposure and stopping investments in programmes that will ultimately prove unsuccessful. Combining knowledge and data from public and private partners not only helps to identify and validate new tools, but also significantly shortens the time taken to validate them. Many biomarkers may also have applications in medical practice.

Diabetes & metabolic disorders

SUMMIT & DIRECT have identified a variant of a gene called SLC2A2 that affects how well a type 2 diabetes patient responds to the drug metformin, paving the way towards stratified medicine.

Tools for predicting & monitoring safety

SAFE-T developed biomarkers for the prediction, detection, and monitoring of drug-induced injuries to the kidney, liver, and vascular system; some of which received 'letters of support' from the European Medicines Agency (EMA) and the Food and Drug Administration (FDA). Companies are using the biomarkers to assess the safety of drugs in development.

Neurodegenerative diseases

EMIF identified 10 plasma proteins strongly associated with disease severity and progression for Alzheimer's disease.

Autoimmune diseases

BTCure has defined new subsets of rheumatoid arthritis patients based on biomarkers analysed. This information is essential for improving clinical trials and moving towards more personalised treatments.

CLINICAL DEVELOPMENT / REGULATORY AND APPROVAL PROCESS

During clinical trials, medicines are tested for the first time in humans, firstly in healthy volunteers (to check that the drug is safe) and then in patients (to check that it works and to determine the best dose). Clinical trials can take years to run and are incredibly expensive. In addition, the results of clinical trials cannot always be extrapolated to the real world, as patients enrolled in a trial may not be fully representative of the wider patient community. IMI projects are investigating ways of improving the way clinical trials are run, so that they can generate reliable results, faster. They are also setting up clinical networks that are already making it easier for researchers to rapidly identify study centres and patients and get their study started.

Clinical trial networks – 8 clinical trial networks with more than 1 885 sites across Europe

Antimicrobial resistance

The COMBACTE family of projects is building self-sustaining, pan European antibacterial development networks and using them to run high-quality clinical studies addressing antimicrobial resistance.

- The CLIN-Net hospital network includes over 800 hospitals in 42 countries in Europe. Capable of quickly and reliably recruiting, treating, monitoring and reporting data on the required numbers of patients in multinational, multicentre trials at all stages of clinical drug development.
- EPI-Net harmonises and connects various European systems of disease surveillance. The aim is to increase our collective scientific knowledge about the distribution and determinants of serious bacterial infections in Europe.
- LAB-Net maintains an extensive pan-European network of over 600 microbiology laboratories, with the overall objective to establish, train, and maintain a high-quality, geographically representative European laboratory network.
- STAT-Net is a pan-European network of statistical experts from both academia and industry investigating approaches to improve the design of clinical trials.

Neurodegenerative diseases

EPAD is setting up an unprecedented pan-European platform for clinical trials of novel treatments designed to prevent the onset of dementia.

Big data and knowledge management

EHR4CR has developed a platform that enables controlled access to hospitals' data for the preparation of clinical trials. The platform has demonstrated its usefulness in speeding up the recruitment of patients, while ensuring that patient privacy is respected.

Autism

EU-AIMS has established an unprecedented clinical trial network for autism spectrum disorder (ASD), which currently includes 93 sites across 37 European countries. The database compiles clinical data of over 7 000 people with ASD.

Diabetes

INNODIA is establishing a clinical trial network for type 1 diabetes, allowing the conduct of smart clinical trials using adaptive trial designs.

39 cohorts and registries

Neurodegenerative diseases

EPAD is currently recruiting the largest multicentre European deep phenotyped cohort (6 000 subjects) for preclinical Alzheimer's disease, including biosamples.

Neurodegenerative diseases

AETIONOMY: One cross sectional cohort including biosamples with a total of 196 subjects (165 for the Parkinson's disease part and 31 for the Alzheimer's disease part).

Antimicrobial resistance

iABC: Patient cohort databases European Bronchiectasis Registry, more than 8 000 patients from 25 countries enrolled.

Direct impacts on regulatory processes

A number of tools and processes developed by projects have been or are being reviewed by regulatory authorities such as the EMA and FDA.

Autism

EU-AIMS has received letters of support from the EMA on tools to stratify people with autism spectrum disorder, resulting in the first EMA guideline on autism.

