

VIBTIMES

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10 YEARS ERC

10 Years European Research Council (ERC)

The European Research Council (ERC) is celebrating its tenth anniversary this spring. This unique EU funding mechanism was launched in 2007 under FP7, and has since funded more than 7,000 top researchers in all fields of research and at all stages of their careers. Together with the first ERC president Fotis Kafatos, VIB was one of the important architects of this brand-new type of European funding.

It is then no surprise that VIB has always recognized the importance of ERC serving its own mission, as the principles guiding ERC grants show clear synergy with those of VIB: focusing on frontier/breakthrough research; 'excellence' as single evaluation criterion, evaluation through peer review panels; providing critical mass for researchers in the form of long-term and sufficiently large budgets; bottom-up support covering all fields of science; the project topic is at the discretion of the PI (no pre-defined topdown programs); supporting individual teams (PI) rather than international networks and simple and straightforward application documents and grant reporting.

VIB has encouraged group leaders at all levels to apply for ERC grants, and supports them during the application, grant negotiation and reporting phases. We are very proud to have had our first ERC-funded researchers from the start in 2007, even in the face of fierce competition during ERC's first application year. A decade later, we have signed a total of 38 ERC grants, of which 28 are still running in 2017. In addition, 5 Proof of Concept (PoC) grants were awarded to valorize the results obtained under these ERC grants.

In total, these 43 VIB ERC grants have created research jobs for 162 people (PIs, postdocs, PhD students and technicians), and comprise about 8 Mio in 2016.

In this VIBnews, you will read the stories of several of our ERC grantees and discover how ERC grants have influenced their research careers. In the alumni interview, together with her partner in life and science, Jiri Friml, Eva Benkova will describe her ERC experience during the launch year of 2007. She was able to compete with the initial tsunami of 9,000 applications.

But more than a funding principle, ERC proves to be a multiplier with increased visibility of the research in academia and beyond.

Lieve Ongena, Senior Science Policy Manager





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AN INTERVIEW WITH ERC PRESIDENT JEAN-PIERRE BOURGUIGNON: “WHEN SCIENTISTS PURSUE THEIR PASSIONS, BREAKTHROUGHS HAPPEN”

10 years have passed since the European Research Council was born in 2007, when it had for its first year a 'limited' budget of EUR 300 million to distribute to Europe's brightest minds. A decade later, the ERC has proven itself invaluable to the betterment of science across Europe and commands an annual budget of EUR 1.8 billion – an incredible story of growth never before seen in this field. On this important anniversary, it is the perfect time to check in with ERC president Jean-Pierre Bourguignon and find out more about the past, present and future of this star in the firmament of European research funding.

It's been 10 years since the ERC was formed. In your opinion, do you think the Council's achievements in the last decade have lived up to expectations?

Jean-Pierre: “Absolutely, and the ERC even surpassed them, thanks to the dedication and commitment of the ERC's Scientific Council members, the ‘founding mothers and fathers’ of the ERC, and all people who worked for it. The project was created from scratch and respected a bottom-up approach from day one. The goal was to provide long-term support to ambitious projects proposed by individual researchers themselves. The demand is very high; researchers submitting proposal to ERC competitions have a 10% success rate, which is highly competitive. By now, the ERC has already funded some 7000 leading researchers across Europe, pursuing their best scientific ideas.

Evaluators working in ERC panels are superb and make the difference here. The peer review evaluation process for candidate projects is very carefully designed and performed by top-class researchers from all over the globe. As a result, after just 10 years, the ERC has an established reputation for quality. Usually, something like this takes several decades to achieve.”

What do you think is a good indicator that you're 'doing it right' in terms of sponsoring excellent science?

Jean-Pierre: “Over the last few years, according to recent independent studies, over 70% of the projects the ERC has funded resulted in scientific breakthroughs or major scientific advances. That

is strong evidence of the ERC success. In Horizon 2020, the European Commission's new framework program which started in 2014 and which the ERC is a part of, the structure of the ERC was left virtually untouched and its budget confirmed. This is excellent proof that the scheme is good. A new feature, that came about as two existing functions were merged, was the creation of the position of the ERC president. A core part of my job is to maintain the relationship between the European Commission and the ERC Scientific Council, which is independent.

Even more compelling is the fact that the ERC budget will grow between 2017 and 2020, enabling the ERC not only to fund even more talent in Europe, but also to develop new tools and create more diverse programs. Synergy is one example: this grant scheme – to be re-launched in 2018 – will be awarded to multi-scientists, multidisciplinary projects, tackling very ambitious scientific challenges”.

What do you think will be the most significant challenges for the ERC in the years to come?

Jean-Pierre: “In my opinion, keeping the ERC's world-leading position is number one on the list of challenges. Being at the top is not an excuse to become complacent. We must continue to convince the best researchers in the world to submit and evaluate projects – it's important for scientists to be encouraged to do so.

We also face challenges present within the wider scientific community, such as fostering a healthy gender balance. With 26% women applicants, we're doing OK, but we want to go further (without



Jean-Pierre Bourguignon

departing for our commitment to have quality as sole selection criterion). Another challenge is to support and encourage scientists from European countries who are currently underrepresented in ERC calls.

Another huge and ongoing priority is to make the case that 'blue sky research' – a bottom-up approach to research that allows scientists to pursue answers to the questions that compel them most – is one of the best ways of furthering the scientific and economic success of the EU. With that objective in mind, the ERC offers a top-up grant, called Proof of Concept, to ERC grantees to help them on their way to bring their scientific successes closer to the market or tackle societal challenges."

Do you think VIB and other EU-LIFE centers of excellence have important roles to play in overcoming these challenges?

