The Innovative Medicines Initiative

Key facts & figures | September 2015

Contents

1 About this document

This document presents a summary of certain key facts and figures on the Innovative Medicines Initiative (IMI). Much of the core information in this report is taken directly from the IMI Annual Activity Report (AAR) 2014, which is online at bit.ly/IMIAAR2014, and includes detailed information on IMI's activities and results from scientific, policy, legal and financial points of view.

The data presented in the AAR represents IMI's situation as of the end of 2014. Where available, this report provides more recent information.

2 Background – About the Innovative Medicines Initiative

The Innovative Medicines Initiative (IMI) is a joint undertaking between the European Union (represented by the European Commission) and the European pharmaceutical industry (represented by EFPIA). It was jointly created by both partners to solve a fundamental challenge in drug development, namely that the development of a new medicine takes too long, costs too much, and is too inefficient.

IMI was launched in 2008 with the goal of **'significantly improving the efficiency and effectiveness of the drug development process with the long-term aim that the pharmaceutical sector produce more effective and safer innovative medicines'**.

IMI's **€2 billion** budget for the period **2008-2013** made it the largest life sciences public-private partnership (PPP) in the world. Half of this budget came from the EU's Seventh Framework Programme (FP7). The rest came in the form of in-kind contributions from EFPIA and its member companies. EFPIA companies do not receive any EU funding via IMI; the EU funding supports the participation of the 'public' partners in IMI projects, i.e. universities, small biotech companies, patient groups, regulators, etc.

By the end of 2013, IMI had released 11 Calls for proposals and committed its entire €2 billion budget. Most importantly, it had demonstrated the success of the PPP model – by bringing together experts from industry, academia, small and medium-sized enterprises (SMEs), patient groups, and regulators, IMI projects were delivering scientific breakthroughs in fields as diverse as autism, diabetes, medicines safety, lung disease, and more.

The **success of IMI** prompted the European Commission and EFPIA to take steps to continue IMI under Horizon 2020, the European Commission's framework programme for research and innovation that runs from 2014 to 2020. The **legislation** creating 'IMI 2' was approved by the **European Parliament** and **Member States** in the first half of 2014, and IMI 2 was officially launched in July 2014.

IMI 2 will run from 2014 to the end of 2024 and it will have a **total budget of up to €3.276 billion**, split as follows:

- Up to € 1.638 billion from the EU's Horizon 2020 programme, to match the contribution of the industrial partners
- Up to €1.425 billion from EFPIA and its member companies
- Up to €213 million from other companies that decide to join IMI 2 as associated partners at project or programme level

As under IMI 1, the EFPIA companies will not receive any funding from the EU; rather, they will contribute to the projects, largely through in-kind contributions, such as their researchers' time or by providing access to other resources and equipment. IMI 2 also focuses on enlarging participation for all health sector industries, as well as to other relevant non-industrial actors, such as associated partners, who can be partners at an organisational or individual project level.

As set out in the IMI 2 legislation, the goals of the IMI 2 programme are to:

- increase the **success rate in clinical trials of priority medicines** identified by the World Health Organisation;
- where possible, **reduce the time to reach clinical proof of concept** in medicine development, such as for cancer, immunological, respiratory, neurological and neurodegenerative diseases;
- 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;
- develop **diagnostic and treatment biomarkers** for diseases clearly linked to clinical relevance and approved by regulators;
- **reduce the failure rate of vaccine candidates** in phase III clinical trials through new biomarkers for initial efficacy and safety checks;
- **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.

3 IMI's added value

IMI assesses its activities and outputs against a set of **key performance indicators** that have been agreed in collaboration with the IMI Governing Board. The key performance indicators fall into the following categories:

- Portfolio (coverage of priority areas)
- Scientific output
- Impact on regulatory framework and standardisation
- Business development and sustainability
- SME participation
- Patient participation
- Socio-economic impact
- Information, communication and dissemination
- Efficiency of the IMI Programme Office

Details of the indicators, as well as IMI's performance as of the end of 2014, can be found on page 6 of the Annual Activity Report. Meanwhile, a snapshot of some of IMI's key achievements is provided below.

IMI projects are creating a 7 000-strong community of scientists

In 2014 IMI concluded its first phase with a total of 59 projects. A key mission and one of the main achievements of IMI has been to facilitate the mobilisation of stakeholders and the creation of the networks behind these projects. It is estimated that these projects currently involve more than 7 000 scientists from Europe and beyond.

SMEs welcome!

IMI has proven attractive to SMEs, which benefit from funding as well as networking with leading experts in their field and access to new customers and markets.