Pain

EUROPAIN's work on classifying patients by their sensitivity to pain contributed to EMA guidelines on the development of pain treatments.

Tools for predicting & monitoring safety

SAFE-T received support from the EMA and FDA for its work on markers of liver and kidney toxicity.

Tools for predicting & monitoring safety

MARCAR contributed to regulatory guidance on the testing of medicines for carcinogenicity (i.e. the risk that they could cause cancer).

Respiratory diseases

PROactive's patient-reported outcomes on chronic obstructive pulmonary disease (COPD) are under review with the EMA. The tools are already being used by researchers from the project as well as at least one company from outside the project.

Methods for benefit /risk assessment

PROTECT delivered a range of tools for regulators relating to the assessment of the benefits and risks of medicines.

Clinical trials ongoing

In areas like antimicrobial resistance and Ebola, where there is a high level of market failure and a very clear and urgent medical and social need, IMI runs clinical trials of novel medicines and vaccines.

Antimicrobial resistance

To date, there are 7 clinical trials and studies involving the COMBACTE networks. These cover studies on the incidence, treatment and outcomes of certain types of infection, as well as clinical trials of novel anti-infectives.

For example:

EURECA focuses on patients with serious carbapanem-resistant infections, and aims to learn how patients across Europe are currently treated and which patients respond well to which treatments.

SAATELLITE is investigating a drug called MEDI4893. MEDI4893 targets a toxin produced by Staphylococcus aureus, a bacteria often associated with hospital-associated infections and linked to resistance issues.

Ebola

EBOVAC1 published data from a trial in the UK (87 participants) showing that the Janssen prime-boost Ebola vaccine regimen is safe, well tolerated, and induces durable immune responses. In total, 1 653 people have been enrolled in the EBOVAC1 and EBOVAC2 trials in Europe and Africa. An innovative community engagement strategy in Sierra Leone helped to ensure successful recruitment for the trial there.

Teamwork works.

There's real power in the collaboration. 26.1% of papers from IMI projects are 'highly cited', meaning they are in the top 10 % of papers by journal category and year of publication. The citation impact for IMI papers is 2.03 compared to 1.14 for the EU average.

IMI PROJECT RESULTS ARE HAVING AN IMPACT

DEVELOPING A NEW TAXONOMY OF DISEASES

IMI projects have contributed to novel scientific insights that have managed to move the field forward and are already influencing decision-making in companies and other research organisations.

Respiratory diseases

UBIOPRED identified 5 subtypes of severe asthma among adult patients. This discovery is already paving the way for the development of more effective treatments.

Autism

EU-AIMS identified new gene pathways and mechanisms that may explain how genetic & environmental factors of autism interact, and is using this information for new research and drug discovery efforts.

Psychiatric diseases

NEWMEDS shed new light on the brain circuits involved in schizophrenia and applied this knowledge for further research and drug development.

DIRECT IMPACT ON PATIENTS

IMI projects were set up to accelerate and improve the drug development process, so they will all ultimately have an impact on patients, albeit indirectly. However, some projects are already delivering direct benefits for patients.

Education and training

EUPATI trained 98 patient experts in its Patient Expert Training Course, and has reached out to more than 65 000 individuals through its EUPATI Toolbox on Medicines R&D. The project also developed guidance documents on the interactions of patient organisations with industry, regulators, health technology assessment (HTA) bodies and ethics committees. It has also helped pharmaceutical companies to work together to improve their patient-centricity.

Ebola

MOFINA successfully tested a device designed to test for Ebola and related diseases in both European reference labs and in field studies in Sierra Leone. The device is now ready for product registration and the data obtained from lab and field tests is being submitted to the regulatory authorities.

Tools for predicting/monitoring safety

WEB-RADR has developed 3 mobile apps for reporting adverse drug reactions (ADRs) directly to regulators in Croatia, the Netherlands and the UK. Patients also receive the latest approved information on their treatments. A generic 'off the shelf' app toolbox to allow other countries to also develop their own apps is currently being tested in Africa for malaria ADR reporting.

Respiratory diseases

PROactive helped clarify the role that physical inactivity plays in COPD and put it higher on the agenda of patient organisations, researchers and clinicians. Patients are already experiencing benefits, as clinicians are increasingly recognising that tackling physical inactivity should be one of the key targets in the management of this disease.