Jean-Pierre: "Institutions like VIB are vital to the training and support of researchers – at the highest level and in the best environments. I am greatly impressed by EU-LIFE's excellent support of young scientists; 2/3 of all ERC funding goes to early- to mid-career researchers.

Nurturing the next generation of researchers is critical to our response to challenges and obstacles. Institutions like VIB must give students the very best support and create a stimulating atmosphere that encourages ambition – which resonates in tune with the overarching mindset of the ERC itself."

GOOD TO KNOW: 3 COMPELLING ERC FACTS

I. ROOTED IN THE MARIE CURIE PROGRAM

Under the seventh Framework Program (FP7), active from 2007 until 2013, the 'Marie Curie Excellence Grants' – also known as EXT grants – aimed at junior group leaders wanting to start up their own research groups in European countries. This was the first time that EU funding was dedicated to 'single' excellent PI's.

While these excellent grants were only available for Junior PI's, the size was very similar to the current ERC Starting grants. However, they came with a mobility requirement: Junior PI's had to start their own lab in another European country, more specifically in the institute most appropriate to their needs. Because this program focused on excellent research, VIB supported a number of senior postdocs abroad to take this opportunity and move their research team to Belgium: Nico Callewaert (from ETH Zürich to the VIB-UGent Center for Medical Biotechnology) and Patrik Verstreken (from Baylor College of Medicine, Houston to the VIB-KU Leuven Center for Brain & Disease Research). It paid off: both scientists were able to attract subsequent ERC Starting and/or Consolidator grants, and even became directors of their research centers.

2. THE MULTIPLIER EFFECT

VIB and ERC share common goals: to give excellent researchers the necessary tools to carry out world-class research and to fill important knowledge gaps through bottom-up long term funding. This unique funding principle proved to be very rewarding: ERC funding allowed VIB researchers to take a big leap forward and to start up game-changing research programs. As a result, ERC programs resulted in 200 published papers, with several contributions in Nature, Cell, Science and other top journals in life science fields such as Cancer Cell, Neuron, Nature Immunology, Plant Cell, Nature Structure & Molecular Biology and many more. With over 6.000 citations to these papers to date, ERC projects are highly visible in the academic world. And it goes beyond academia: not only did we obtain 5 additional ERC Proof of Concept grants, but we were also able to file 14 patent applications and sign several industrial agreements resulting in further translation of the research outcome into applications.

Bottom-line: much more than a funding vehicle, ERC proves to be a multiplier. It leads to increased visibility based on breakthrough papers, creates room for patentable inventions and generates increased interest from industry. As many of these projects started just a few years ago, we can expect an increasing impact in the years to come.

3. ONE PLUS ONE EQUALS THREE

Several European centers of excellence carry a double (or even multiple) affiliation. This results from a strategic choice between two or more organizations to collaborate with the aim of creating a better research environment. In this way, individual PI's have access to the necessary tools to make groundbreaking discoveries. That is precisely why VIB was created in 1996 as a joint venture with the Flemish universities, with a clear impact on the research quality after 20 years.

After 10 years of ERC, the 'ERC grant' clearly became a label of excellence: it puts PI's in the spotlights. In addition, the number of ERC grants per institute is a recognition of the quality of universities and institutes involved. Although ERC grants are administratively managed by VIB, the prestige of the grant also shines on the hosting university. That's why we always mention both the affiliations – VIB and the university – of the ERC grantee and its outcome in our communications.



HOW VIB AND EU-LIFE PITCHED IN TO SAFEGUARD ERC GRANTS

Many of us are familiar with time-consuming grant applications – and, sometimes, with the disappointment that comes with missing out on funding. At the same time but on a higher level, clusters of research institutes are sparing no effort to safeguard funding for research and innovation. This became quite clear in 2015, when the European Research Council (ERC) was nearly the victim of considerable cost-cutting. EU-LIFE, the alliance of top European life sciences research centers, pulled its weight and zealously underlined the importance of investments in R&D to Europe’s competitiveness. With success – but further caution is required.

With a total budget of € 13.1 billion for the period 2014-2020, the ERC is within the first pillar (‘Excellent Science’) of Horizon 2020, the EU program for Research and Innovation. Its funding has proven to be essential to attracting the best investigative talent to work in EU centers and to retain some of the top scholars. No wonder the so-called Juncker’s plan, which aimed at diverting € 2.7 billion from Horizon 2020 to fund new innovation projects, came as a bitter surprise to many European scientists and institutes. The ERC alone was predicted to be cut by € 221 million.

EU-LIFE PUTTING THE PRESSURE ON

It is precisely ERC funds that turned Europe into an attractive place to do research, competing successfully with the US. And for many institutions and scientists in EU countries, ERC grants are the only viable sources of funding for basic research. Among leading scientists, there was a consensus that the Horizon 2020 cuts would jeopardize the newly-gained European competitiveness – especially at a time when China, Brazil, Korea, India and other countries are massively investing in R&D.

Shortly after Juncker’s announcement, Europe’s science community spoke out with one clear voice. A number of papers advocated maintaining the existing budget – and if anything, budgets for science would have to be higher if Europe intends to maintain its leadership in knowledge-based sectors. One of the opinions that made waves

was a press release by EU-LIFE, the cluster of top European life sciences research centers of which VIB is a founding member.

“Investing less in Europe’s flagship programs such as the ERC is probably the worst thing to do during current economic instability. It should be the other way around: only by making even larger investments in competitive areas are we going to invert the spiral.”