Overview of the SMEs participation in IMI per year

	2011	2012	2013	2014
% Participation	13%	16.1%	15.2%	16%
% Budget	13%	18.9%	18.5%	15.8%

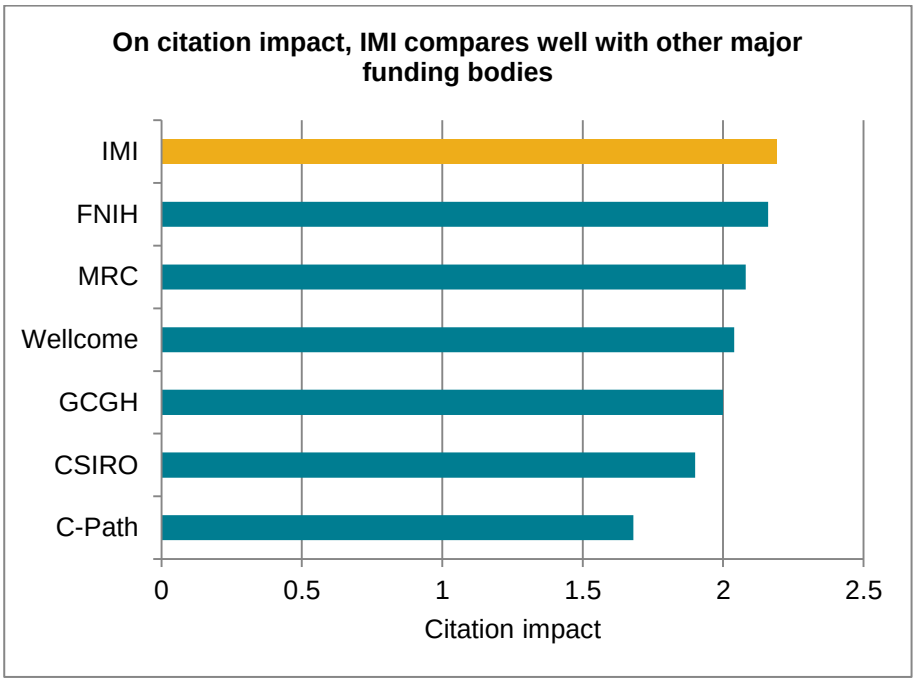
IMI projects are collaborative and scientifically excellent

The overall volume of IMI project research has increased rapidly since 2009. To date, IMI projects have produced 1 134 publications which have been matched to the Thomson Reuters Web of Science. Thomson Reuters analyses these publications to see how many times they are cited in subsequent publications – this gives the citation index which is commonly used as an indicator of research quality. Thomson Reuters also investigates levels of co-authorship involving researchers from different countries and sectors.

Note that the data provided here come from the 6th report on this subject which was published in summer 2015, and so represents an update compared to what was published in the Annual Activity Report 2014.

Key findings from the new report are:

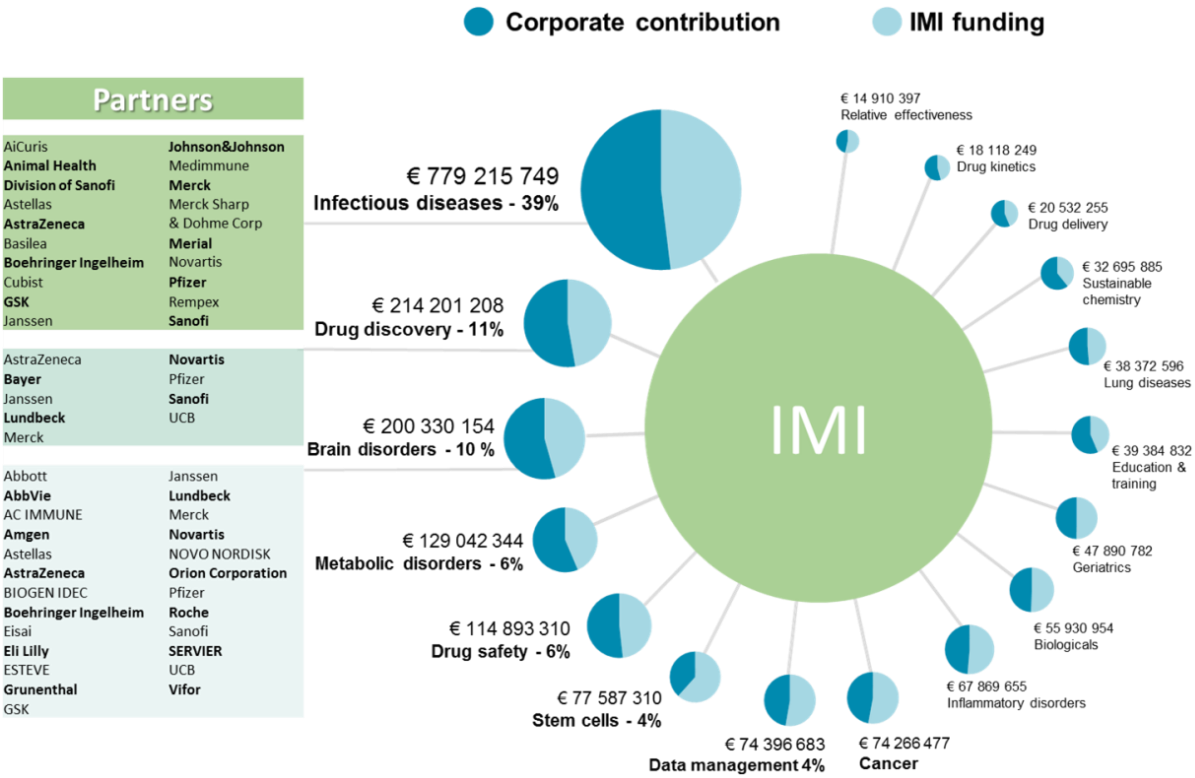
At 2.19, the **citation impact** for **IMI project papers** was **more than twice the world average** over the five-year period, 2010-2014. This indicates that the quality of IMI-associated research (as indicated by citation impact) has been maintained while output has continued to grow. Furthermore, IMI had the **highest average citation impact** of funding organisations analysed.