Pain

EUROPAIN discovered that people prone to catastrophising (believing that something is far worse than it actually is) have a higher risk of developing chronic pain in the aftermath of surgery, and that patients who undergo keyhole surgery develop chronic pain to a lesser extent than patients who undergo open surgery. This is already helping doctors personalise post-surgery follow-up treatments in some countries.

Tools for predicting/monitoring safety

SAFE-T has reinforced the ability of pharma industries to ensure safe dosing in patients.

RESEARCHERS IN INDUSTRY ARE USING IMI PROJECT RESULTS IN THEIR WORK

IMI project results are providing evidence for informed decision-making within the pharmaceutical industry; or informing clinical, medical and regulatory best practices. This includes transfer of tools, models, and systems to the pharmaceutical industry, thereby changing industry practice.

Environmental aspects

CHEM21 developed a new, rapid, simple way to synthesise the WHO essential medicine flucytosine, which is used to treat a common and often deadly fungal form of meningitis in people with HIV / AIDS, The technique could dramatically cut production costs; the technology involved has been patented and is now being scaled up by a pharmaceutical partner.

Cancer

PREDECT is developing tools to aid in the study of breast, lung and prostate cancer. The project's three dimensional tumour cell models are being used in four organisations.

Antimicrobial resistance

TRANSLOCATION developed tests to determine the uptake of antibiotics by bacterial cells; the tests are now being validated by the pharmaceutical industry.

Drug discovery / cancer

ULTRA-DD results have spurred at least one pharmaceutical company to launch an effort to generate compounds suitable for trials in glioblastoma, a form of brain tumour.

Diabetes & metabolic disorders

IMIDIA developed the first human pancreatic beta cell lines (the cells which go wrong in diabetes) that behave naturally in the lab and can be used to study diabetes. The cell line, which was developed by a French SME, has been licensed to multiple industry partners.

Tools for predicting & monitoring safety

ABIRISK has delivered tools that are being used with confidence by companies to determine whether a molecule is of high risk for certain serious side effects prior to entering human clinical trials. This helps with the selection or rejection of compounds and allows companies to focus on those candidates with an improved chance of success.

IMI PROJECTS ARE DEVELOPING RESOURCES FOR OPEN USE BY THE RESEARCH COMMUNITY

Many IMI projects are delivering resources for drug discovery. These include online platforms that allow scientists to rapidly access diverse data sources with just a few clicks; physical facilities that allow researchers to identify and further develop potential drugs; and clinical networks that are facilitating the conduct of clinical studies and clinical trials. A lot of these resources are easily accessible to the wider scientific community.

Drug discovery

The European Lead Factory's Joint European Compound Library has 460 000 compounds ready for use in drug discovery and research. Scientists can apply to use the library and associated screening centre, and this has triggered 3 408 qualified drug discovery hits. 17 out of 49 screens run by EFPIA partners have triggered further drug discovery work. The project has also run 62 high throughput screens for public partners, including 14 SMEs.

ULTRA-DD, together with the Structural Genomic Consortium (SGC) launched the chemical probes portal (www.chemicalprobes.org) to make high quality data available to the chemical biology community.

Stem cells

EBiSC delivered the online European induced Pluripotent Stem Cell (iPSC) Bank Catalogue, currently containing a collection of 424 human iPS cells and relevant data for disease modelling and other forms of preclinical research. The forecast is that by the end of project, the EBiSC collection will consist of over 1 100 lines, resulting in an infrastructure for centralised, not-for-profit banking and distribution of iPSC lines.

Big data and knowledge management

The Open PHACTS Discovery Platform links up existing data sources and allows scientists to answer complex questions in drug development. The project's application programming interface (API) also allows developers to create their own, customised apps.

Real world data, evidence

GetReal has developed the pilot PragMagic tool as a decision support tool that helps in the design and planning of pragmatic trials, giving insights to the consequences of design choices and allowing users to visualise the interplay between the various design options, operational challenges and implications.

Psychiatric diseases

NEWMEDS developed DupCheck, an online tool to check that patients are not enrolled in more than one clinical trial.