Jo Bury, EU-LIFE chair and VIB Managing Director, in an EU-LIFE press release on February 17, 2015

MAINTAIN THE EFFORTS UNABATED

This and other influential opinions have ensured that, ultimately, the plan was adjusted and the necessary ERC funding was secured. However, this doesn’t mean scientists can rest on their laurels. Debates on Horizon 2020’s successor, the so-called new Framework Program (FP9), have already started. In this respect, it is vital that VIB, embedded in the powerful EU-LIFE alliance, continues to underline the huge importance – and positive outcomes – of more R&D funding, including the ERC schemes.

Research grants typically allow taking a small step forward on a path you are already following. My ERC starting and consolidator grants allowed me to take a big leap into a new, exciting direction.

Kevin Verstrepen, VIB-KU Leuven Center for Microbiology

ERC has been a game changer for my lab and myself. These grants are definitely not easy to obtain, but I felt encouraged after the scrutiny that my proposals were put through and stronger after being questioned by the neuroscience evaluation board members on the topics I proposed in my grants. The process has given me more confidence in our research lines and ideas.

Patrik Verstreken, VIB-KU Leuven Center for Brain & Disease Research

An ERC grant reflects broad support and trust of the research field towards you and your ideas, which is very rewarding. It allows researchers to pursue their dreams and tackle biological questions at a scale and depth which is simply not achievable otherwise.

Daniël Van Damme, VIB-UGent Center for Plant Systems biology

The ERC grant offers a funding scheme that allows PI's to run a coordinated 5 year research program at a scale and level of integration that would be very difficult on separate grants or fellowship. I believe ERC grants hit a good balance between project- and career-based science funding, with transparent selection procedures.

Han Remaut, VIB-VUB Center for Structural Biology

Receiving the ERC Starting Grant is one of those special moments where you feel both supported by the scientific community and excited by the opportunity to tackle the next big question in your line of research.

Bert De Rybel, VIB-UGent Center for Plant Systems biology

The ERC grant gave us the opportunity to start up an entirely new research line and allowed us the flexibility to attract junior scientists with specific expertise, for whom no fellowship could be obtained at such a 'premature' stage of the project.

Peter Carmeliet, VIB-KU Leuven Center for Cancer Biology

#ERCIOYRS

Obtaining ERC funding puts an internationally visible European seal of quality on a research line. It enables us to dare to tackle risky research ideas that have the potential to make real breakthroughs in our respective fields.

Moritz Nowack, VIB-UGent Center for Plant Systems biology

The future of Europe is more innovation, more excellence, more research and development: in short, more ERC!

Adrian Liston, VIB-KU Leuven Center for Brain & Disease Research

The recognition associated with an ERC grant allowed us to recruit top scientists and maintain a stable team over a prolonged period. I consider both as key aspects of a successful research group.

Diether Lambrechts, VIB-KU Leuven Center for Cancer Biology

The high-risk/high-gain nature of the ERC grants allowed us to perform game-changing research expanding the borders of current knowledge.

Dirk Inzé, VIB-UGent Center for Plant Systems biology

ERC has allowed us to provide proof for a wild idea (plants duplicated their genomes and survived while dinosaurs went extinct). This 'idea' is now being widely adopted and is inspiration for several novel biological hypotheses in evolutionary biology.

Yves Van de Peer, VIB-UGent Center for Plant Systems biology

My ERC grant allowed me to tackle a very high risk, high gain project before I had the results that would convince other funding sources. It also helped in attracting great researchers to my lab.

Joost Schymkowitz, VIB-KU Leuven Center for Brain & Disease Research

ERC has been absolutely essential to my career. ERC funding catalyzed my move into astrocyte research –giving me the freedom to immediately take on 'high-risk, high-gain projects' in this area.

Matthew Holt, VIB-KU Leuven Center for Brain & Disease Research

3 ACCOMPLISHED VIB SCIENTISTS RECEIVE ERC CONSOLIDATOR GRANTS

Established scientists with 7 – 12 years of research experience demonstrating that they can run their own labs are eligible for Consolidator Grants from the European Research Council. This funding, specifically targeting high risk/high gain projects, totals approximately 2 million euro per scientist. In November of 2016, three of our very own top researchers, Stein Aerts (VIB-KU Leuven Center for Brain & Disease Research), Martin Guilliams (VIB-UGent Center for Inflammation Research) and Rouslan Efremov (VIB-VUB Center for Structural Biology) were awarded Consolidator Grants, bringing the total number of such ERC grants won by VIB scientists up to 43.

Stein: "Receiving such a prestigious grant is enormously stimulating. We will use this grant to continue our work on decoding enhancer logic, as well as to explore more risky ideas and new areas such as mouse models, deep machine learning, proteomics and synthetic biology. Huge thanks to all our collaborators – it has been great fun so far, and we have exciting times ahead!"

Martin: "Getting the ERC is wonderful! The whole team worked very hard for it. It's exciting to realize that with this grant in combination with the excellent scientific environment of the VIB-UGent, we will be able to execute the ambitious research project we've been dreaming about."

Rouslan: "I see this grant as a fantastic opportunity to pursue ideas I've been nourishing for years, and also as a sign of confidence from the scientific community. It is my responsibility to bring these ideas to life."



Stein Aerts



Martin Guilliams



Rouslan Efremov



Mohamed Lamkanfi

2 INNOVATIVE PROJECTS AWARDED ERC PROOF OF CONCEPT GRANTS

Like VIB itself, the European Research Council is keen on taking excellent ideas at the frontiers of science all the way to commercialization and real societal benefit. The Council's Proof of Concept Grants are awarded to recent winners of ERC grants working on high-potential research projects to bridge the chasm between scientific exploration and commercial innovation. Previous POC grants have been awarded to projects undertaken by the labs of Jan Tavernier (VIB-UGent Center for Medical Biotechnology), Matthew Holt (VIB-KU Leuven Center for Brain & Disease Research), Jan Cools (VIB-KU Leuven Center for Cancer Biology) and Peter Carmeliet (VIB KU-Leuven Center for Cancer Biology).

