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Uniting 6 000 researchers to crack medicine's toughest nuts – Michel Goldman

The challenge of tackling some diseases is too great for just one institution, company or country. The Innovative Medicines Initiative (IMI) is showing that by bringing people together, real progress can be made, according to Professor Michel Goldman, the initiative's executive director.

09 May 2014 - By PROFESSOR MICHEL GOLDMAN

Despite researchers' best efforts, there are still many diseases for which there is no cure. This is because the challenges of developing innovative medicines for these diseases are too great for any single institution, company or country to tackle alone. Our experience at the Innovative Medicines Initiative (IMI) demonstrates that by bringing together everyone involved in health research, public-private partnerships are well placed to make progress in even the most challenging areas, such as brain disorders, diabetes, and infections caused by drug-resistant bacteria. The good news is that this successful programme is set to continue under Horizon 2020, with a renewed focus on the needs of patients and on patient access to new drugs.

A partnership between the European Union and the European Federation of Pharmaceutical Industries and Associations (EFPIA), an industry association, IMI was created in 2008 with the goal of speeding up the development of better and safer medicines for patients. Some six years and 46 projects later, it is delivering exciting results that are helping to address some of the biggest challenges in health research and boost the competitiveness of Europe's pharmaceutical sector.

A new tool for diabetes research

Diabetes is a chronic disease in which patients' blood sugar levels are elevated because the beta cells (which store and release insulin) in the pancreas fail to produce enough insulin. It affects an estimated 366 million people worldwide, and patients are at risk of serious complications, including heart disease and stroke, and damage to the blood vessels, kidneys and eyes. Diabetes therefore has a major impact on sufferers' quality of life. Currently there is no cure for diabetes and treatment options are limited.

For many years, a major challenge for diabetes researchers was the lack of a human pancreatic beta cell line that survived, and so could be studied in the lab. Instead, scientists had to use rodent beta cell lines. Scientists from IMI's IMIDIA project developed a human pancreatic beta cell line that not only survives in the lab, but also behaves in much the same way as beta cells in the body. The result has been hailed as a breakthrough for diabetes research.

Action on autism

People with autism experience difficulties in social interaction and communication, and often have unusual repetitive behaviours. Although autism affects one child in 110 and is a lifelong condition, there are no drugs designed specifically to treat the main symptoms. IMI's EU-AIMS project is generating tools that will enhance our understanding of autism spectrum disorder (ASD), and ultimately pave the way for the development of new, safe and effective treatments for use in both children and adults.

EU-AIMS has already made a number of important discoveries. Among other things, it has found that some of the brain changes associated with autism could be reversible and revealed that autism affects men's and women's brains differently. Elsewhere, the project is contributing to new treatment guidelines being compiled by the European Medicines Agency (EMA), the European regulator, and setting up two of the largest-ever clinical studies of autism. The first study looks at the risk of autism in a younger brother or sister of a child with autism, while the second is tracking how symptoms change with age.

New drugs for bad bugs

Antibiotic-resistant bacteria kill 25 000 people in the EU every year, and cost the economy EUR 1.5 billion. IMI's New Drugs 4 Bad Bugs (ND4BB) programme represents an unprecedented partnership between industry, academia and biotech organisations to combat antibiotic resistance in Europe by tackling the scientific, regulatory, and business challenges that are hampering the development of new antibiotics. The programme currently comprises three projects and more are in the pipeline.

Assessing the benefits and risks of vaccines

Vaccines are one of the most effective public health measures out there, saving some two to three million lives worldwide every year. However, in Europe, public distrust in immunisation programs is limiting vaccine uptake, resulting in outbreaks of vaccine-preventable infectious diseases that had almost disappeared.

Bringing together Europe's diseases monitoring organisation, the European Centre for Disease Prevention and Control, and the EMA, as well as national public health and regulatory bodies, vaccine manufacturers and academic experts, the IMI project ADVANCE is paving the way for a framework capable of rapidly delivering reliable data on the benefits and risks of vaccines that are on the market. This framework should both help regulators and public health authorities make decisions on vaccination strategies, and also help maintain public confidence in immunisation as an effective public health tool to control infectious disease.

The future

IMI owes its successes to its open, collaborative model. In IMI projects, researchers from a number of pharmaceutical companies, universities, smaller companies, patient groups and regulatory authorities work together, sharing knowledge and ideas. The pharmaceutical companies pay for their own participation in the projects, for example by donating their researchers' time, while the other partners receive funding in cash, via IMI, from the EU's research programmes.

This successful model is set to continue. IMI2's proposed budget for the period 2014-2024 is over EUR 3 billion – half of this will come from Horizon 2020, while half will be from industry. What is more, the funding and reporting rules will be simpler, meaning researchers can spend more time in the lab and less time on red tape. In addition, there will be greater scope for large companies from other sectors (such as biomedical imaging, medical information technology, diagnostics and animal health) to contribute to IMI2 projects. Finally, and most importantly, there will be a renewed focus on the needs of patients and society, and while IMI2 will continue to focus on improving the development of new medicines, there will also be a strong emphasis on ensuring that, once developed, new medicines reach patients as quickly as possible.

Innovative Medicines Initiative

The Innovative Medicines Initiative (IMI) is one of seven Joint Technology Initiatives set up by the European Commission to fund research by combining public and private financing.

The IMI has united around 6 000 researchers across Europe and includes 650 academic and research teams, as well as over 400 teams from big companies, in the fight against some of the world's most intractable diseases.

IMI2 is aiming to develop new treatments such as vaccines or antibiotics, and improve the success rate of clinical trials into diseases like Alzheimer's by 30 %. The initiative will launch its first calls under Horizon 2020 on 9 July 2014 at a joint event in Brussels.

For more details: #IMI2.

More info

Innovative Medicines Initiative (IMI)

Innovative Medicines Initiative 2 factsheet

IMI YouTube channel

European Federation of Pharmaceutical Industries and Associations

European Medicines Agency

IMIDIA

EU-AIMS

ADVANCE

New Drugs 4 Bad Bugs