IMI project research is also **collaborative at sector, institution and country level**.

- **More than half (59.7%)** of all IMI project papers were published by researchers affiliated with **more than one sector** (e.g. industry, academia, SME, patient groups, regulators).
- **More than three-quarters (78.8%)** of IMI project papers were collaborative between **institutions**.
- **More than half (53.4%)** of all IMI project papers were **internationally collaborative**.

IMI projects address the full spectrum of the research & development (R&D) value chain as well as many key disease and interest areas[1].



IMI projects are delivering results that are making a real difference to the way new medicines are developed and will help to speed up the development of novel, more effective treatments for patients.

This Executive Summary provides just a snapshot of the over 150 project achievements listed in the full Annual Activity Report 2014 under the following categories:

- 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.

[1] The diagram is adapted from *Nature Medicine* 20, 5 (2014) | News –'Infectious disease leads in first phase of Europe's IMI effort' published online on 07 January 2014 at http://www.nature.com/nm/journal/v20/n1/full/nm0114-5.html.

European Lead Factory proves potential with first results

The European Lead Factory is a pan-European platform for drug discovery. 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, small and medium-sized enterprises (SMEs) and patient organisations an unprecedented opportunity to advance medical research and develop new medicines.

In 2014, the project proved its potential for drug discovery with the delivery of its first results in the form of four 'qualified hit lists' – lists of up to 50 compounds identified as showing activity against a drug target submitted to the European Lead Factory's screening programme. One of the beneficiaries of these results is the Netherlands Cancer Institute, which stated that access to the European Lead Factory had fast-forwarded its oncology drug discovery work 'by several years'. Another list went to pharmaceutical company UCB, which noted that access to the 300 000-strong Joint European Compound Collection had provided it with a list of 'highly interesting' compounds that would allow it to take a fresh look at a particularly challenging drug target.

In 2015, the project was awarded the Bio-IT World Best Practices prize in the knowledge management category for its Honest Data Broker (HDB) system for managing intellectual property issues.

SUMMIT ultrasound device could prevent heart attacks and strokes

IMI diabetes project SUMMIT has developed a revolutionary new ultrasound device capable of identifying patients at imminent risk of a heart attack or stroke. Atherosclerosis occurs when plaques of fatty material build up on the inside walls of blood vessels. If a plaque breaks up, the resulting blood clot could block the blood vessel and so cause a stroke or heart attack. People with diabetes are at a greater risk of both conditions. Currently, detecting plaques that are at risk of breaking up involves expensive, risky procedures as medical devices are inserted into the blood vessels themselves.

The SUMMIT method is non-invasive, and for the patient it works in much the same way as a normal ultrasound, such as that used on pregnant women, although in reality it is much more complex. The SUMMIT team has validated the new ultrasound technique and it has been used in at least to new studies. Although SUMMIT developed the device with diabetic patients in mind, it could be used on all patients at risk of heart attacks and stroke. The researchers behind the device applied for a patent.

NEWMEDS tool spots patients involved in more than one clinical trial

IMI project NEWMEDS has launched an online tool that alerts those running a clinical trial if a patient is already enrolled in another trial elsewhere. Dubbed DupCheck, the tool is set to both improve patient safety during clinical trials and enhance the validity of trial results. Clinical trials do not accept patients who are already involved in another trial. This is partly to protect the patient - interactions between experimental drugs can be harmful and even fatal. Avoiding multiple trial enrolments also helps to ensure the validity of the trial results – a patient could be given the placebo in one trial and an active ingredient for the same condition in another. Alternatively, if a patient is taking active treatments in two trials, both trials will attribute any improvements (or adverse reactions) to their own trial drug. The scale of the multiple enrolment problem is not well understood, although some studies suggest that around 5% of patients taking part in large trials may be enrolled in the same trial twice, but at different locations. There is no systematic data yet on enrolment across studies.