Two new projects will be joining their ranks in the form of Mohamed Lamkanfi's (VIB-UGent Center for Inflammation Research) development of a diagnostics tool for Familial Mediterranean Fever, and Massimiliane Mazzone's (VIB-KU Leuven Center for Cancer Biology) research into a blood-based test for diagnosis

of colorectal cancer. We asked them both to tell us a little bit about their projects and what these grants mean to their continuing research.

Why did you decide to go ahead and apply for a Proof of Concept Grant?

Massimiliano: "I liked the idea of linking EU support to my main

ERC grant that could help us to use our findings to design and carry out real clinical tests that are meaningful for patients."

Mohamed: "On my side, considering the need for more diagnostic options for these patients, there was a clear impetus for us to ask ERC to support our efforts to study how

our basic research findings can be put to work as a practical diagnostic assay.”

And for your grant-winning projects, was your close connection to a university hospital key to the success of the research?

Massimiliano: “This connection was crucial, I couldn’t have done it without Hans Prenen at UZ Leuven, with whom we’ve been collaborating for the last 5 years. His clinical knowledge and our basic and translational science was the perfect combo, leading to important discoveries, good visibility in the scientific community and support from the outside world.”

Mohamed: “I agree with Massimiliano, it was extremely important. We worked closely with Joke Dehoorne and Filomeen Haerynck at the University Hospital in Ghent, as they are in the unique position of actively seeing patients. Working with them opened

doors and provided other points of view and novel ideas.”

What will you do with the extra funding?

Massimiliano: “We’re planning to develop a proof-of-principle that our diagnostic tool can work in the general population in a prospective study, and that it can be combined with or presented as an alternative to the FIT test.”

Mohamed: “We want to extend our initial proof-of-concept studies in 13 patients to a larger patient group, and we will use the ERC funding to study the opportunity for commercial development with an industrial partner and/or clinical implementation of our FMF diagnostic test with clinical labs.”

Is communication important in these kinds of projects, and do you need to be in touch with the population collaborating with you?

Massimiliano: “Communication channels definitely played a role

in sensitizing the population to the medical need for fast CRC diagnosis, which means a high chance of being cured. The media’s pickup of the information is also relevant to gaining support from granting agencies as well. Even so, patient enrollment was done by the hospital, although many people expressed their interest in participating by contacting us personally.”

Mohamed: “Many people aren’t aware that they can make essential contributions to groundbreaking research even though they would be very interested in doing so. This makes communication very important to this project. We actively committed to communication through the press, through hospital channels and through www.vib.be/ikwerkmeem.”





Eva Benková and Jiří Friml

ALUMNI IN THE PICTURE

WE ENJOY EACH OTHER'S SCIENTIFIC SUCCESSES, INCLUDING ERC GRANTS

Eva Benková and Jiří Friml share their lives. Privately and professionally. They are both tenure professors at the Institute of Science and Technology in Vienna, fascinated by hormonal interplay and signal transduction in plants, alumni from the VIB-UGent Center for Plant Systems Biology (2007-2012), and both are ERC Grantees.

Nevertheless, they run their own research groups. Eva studies the molecular mechanisms and principles underlying hormonal interactions in plants. Jiří is mainly focused on how the plant hormone auxin regulates development.

How difficult has it been as a married couple to develop independent careers?

Jiří: "It is extremely common in the research world that both partners are scientists. For obvious reasons: if you are young and have the ambition to become a dedicated and successful scientist, you live in the lab. The probability that you find your girlfriend there is far higher than anywhere else."

Eva: "The advantages are that we have more understanding for each other's needs and choices. Also we both have flexible working hours and duties, which is a benefit for family life, especially when you have children. We also share information if one of the two goes to a meeting. So, for many practical aspects, it has advantages."

Although you work at the same institute, you both run independent labs. That is a conscious choice?

Jiří: "Absolutely. That was even one of the important reasons why we joined VIB in 2007. At that time, I was already a full professor at the University of Göttingen and the head of the Department of Plant Cell Biology. If Eva wanted to continue doing research, she needed to join my department. I did not want to be her boss and she felt ready to set up an independent career. And that was exactly what VIB offered her. A lucky coincidence was that at the same time the Flemish Odysseus program started, which gave me the opportunity to move to Ghent as well. Of course, other factors also played: the research environment, the international reputation of the VIB-UGent Center for Plant Systems biology, the great colleagues that we already knew and collaborated with, the perspectives on funding, ... all these elements created the perfect mix."

Why did you leave in 2012?

Eva: "There were mainly personal reasons. The kids were growing up and we realised we had to settle somewhere long term. Furthermore, our parents were getting older and they really needed our attention. Both families live in the provinces of the Czech and Slovak Republics respectively. It was far from obvious to regularly take a plane from Brussels to visit them. It is much closer now that we live in Vienna."

Jiří: "From a scientific point of view, it may have been easier and more efficient for me to stay in Flanders, but one has to make the balance between professional and family life and IST was also very attractive in their dedication to basic research and strong interdisciplinarity."

Eva, you received an ERC Starting Grant in 2007, as one of the first at VIB and in Europe. How important has this grant been for you?

Eva: "For me, the call came at the right moment in my scientific career. I had in mind what I wanted to do. This crystalized further by writing the application. The 5-year grant gave me the opportunity to set up my research group. It allowed me to focus on the main questions, without being sidetracked. In retrospect, it formed the basis of my research program in the long run. Even today, I still profit from that basis."