Neurodegenerative diseases

EMIF has opened up access to the EMIF Data Catalogue to the wider research community. The online catalogue currently (early 2017) includes 14 population-based data sources (e.g. electronic health records, regional databases) and 46 cohorts (mainly in the Alzheimer's field) where the project partners have consented to providing information to bona fide researchers who want to explore potential data partners for their own work. https://emif-catalogue.eu

AETIONOMY published its Knowledge Base, a data, disease models and tools repository for research on neurodegeneration.

Tools for predicting/monitoring safety

ABIRISK published proposals to standardise communication in the biopharmaceuticals field, something that would help collaboration across disciplines and sectors.

Real world data, evidence

GetReal published a glossary of key terms in the area of relative effectiveness and real world data.

Tools for predicting/monitoring safety

The MARCAR web tool (ToxDBScan) allows a quick and easy evaluation of the ability of drug candidates to cause cancer.

A smarter sector.

Thanks to innovative courses created and run by IMI projects, thousands of people have been able to learn new skills and stay ahead of the game professionally.

CAPACITY BUILDING: IMI PROJECTS ARE TRAINING NEW AND CURRENT PROFESSIONALS IN THE FIELD

If Europe is to stay at the forefront of medical research and drug development, it needs a highly-skilled workforce with a broad understanding of the viewpoints of the different stakeholders involved in the process. Close to 70% of IMI projects include elements of, or are dedicated to education and training activities, resulting in more than 351 various training courses and 3 541 newly trained professionals from across Europe and from different sectors.

Ebola

Ebola+ project EBODAC trained 122 clinic-based research staff trained on communications and engagement skills in Kambia, Sierra Leone.

Antimicrobial resistance

COMBACTE-NET trained 598 people on the creation of a high quality clinical network of investigators supported by laboratory network to conduct high quality studies.

Education and training

EMTRAIN created on-course (www.on-course.eu), an online database on postgraduate biomedical training opportunities in Europe. Now it has info on over 8 000 courses, and the portal is being used in new EU-funded projects.

Education and training

Eu2P has created a pan-European teaching network in pharmacovigilance and pharmacoepidemiology, strengthening the competitiveness of European universities.

IMI PROJECT RESULTS ARE BEING CONVERTED INTO NEW BUSINESSES

Some 33% of projects have already created new businesses or improved the performance of existing businesses as a result of IMI project participation.

Cancer

The archiving of OncoTrack data after completion of the project will be supported by funds from the government of Luxembourg, creating an ELIXIR hub at the University of Luxembourg.

Drug discovery

As a result of public screening programme of the European Lead Factory, a spin-out company was created (ScandiCure), whose aim is to further develop molecules discovered via the ELF screen into a first-in-class anti-diabetic drug. The company has already secured an investment from GU Ventures AB, an investment company and an incubator owned by the Swedish state.

Education and training

EUPATI has established national platforms in several countries across Europe including Austria, France, Germany, Ireland, Italy, Luxembourg, Malta, Poland, Spain, Switzerland and the UK, and more recently in Denmark, Slovakia and Serbia.

Big data and knowledge management

The European Institute for Innovation through Health Data (i~HD) has been formed as one of the key sustainable entities arising from the IMI1 project EHR4CR and the FP7 project SemanticHealthNet, in collaboration with several other European projects and initiatives supported by the European Commission.

Pain

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.

IMI projects are securing additional funding to expand and continue their work, as the following examples show.

Big data and knowledge management

Open PHACTS has established the Open PHACTS Foundation and it currently has four paying members (GlaxoSmithKline, Janssen, Lilly and the University of Vienna) and is a partner in two Horizon 2020 projects.

Drug discovery

The ULTRA-DD consortium has attracted additional funding (€1.5 million for two years) via collaborations with disease foundations, including Myeloma UK and The Brain Tumour Charity, to sponsor postdoctoral researchers whose scientific outputs will contribute directly to the ULTRA-DD project.

Respiratory diseases

UBIOPRED has received a sustainability grant from the European Respiratory Society to support the maintenance of project outputs (biobank/data base and data management, consortium activities). Funding has also been secured from project members to ensure continuity in ongoing research and for the exploitation of project outputs.

Find out more about IMI

Visit our website: **www.imi.europa.eu**
Follow us on Twitter: **@IMI_JU**
#carrythetorch for more information