DupCheck was created to tackle the issue. Those running trials can input or upload data collected into DupCheck, and the system alerts users of any potential duplicates. All patient data is encrypted and access to the site is restricted to those working on clinical trials. According to NEWMEDS scientist Jonathan Rabinowitz of Bar Ilan University in Israel, DupCheck is 'the only solution to this problem that has been qualified by a regulatory agency'. The tool is currently in free beta and is being systematically incorporated by companies participating in NEWMEDS and other companies globally across therapeutic areas. Trial sponsors can enrol at www.dupcheck.org. 'The benefits of DupCheck for the advancement of medical research are

commensurate with the growing number of studies using it,' says Professor Rabinowitz. 'It is precompetitive collaboration taken to a new level. Every sponsor wants others to use it.'

Trial of new antibiotic gets underway through COMBACTE project

In 2014, the first patient was enrolled into a clinical trial of a novel antibiotic run by IMI's COMBACTE project. The patient, who is based in Belgium, is the first participant in a Phase II 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. MEDI4893, which was developed by pharmaceutical company MedImmune, works by targeting a toxin produced by *S. aureus*. The enrolment of the first patient in the trial is the result of months of hard work on the part of the project partners, who come from academia and industry and worked closely together to set up the study.

'An increase in emergence of antimicrobial resistance and a steady decline in the number of novel antimicrobials being developed across industry have significantly limited treatment options for diseases like pneumonia caused by *Staphylococcus aureus*,' said MedImmune's Hasan Jafri, EFPIA Lead for the study.' Novel biologics under investigation such as MEDI4893 may offer a unique opportunity to help prevent these serious infections without inducing antimicrobial resistance. We believe collaboration with world-renowned experts such as those within COMBACTE is one of the best models to advance development in this area, and supports our commitment to bring novel and effective anti-infectives to patients.'

EU-AIMS highlights gender differences in autism

Autism affects different parts of the brain in males and females, reveals research from IMI project EU-AIMS published in the journal Brain. The findings suggest that researchers should stratify their results by gender and avoid assuming that results found in males also apply to females.

The team used magnetic resonance imaging (MRI) scans of both healthy adults and adults with high-functioning autism to determine whether the condition affects male and female brains in the same way or differently. They found that the brain areas that were atypical in women with autism are similar to the areas that usually differ between males and females, lending support to the idea that females with autism show neuroanatomical 'masculinisation'. In the men with autism, different brain areas were affected.

'This is one of the largest brain imaging studies of sex/gender differences yet conducted in autism. Females with autism have long been under-recognised and probably misunderstood,' commented Dr Meng-Chuan Lai of the University of Cambridge, who led the research. 'The findings suggest that we should not blindly assume that everything found in males with autism applies to females. This is an important example of the diversity within the 'spectrum'.

Open PHACTS on track for sustainability

The Open PHACTS project has taken further steps along the path to sustainability for its outputs by launching a new version of its drug discovery platform and ensuring the long-term financial and technical viability of the infrastructure. Open PHACTS has developed a powerful cloud-based data platform that allows scientists to draw on diverse databases to answer all kinds of questions relating to drug development. The new version of the platform provides access to two additional data sets and also provides extra information on compounds. Elsewhere, the Open PHACTS Foundation has ensured the sustainability of the Open PHACTS Discovery Platform by funding secure hosting and organising the ongoing technical development of the infrastructure. Looking to the future, the project is now ready to tackle new scientific challenges and use cases by integrating commercial data sources and proprietary in-house data into its platform, adding more platform functionalities, and enhancing connections with workflow tools and engaging existing and upcoming IMI projects and initiatives.

How green are your reactions? CHEM21 delivers toolkit to find out

The CHEM21 project has developed a metrics toolkit to comprehensively evaluate the sustainability of chemical and bio-chemical reactions. The toolkit uses a blend of both qualitative and quantitative criteria to assess how green a reaction is, as well as considering factors both upstream and downstream of the reaction itself, thus ensuring a truly holistic approach. The toolkit allows the user to assess/demonstrate the 'green credentials' of their research; benchmark it against current state of the art for a particular reaction or pathway and evaluate new methodologies to ensure that solving one problem does not give rise to others elsewhere in the process. The toolkit is specifically structured to cover everything from bench top research right through to industrial scale with increasing levels of complexity.

The acceptability of a particular process or reaction step is shown by a system of flags: green denotes 'preferred', amber is 'acceptable – some issues' and red is 'undesirable'. The purpose of the toolkit is to ensure a holistic approach is taken so that no parameter is looked at in isolation. CHEM21's aim is that this toolkit will encourage continuous improvement whilst training researchers to think critically about sustainability and environmental acceptability, making analysis of their synthetic routes and the use of greener and more sustainable techniques part of everyday practice. Details of the toolkit have been published in the journal Green Chemistry.

IMI projects implementing and contributing to data standards

In an era of increased transparency and data sharing, where data from multiple sources is pooled and analysed, data standards are essential to ensure accuracy, reproducibility and scientific integrity. For this reason, IMI strongly encourages its projects to use data standards. Furthermore, many projects are leading the way in the development of new standards. For example, the rheumatoid arthritis project BTCure developed standards for sharing data and samples between groups while other projects are proposing additions and extensions to existing standards in areas such as Alzheimer's disease (EMIF project) and tuberculosis (PreDiCT-TB).