Jiří, you obtained an ERC grant in 2012. Did this grant have a similar impact on your career?

Jiří: "For Eva the ERC grant was certainly the turning point in her career. My ERC grant had a lower impact. The lab was already established; many projects were up and running etc. What the ERC grant meant for Eva, was a grant in 2002 from the Volkswagen Stiftung for me. That grant really put me on track. Of course, the ERC grant was very welcome. It provided continuity on a longer term. Such a grant always makes a difference."

Have your research interests changed since you left VIB?

Eva: "It is not because you change institute that your research changes overnight. There is a gradual evolution. We both still have common projects with ex-colleagues in Ghent. "

Jiří: "About 70% of the research we are doing now, is a continuation of the research lines that we started at VIB. Because of the different focus of the IST in Vienna, the presence of colleagues with other ideas and the different technological environment, we embarked on new projects that we would never have started in Ghent. "

Is the research climate different in Austria compared to Flanders?

Jiří: "It is more difficult to get national funding in Austria because there is much less orientation towards plant science. The resistance against GMOs is bigger. Also, IST is more oriented towards basic science, so we are less encouraged to do applied research. I don't want to judge whether that is an advantage or a disadvantage, but there is a difference in philosophy between VIB and IST. On the other hand, we also have fantastic central facilities here, efficient administrative support and a friendly research environment. So there are currently no strong incentives to move elsewhere."



STELLAR CROSS-DOMAIN INSIGHTS FROM PETER CARMELIET AND HIS TEAM

Researchers from the lab of Peter Carmeliet (VIB-KU Leuven Center for Cancer Biology) made an unexpected discovery: the meninges, previously thought to be simply a protective membrane on the outer surface of the brain, actually contains cells that give rise to neurons. Before this finding, scientists thought that these types of cells were only produced by the body during development. The research was published in Cell Stem Cell and gives rise to interesting leads for further investigation.

In another study, which was published in Nature, Peter's team investigated the mechanisms behind the development of lymphatic vessels, discovering that an enzyme that regulates lymphatic cells' use of fatty acids is critical to the process. Since tumors and other diseases are associated with increased levels of lymphangiogenesis – the creation of new lymphatic vessels – this finding could lead to new therapies that block the effects of this enzyme.

To find out a little bit more about the successful productivity of his lab, take a look behind the scenes of projects and explore what the future might have in store for this research, we asked Peter Carmeliet to answer a few questions.

Could this new source of neural progenitor cells in the meninges provide opportunities to treat disease or injury of the brain?

Peter: "An intriguing question indeed. To answer it, we still have more work to do. For example, it's necessary to better understand the molecular mechanisms that cause these cells to be activated, differentiated and moved. We also need to investigate the meninges of the spinal cord, to see if it contains neural progenitors. Can these cells be transplanted *in vivo*? Can they be induced to become different types of neurons *in vivo*? These are all interesting tracks for future research."

The Cell Stem Cell paper is the first publication using cutting-edge single cell RNA sequencing in VIB. What are the advantages of this technology?

Peter: "Most importantly, this method allows us to identify very tiny cell subgroups within large populations of cells. The cells we were targeting make up only a tiny fraction of the cells in the meninges, and without single cell RNA sequencing, we would have never been able to discover

and identify them. Though mapping out the single cell gene expression landscape is the first necessary step, scaling single-cell genomics from phenomenology to mechanism and function is the next challenge."

Regarding your paper on lymphangiogenesis, what triggered you to do research outside the main interests of the host lab?

Peter: "Nothing was known about the metabolism – or the rate of consumption of fatty acids – of lymphatic endothelial cells (LECs). In fact, since LECs are present in environments with lower oxygen levels, we assumed that their metabolisms would be anaerobic – and it's exactly the opposite. They rely on these fatty acids and aerobic pathways to multiply and differentiate. These findings strengthen the idea that targeting the metabolism of vascular cells may be an important translational path."

2016 was a hugely productive year for you – over 30 publications in leading academic journals, including the following top tier publications: 1 Cancer Cell, 4 Natures, 1 Science, 1 Cell Stem Cell, 4 Cell Metabolisms, 2 Cell Reports, 1 Science Immunol, 2 Nature Comm, 1 Ann Rev Physiol, 1 Nat Rev Neurol, 1 editorial in Dev Cell and 1 Cell Metabolism, and numerous other papers. Do these papers have a common focus?

Peter: "We've focused on cellular metabolism of vascular cells in the last several years, although we've collaborated on studies involving bone cells, immune cells and others. About 7 years ago, we chose to target endothelial cell metabolism, which had been previously overlooked. As a result, we completely restructured our lab and set up a metabolomics core facility, attracted new talent,

etc. All this effort is paying off hugely in papers that explore uncharted territory across domains.”

And what is the scientific versus the social relevance of these papers?

Peter: “Our studies provide unprecedented insight into how vessels are formed and shine light on metabolic pathways that control vessel formation in health and disease. Since there are over 4,000 metabolic enzymes and transporters, targeting them is a rich resource for drug development.”

How do you manage to oversee all those projects while publishing papers simultaneously?

Peter: “I sometimes indeed wonder how to do this best, but I don’t feel overwhelmed. I’m too fascinated. I’m also lucky to be working with a wonderful team of excellent, knowledgeable, motivated, focused, time-management efficient and well-organized staff, senior colleagues, junior scientists and lab technicians to whom I delegate a lot, and whom I involve in the work at all levels - three brains are simply smarter than one alone. This productivity is a team effort, and 2016 was a vintage year.”

The research topics you choose are far from obvious. How important is out-of-the-box thinking and risk-taking in research, and where do you find the funds for it?

Peter: “Asking ‘high-gain’ questions is always risky. What matters is that you judge the risk and weigh the gain in order to make an informed decision to move forward relentlessly. These decisions require long-term commitment before any success can happen. Focused minds, a willingness to readjust strategies and find creative solutions, careful reconsideration, perseverance and strong motivation render the risk less risky. Also, the award of mining uncharted territory offers strong perspectives to embark on risky journeys. We keep an eye open for new opportunities, and support talent regardless of education, experience or seniority - this always pays off.

High profile research requires large funds, and like everybody else, we spend a lot of time writing grants and fellowships to perform innovative research (with rejected grants being equally part of our daily life experience). But we also pay great

attention to careful budgeting, and with careful consideration, plenty of creativity and mutual discussions, budgets are reduced and the project completed at much higher efficiency.”

Wong et al., Nature 2016

Bifari et al., Cell Stem Cell 2016

Cantelmo, et al., Cancer Cell 2016



Peter Carmeliet

BRINGING THE CORE OF FUNDAMENTAL LIFE SCIENCE TO THE FOREFRONT

The immunology lab of Bart Lambrecht and Hamida Hammad (VIB-UGent Center for Inflammation Research) is constantly churning out groundbreaking new insights relevant to a wide range of disease-fighting applications. But since this research often has to do with the molecular interactions of tiny particles, linking breakthroughs with familiar ideas can be quite a challenge. Such is the case with a paper they recently published in Nature Immunology, in which they investigate the mechanisms behind the development of immune cells in the spleen.

Bart and Hamida discovered that a protein, Taok3, is needed for immature B cells – which produce antibodies to fight disease – to develop into MZB cells, named so because they are found in the ‘marginal zone’ of the spleen. To test their hypothesis, the research team demonstrated that mice genetically lacking the protein Taok3 produced other types of B cells in their spleens, but not MZB cells. As a result, they were more vulnerable to infection by pneumococcus, a bacterium responsible for serious respiratory illness.

We asked Hamida to tell us a little bit more about the project, and about what these tiny details mean for the greater world of life sciences and human medicine.

What do you think is the most important element of this research?

Hamida: “We rely on B cells to make antibodies that fight harmful pathogens, but not all B cells are alike. We already knew that a certain type, MZB cells, were located in the spleen, but we weren’t sure exactly what caused them to become this type of B cell. We were surprised to discover that a previously-unknown protein was crucial for MZB development, and we demonstrated it *in vivo*.”



Bart Lambrecht



Hamida Hammad

Was there a particular 'eureka!' moment during the study?

Hamida: "Yes – that moment came when we observed that Taok3 was controlling the surface expression of the ADAM10 on immature B cells, and that only ADAM10-expressing cells could become MZB cells and no other type of B cells."

Was there a surprising turn of events in the story?

Hamida: "We worked with VIB scientists in other fields like microbiology and found out that proteins leading to genetic brain diseases like fragile X syndrome and other illnesses like diabetes and asthma were also affected by a lack of Taok3. Blocking this protein could be a good therapeutic strategy."

Did you use any new technologies or approaches in your research?

Hamida: "We actually relied on well-established technologies and expertise, and we had to create new transgenic mouse strains to prove our point. I think the main strength of this paper stems from the fact that we collaborated with many other investigators both inside and outside VIB. At some points, we had no clue what was going on! Because of their different perspectives, we totally nailed it."

Did you run into any setbacks?

Hamida: "We certainly did – and so many of them that we sometimes thought we'd have to give up the project. However, with such a strong and reproducible phenotype, we knew there was something fundamental happening. It was this thought that kept us going, and in the end, it took us over 5 years to complete the project."

Will you continue on this research path?

Hamida: "There's so much potential here. VIB Discovery Sciences has identified Taok3 as an important lead to new therapies involving small molecule inhibitors. These types of disease therapies interfere with the actions of proteins that can lead to harm or illness. We have collaborated with CNIO in Spain on this front, where several inhibitors are currently being tested in diverse applications such as asthma and diabetes."

Hammad et al., Nature Immunology 2017



Adrian Liston

NEW INSIGHTS IN GENETIC DEFECT ALLOW PREVENTION OF FATAL ILLNESSES IN CHILDREN

A team of scientists led by Adrian Liston (VIB-KU Leuven Center for Brain & Disease Research) and Isabelle Meyts (UZ Leuven – KU Leuven) were able to characterize a new genetic immunodeficiency resulting from a mutation in a gene named STAT2. This mutation causes patients to be extremely vulnerable to normally mild childhood illnesses such as rotavirus and enterovirus. Adrian Liston's comprehensive analysis of the genetic defect allows clinicians to provide children with the proper therapies before illnesses prove fatal. The findings of the research have been published in the Journal of Allergy and Clinical Immunology.

Recent advancements in technologies and tools now make it possible for researchers to identify extremely subtle defects of the human immune system. In the past, many patients with “hidden” immunodeficiencies, or defects that were not obvious from the outset, often become extremely ill or die before their genetic disorders are diagnosed. Adrian and his lab were able to identify a gene mutation causing an immunodeficiency that can be fatal during childhood, enabling children to be diagnosed, monitored and preemptively treated for the disorder.

IMMUNODEFICIENCY DISORDERS ARE NOT RARE

Ranging from disorders as severe as the well-known “bubble boy” to nearly impossible-to-detect ‘hidden’ defects, immunodeficiencies are more common than scientists previously thought. Immunologists and geneticists have only just begun to scratch the surface when it comes to defining these latter types of immune disorders, which can be specific enough to make sufferers highly susceptible to just one or two types of diseases.