IMI projects having an 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. In addition, some projects have been instrumental in triggering the development of regulatory guidelines. For example, the EU-AIMS project has obtained advice from the European Medicines Agency (EMA) on certain aspects of its Longitudinal European Autism Project, while safety project eTOX is in discussions regarding its computer tools designed to pick up on potential toxicity issues in potential medicines.

IMI project outcomes in use

Ultimately, IMI was set up to make a very real difference to the way new medicines are developed – to make the processes faster and more efficient. A number of the tools, models and methodologies generated by IMI projects are now being taken up and used by researchers in industry, academia, small business, and elsewhere. For example:

In a world first, the IMIDIA project on diabetes created human cell lines of pancreatic beta cells (which produce insulin and are affected in diabetes). The cell lines were created by an SME which is licensing them to multiple industry partners.

The PROactive project developed patient-reported outcomes (PROs) that assess the impact of chronic obstructive pulmonary disease (COPD) on patients. The PROs are now being used by several EFPIA companies' trials.

The Eu2P online training programme in regulatory science is becoming more popular

Through its partnership of 7 European universities, the EMA and French Health Authority, and 15 pharmaceutical companies, the Eu2P project offers flexible and personalised, fully online eLearning programmes at Certificate-, Masters- and PhD-levels. The programme covers medicines risk identification and quantification, medicines and public health, medicines risk communication, medicines benefit assessment, and regulatory processes. At the end of 2014, there were 58 participants on courses, of whom 41 are following the 2-year programme. Student enrolment has doubled from the first to the second were year.

4 The IMI project portfolio

The table below shows the full list of all 68 IMI projects, as of 15 September 2015, including links to their websites and their subject areas.

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
ADAPT-SMART	Accelerated development of appropriate patient therapies: a sustainable, multi-stakeholder approach from research to treatment-outcomes	http://adaptsmart.eu	Medicines Adaptive Pathways to Patients (MAPPs)
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		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/About-us/COMBACTE-CARE	antimicrobial resistance
COMBACTE-MAGNET	Combatting bacterial resistance in Europe - molecules against Gram negative infections	www.combacte.com/About-us/COMBACTE-MAGNET	antimicrobial resistance

Project acronym	Full project title	Website	Subject area
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
EBODAC	Communication strategy and tools for optimizing the impact of Ebola vaccination deployment	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
EBOVAC2	Development of a prophylactic Ebola vaccine using an heterologous prime-boost regimen Phase II	www.ebovac2.com	Ebola and related diseases
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	www.ep-ad.org	Alzheimer's disease

Project acronym	Full project title	Website	Subject area
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
FILODIAG	Ultra-fast molecular filovirus diagnostics	**www.filodiag.eu**	Ebola and related diseases
FLUCOP	Standardization and development of assays for assessment of influenza vaccines correlates of protection	**www.flucop.eu**	flu vaccines
GetReal	Incorporating real-life clinical data into drug development	**www.imi-getreal.eu**	relative effectiveness
iABC	Inhaled antibiotics in bronchiectasis and cystic fibrosis		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		green chemistry
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
Mofina	Mobile filovirus nucleic acid test		Ebola and related diseases

Project acronym	Full project title	Website	Subject area
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
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	www.mysprintt.eu	geriatrics

Project acronym	Full project title	Website	Subject area
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
VSV-EBOVAC	Vaccine safety and immunogenicity signatures of human responses to VSV-ZEBOV	**www.vsv-ebovac.eu**	Ebola and related diseases
WEB-RADR	Recognising adverse drug reactions	**http://web-radr.eu/**	pharmacovigilance
ZAPI	Zoonotic anticipation and preparedness initiative		infectious diseases

5 The IMI funding model

5.1 The budget

IMI is funded jointly by the European Union (represented by the European Commission) and the European pharmaceutical industry (represented by EFPIA,). Details of who contributes what are set out in the legislation creating IMI 1 and IMI 2.

For the **IMI 2** programme (2014-2024), the **total budget is €3.276 billion**, of which:

- **€1.638 billion** (half the budget) comes from the Health, Demographic Change and Wellbeing Societal Challenge of **Horizon 2020**, the EU's framework programme for research and innovation;
- **€1.425 billion** is committed to the programme by **EFPIA companies**;
- **up to €213 million** can be committed by **other life science industries or organisations** that decide to contribute to IMI 2 as members or Associated Partners in individual projects.

For the **IMI 1** programme (2008-2013), the total budget is **€2 billion**, of which:

- **€1 billion** comes from the Health theme of the EU's **Seventh Framework Programme** for Research (FP7);
- **€1 billion** comes from in-kind contributions **by EFPIA companies**.

Recipients of IMI funding

IMI funding supports the participation in its projects of organisations like universities, research organisations, patient organisations, small and medium-sized enterprises, and (under IMI 2) mid-sized companies. Details of who is eligible to receive funding can be found in the rules for participation for IMI 1 and IMI 2.