Adrian: “I wouldn’t be surprised if, when we finally do complete the identification of all genetic immunodeficiencies, we discover that up to 1 in 100 children are affected. The ‘hidden’ ones are especially insidious, because they do not present as obviously as other genetic immune disorders. In our study, one of the patients did unfortunately die before a diagnosis could be made. The other patient is alive and well, and now that she has been diagnosed, she is being carefully watched. We can do something about most immunodeficiencies – if only we can identify them.”

SEVERE COMMON ILLNESSES MAY SIGNAL IMMUNE DISORDER

Isabelle Meyts, lead clinician for the patients, stresses the importance of assessing the severity of childhood illnesses on the part of parents, suggesting that parents look for helpful information online and raise the possibility of a potential genetic immunodeficiency with a pediatrician.

Isabelle (UZ Leuven – KU Leuven): “When an otherwise healthy child experiences extremely severe infection with a common pathogen, like influenza or the chickenpox virus, or whenever a child is particularly vulnerable to infection with a single pathogen, an underlying defect in the immune system is likely. Likewise, a family history of a child succumbing to infection should alert the family and the clinician. Identifying the causative gene defect allows for genetic counseling of the family and for preventive measures to be taken.”

UNRAVELING ‘HIDDEN’ IMMUNODEFICIENCIES

The potential future avenues for this research are numerous and extremely relevant to current medicine. Adrian’s lab has developed a unique immune phenotyping platform and gene discovery program that can help identify previously unknown immune system defects and inflammatory diseases, leading to novel new treatments that can be administered in a timely way.

Adrian: “We seek to identify every possible cause of genetic immunodeficiency so that every child displaying warning signs can be tested and treated before it is too late.”

Moens et al, Journal of Allergy and Clinical Immunology 2017



SCIENTISTS USE TUMOR-DERIVED DENDRITIC CELLS TO SLOW TUMOR GROWTH

Jo Van Ginderachter

In the human body, so-called dendritic cells are responsible for activating our immune system. While researchers previously believed that tumors could repress these dendritic cells – blocking an adequate natural cancer defense mechanism – a new study has painted a more positive picture. A team led by Jo Van Ginderachter (VIB Center for Inflammation Research) revealed that two immune response-stimulating dendritic cell types do exist within tumors. The scientists were able to isolate these cells and use them to “vaccinate” tumors, slowing tumor growth. This success could lead to innovative new cancer immunotherapies. The results of the study are published in the high-impact journal Nature Communications.

Dendritic cells, or ‘DCs’, are a hot topic when it comes to cancer immunotherapy development, making them heavily investigated by the scientific community. The findings of Van Ginderachter’s research team at VIB and VUB suggest a new approach in which DCs are taken from surgically-removed tumors and used to “vaccinate” the same patient, making use of the patient’s own immune system in slowing tumor growth. In the search for the “perfect” DC for this kind of therapy, these researchers may have a definitive answer.

SURPRISE: TWO SPECIFIC DCs FOUND IN HUMAN TUMOR TISSUES

Contrary to expectations, the team was able to discover and identify two immune system-stimulating DC groups in tumors, dubbed cDC1 and cDC2. Each of them cause specific types of immune responses, and they are present in both human and mouse tumors.

Jo: “We believe that DCs taken from tumors are well-suited for cancer immunotherapy, since they’ve been confirmed present within removed tumors and cause a strong anti-tumor response even in low numbers. The fact that we even discovered two different suitable DC types comes as a surprise!”

THE FUTURE OF CANCER IMMUNOTHERAPY

Jo Van Ginderachter and his team, which was largely driven by PhD student Jiri Keirsse and postdoctoral researcher Damya Laoui, relied on the help of outside experts to both identify dendritic cells and to get the human tissues needed to perform the research. As an authority on DCs, Martin Guilliams of the Inflammation Research Center in Ghent was essential to the study. Massimiliano Mazzone (VIB-KU Leuven Center for Cancer Biology) had access to human tumor samples and was responsible for coordinating the availability of these tissues.

Jo: “For this study, we performed vaccinations using the DCs that we took from actual tumors to reveal their potential. Logically, the next step will be to find out whether vaccination will be successful in a therapeutic setting. We will have to remove the tumor, isolate the DCs and then re-inject them into the same individual to discover whether we can prevent the formation of new tumors and relapse of the main tumor. These next steps are also crucial for us to better understand why some tumors respond better to cDC2, and others to cDC1 vaccination. For this part we are actively looking for a partner.”

Laoui D. et al., Nature Communications 2017

QUICKSCAN

1

#blood flow #cilia #vascular mural cells

The Massimo Santoro Lab (VIB-KU Leuven Center for Cancer Biology) has identified a novel hemodynamic-dependent mechanism in developing vasculature that controls vascular myogenesis. Here, they show that hemodynamic forces act through cilia mechanosensors to drive vascular mural cell (vMCs) coverage in zebrafish. Cilia and blood flow controls Notch activation and signaling of arterial-fated vessels. This pathway leads to specific expression of *Foxc1b*, which is then necessary and sufficient to drive vascular myogenesis in zebrafish. This discovery opens novel possibilities for chemical and drug screening affecting endothelial and mural cell interaction in health and disease.

Xiaowen et al., Cell Reports 2017

2

#dementia #ANCL #FTD

The Christine Van Broeckhoven Lab (VIB-UAntwerp Center for Molecular Neurology), in collaboration with the Belgian Neurology consortium, has identified a potential link between adult-onset neuronal ceroid lipofuscinosis (ANCL), a rare neurodegenerative lysosomal storage disease, and frontotemporal dementia (FTD). They identified missense mutations in the *CTSF* gene, coding for the lysosomal cysteine protease, which co-segregated in a recessive ANCL family and were present in FTD patients. They propose genetic testing of *CTSF* in patients with early-onset dementia with frontal lobe and motor symptoms.