Contributing to IMI: the pharmaceutical industry

Large pharmaceutical companies that are members of EFPIA do not receive any EU funding through IMI. Rather, they contribute to IMI, mostly through 'in-kind' contributions. These contributions are mostly in the form of:

- **Personnel** - the time of staff employed by EFPIA companies directly working on IMI projects. This is important because IMI's success is based on the way it brings together the expertise of people working in large pharmaceutical companies with the expertise found in other organisations, like universities, SMEs, and patient groups.
- **Other direct costs** - consumables, equipment depreciation, samples, compounds.
- **Subcontracting** - e.g. for clinical trials, subcontracting to Clinical Research Organisations, subcontracting to data management companies, lab services, communication, project management support, etc.
- **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 project or to buy consumables or equipment.

Details of what companies can count towards their in-kind contribution and how this should be calculated can be found in the following documents:

- IMI 1 Financial Guidelines
- The principles underlying the rules for IMI 2 are set out in the IMI 2 legislation. Guidelines are being finalised and will be published when ready.

Associated partners

Under IMI 2, organisations other than EFPIA companies can become 'Associated partners' of IMI and make in-kind contributions to IMI in the same way as EFPIA companies. These in-kind contributions are then matched by IMI. This option works well for charities and philanthropic organisations that run their own research programmes and wish to support IMI projects in specific areas that are aligned with their own work. Like EFPIA companies, Associated partners do not receive any funding from IMI. Associated partners so far are:

- JDRF (foundation focused on tackling type 1 diabetes)
- Helmsley Charitable Trust (trust with a number of activities in health research that is involved in IMI's diabetes activities)
- Bill & Melinda Gates Foundation (foundation involved in a broad range of health issues that is contributing to IMI research on a vaccine for whooping cough)

5.2 Budgetary control

Half of IMI's budget comes, via the EU, from European taxpayers, and IMI takes the management of these funds extremely seriously. This section summarises how the correct management of these funds is managed internally and overseen by the IMI Governing Board, the European Commission's Internal Audit Service, the European Court of Auditors, and the European Parliament. It also gives an overview of the checks and procedures surrounding the in-kind contributions made to IMI projects by EFPIA companies. IMI constantly strives to improve its procedures with the goal of improving its management of its resources.

In-house checks and controls

The IMI Programme Office has an in-house audit and internal control team. They are responsible for setting up and implementing procedures and systems to ensure the correct management of IMI funds.

Prevention is always better than a cure, and with this in mind, IMI works to prevent recipients of IMI funding from making incorrect cost claims in the first place. For example, IMI provides all project participants with information and guidance to help them make claims correctly. IMI also runs regular workshops where participants can learn in detail what costs are eligible and how to avoid errors, and ask detailed questions on IMI's rules and procedures.

In addition, IMI's internal procedures and checklists are designed to ensure that when a cost claim is received from a project, errors are detected before payment is made (ex ante controls).

Finally, IMI sends external auditors into project participants' premises to go over cost claims with a fine-toothed comb. If they find that payments have been made in error, these are recovered.

The Governing Board

IMI's Governing Board is made up of equal numbers of representatives of the European Commission and EFPIA. It must approve both IMI's annual accounts and IMI's Annual Activity Reports (which include details of the outcomes of IMI's budgetary control and audit activities). Once approved by the Governing Board, both the accounts and the Annual Activity Report are published on the IMI website.

Internal Audit Service of the European Commission

The European Commission's Internal Audit Service is the official internal auditor for IMI and it reports to the IMI Governing Board. IMI draws on its findings and recommendations to update and improve its procedures.

European Court of Auditors

Another important level of budgetary control at IMI comes from the European Court of Auditors (ECA), which thoroughly scrutinises IMI's accounts and activities. The ECA's findings and recommendations are summarised in annual reports. IMI is given the opportunity to respond to the ECA report, and the report, together with IMI's replies, is published on the ECA website and in the Official Journal of the EU. IMI uses this report to further improve its procedures.

European Parliament

Finally, the European Parliament scrutinises how IMI has spent its money in a given year through the so-called 'discharge procedure'. The lead committee here is the Budgetary Control ('CONT') committee, which analyses the ECA report and other materials such as IMI's Annual Activity Reports. The CONT Committee's opinion is compiled into a report which is voted on at the committee level before being passed to the parliament as a whole (i.e. the plenary). The final decision on whether or not to grant discharge is taken by the plenary on the basis of the CONT report. Members of the European Parliament may also include recommendations which IMI uses to improve its procedures.

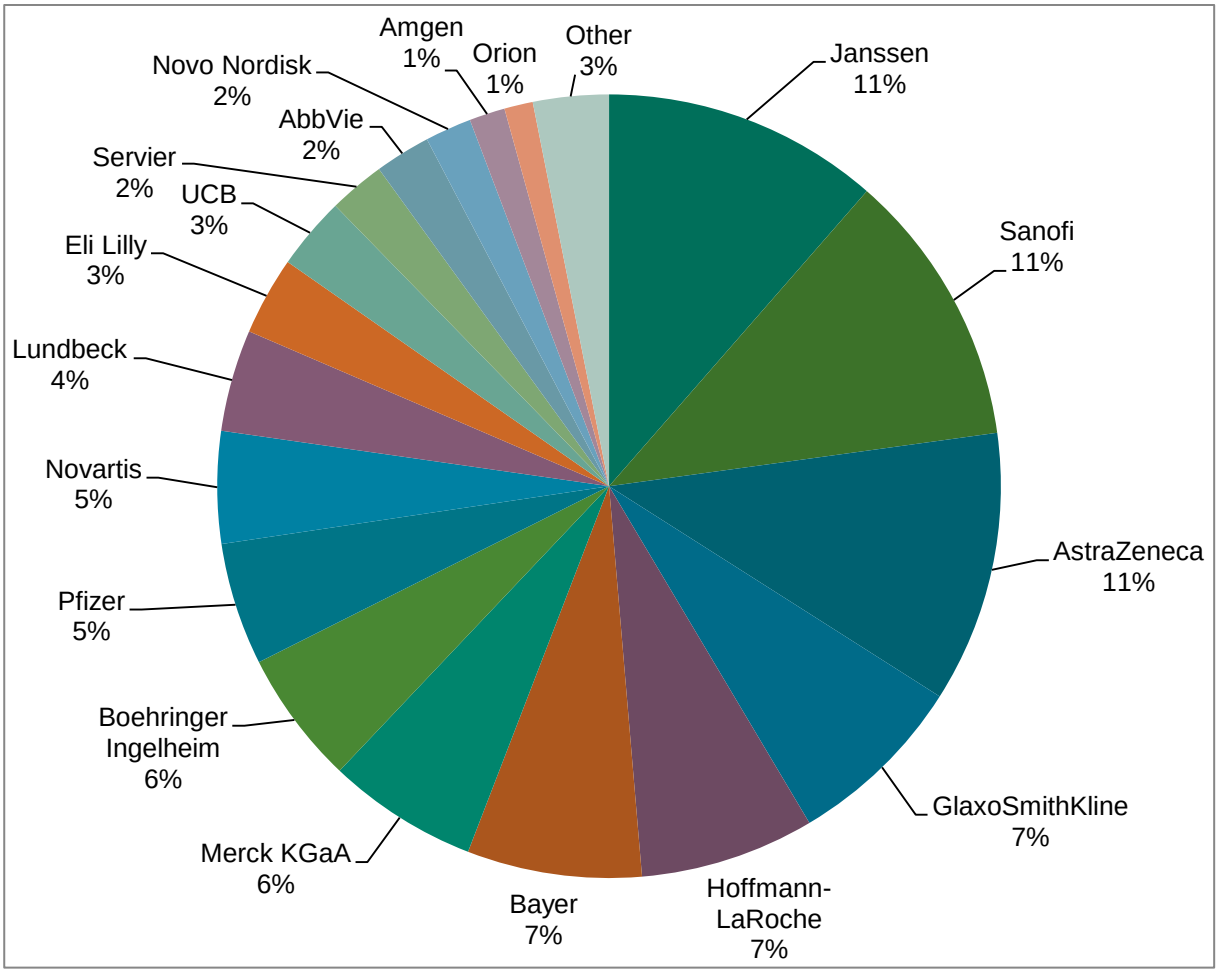
Update on IMI's ex post audit activities

As reported in the Annual Activity Report 2014, the implementation of audits of beneficiaries of IMI funding (finalised/launched) stood at 59% on 31 December 2014. By the end of August 2015, this figure had risen to 65%.

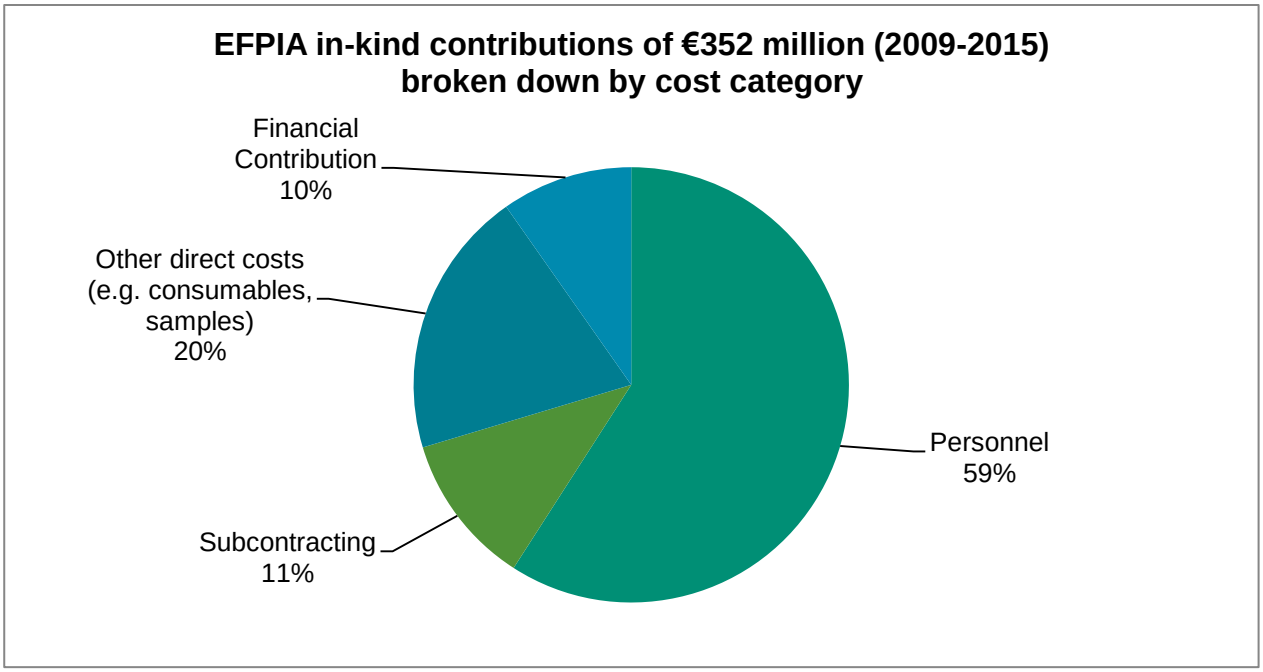
As the programme moves along, a gradual decrease in the error rate can be observed. By the end of 2014, the cumulative residual error rate was 1.98%. By the end of August 2015 had fallen to just **1.29%,** thereby confirming the downward trend.

5.3 EFPIA contributions to IMI

EFPIA companies do not receive any EU funding through IMI, but contribute to the projects 'in kind'. (Under IMI 2, Associated Partners such as non-EFPIA companies and other large organisations can also do this.) The following graphs show the **declared contributions of EFPIA companies to IMI, as of 31 August 2015**. (This represents an update of the data reported in the Annual Activity Report, which covered data up until the end of 2014).



The companies in the 'other' category are: Almirall, Astellas Pharma, Basilea, Bristol Myers Squibb, Chiesi Farmaceutici, Eisai, Esteve, Farma industria, Grünenthal, Infarma, Ipsen, Merck Sharp & Dohme, Sanofi Chimie, Sanofi Pasteur, Sigma Tau, Takeda, Verband forschender Arzneimittelhersteller, Vifor.



Oversight of EFPIA contributions to IMI

EFPIA companies do not receive any EU funding through IMI, but contribute to the projects 'in kind'. (Under IMI 2, Associated Partners such as non-EFPIA companies and other large organisations can also do this.) 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 carries out ex post audits of companies providing in-kind contributions.

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 exercise consists of two key elements: ex post review and financial audit.

The ex post review (the first step) entails reviewing 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 are able to conclude whether:

- the approach and basis of the actual calculations were as originally described in the accepted methodology;
- 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 grant agreement and excludes prescribed ineligible costs.

The second step is 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

By the end of August 2015, six ex post reviews and audits of selected EFPIA companies had been finalised and a further seven reviews and audits were ongoing. These engagements cover the largest contributors of in kind contributions to IMI JU projects, thereby ensuring extensive coverage of the programme.

The table below gives an overview of the status of ex post audits of the in kind contribution of EFPIA.

	Selected	Launched	Ongoing	Finalised	Total reported EFPIA contribut-ions in the period (€ million)	Total audited EFPIA contribut-ion (finalised audits) (€ million)	Direct coverage	Corrections (€ million)
2011					23.3			
2012	3	3	0	3	28.7	9.7	18.6%	0.9
2013	3	3	0	3	58.0	9.4	16.2%	- 0.6
2014	0	0	0	0	131.5	N/A	N/A	N/A
2015	7	7	7	0	110.7	N/A	N/A	N/A
Total	13	13	7	6	352.2	19.1	5.4%	0.3

Note that the figure for corrections includes both positive and negative adjustments, and the figure for direct coverage for 2012 is calculated on the basis of total EFPIA contributions in both 2011 and 2012.

This approach will be continued with other EFPIA companies in order to obtain additional risk-based coverage of declared in kind contributions on a multi-annual basis and over the lifetime of IMI JU.

Trust vs control – striking a balance

In all its budgetary control and audit activities, IMI strives to achieve a balanced approach to risk management. While IMI remains committed to achieving effective budgetary control, it does not want to overburden project participants with lengthy administrative procedures. When assessing IMI's activities, it is important to look at all indicators, including the effective delivery of excellent science, and advancing biomedical research for the benefit of patients, and in addressing challenging public health needs, such as antimicrobial resistance, dementia or diabetes.

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