Van der Zee et al., Neurology Genetics 2016

3

#GPCR #structural biology #Nanobodies

The Kobilka (Stanford University) and Steyaert (VIB-VUB Center for Structural Biology) review how Nanobodies have emerged as important tools to study GPCR signal transduction, yielding insights into the dynamics of receptor activation. Nanobodies have also been used to stabilize transient GPCR transmembrane signaling complexes, yielding the first structural views of GPCR signal transduction across the cellular membrane. Beyond their use in vitro, Nanobodies also serve as conformational biosensors in living cells.

Manglik, Kobilka, Steyaert et al., Annual Review of Pharmacology and Toxicology 2017

4

#food web #gut

Despite recent progress, the organizational and ecological properties of the intestinal microbial ecosystem remain under investigated. Using a manually curated metabolic module framework for (meta-) genomic data analysis, Sara Vieira-Silva, Gwen Falony and colleagues from the Jeroen Raes Lab (VIB-KU Leuven Center for Microbiology) studied species-function relationships in gut microbial genomes and microbiomes. The team observed that half of the bacteria in the human gut were metabolic generalists, while others were specializing and feeding on specific substrates such as carbohydrates, proteins, or lipids. They also found that a subset of people have less functional redundancy, making them vulnerable to disturbances.

Vieira-Silva, Falony et al., Nat Microbiol. 2016.

5

#cancer #neurodegeneration

The Sarah-Maria Fendt Lab (VIB-KU Leuven Center for Cancer Biology) studied loss of function mutations in succinate dehydrogenase (SDH) that can lead to tumor development or neurodegeneration.

Postdoc Doriane Lorendeau: “We found that in cells with SDH mutations that lead to tumors, an additional loss of complex I of the respiratory chain occurs. Consequently, the metabolism of these cells shifts towards a state that supports proliferation. In cells with SDH mutations that lead to neurodegeneration, this is not the case, and they are stuck in a metabolic state that impairs their fitness.”

Lorendeau et al., Metabolic Engineering 2016

6

#carrot #art #genetics

The large, unbranched cultivated carrot is a popular vegetable with high sugar and dietary provitamin A carotenoid content. The orange-colored one is best known, but there are also white, yellow, red, and purple varieties. Ive De Smet (VIB-UGent Center for Plant Systems biology), together with his childhood friend, art historian David Vergauwen (Amarant), summarized molecular information explaining color differences observed in carrots painted throughout the centuries. Ive says “This work is a first step in bringing iconographic, historic and genetic studies together in order to explain the diversity in depicted fruits, crops and vegetables”.

Vergauwen et al., Trends in Plant Science 2016

7

#Alzheimer’s #APP #lysosomal system

Loss of Phospholipase D3 (PLD3) function has been proposed to increase the risk for Alzheimer’s disease by affecting the processing of the A β precursor protein APP. However, researchers at the Bart De Strooper Lab (VIB-KU Leuven Center for Brain & Disease Research) have found that PLD3 is not relevant for APP metabolism in wild-type mice or in a mouse model of Alzheimer’s disease pathology. They demonstrated that the PLD3 protein is localized in the lysosomal system and affects its morphology, indicating that PLD3 may be involved in the pathophysiology of Alzheimer’s disease by exacerbating impairments of the endosomal-lysosomal system.

Fazzari et al., Nature 2017

8

#Charcot-Marie-Tooth disease #HDAC6

Histone deacetylase 5 (HDAC6) is a potential therapeutic target for axonal Charcot-Marie-Tooth disease (CMT2). Veronick Benoy and colleagues at the Ludo Van Den Bosch Lab (VIB-KU Leuven Center for Brain & Disease Research) characterized three different selective HDAC6 inhibitors, which could increase innervation of the neuromuscular junctions in the gastrocnemius muscle and improve motor and sensory nerve conduction. These results are an important step in the translation of HDAC6 pharmacological inhibition into a viable therapy against CMT2.

Benoy et al., Neurotherapeutics 2016

9

#nutrient transport #sulfonates #fungi

Research on cellular nutrient sensing has generated an unexpected offshoot. Transporters for virtually all nutrients have been identified in the model eukaryote, the yeast *Saccharomyces cerevisiae*. The work of Sylvester Holt in the Johan Thevelein Lab (VIB-KU Leuven Center for Microbiology) therefore came as a major surprise, revealing that a previously uncharacterized yeast gene, YIL166C, encodes the founding father of a new family of nutrient transporters in fungi. They transport sulfonates and choline sulfate, revealing the importance of these compounds as sulfur sources in the natural environments of yeast and other fungi.

Holt et al., Nat Commun 2017

10

#mechanism of protection #universal influenza vaccine

Clinical assays, which are used to define correlates of protection induced by vaccines, often miss the Fc-mediated effector functions. The Xavier Saelens Lab (VIB-UGent Center for Medical Biotechnology) showed that two monoclonal antibodies, with a close-to-identical binding specificity and affinity for a conserved influenza A virus antigen, have a very different *in vivo* protective potential that is controlled by their capacity to interact with activating Fcγ receptors. This study thus demonstrates that future developments towards antibody-based universal influenza vaccines should consider the role of the Fc receptor repertoire in vaccine efficacy.

Van den Hoecke et al., Journal of Virology 2017

11

#MAPPIT #cell microarray

The Jan Tavernier Lab (VIB-UGent Center for Medical Biotechnology) developed a high-throughput cell microarray-based screening approach for their MAPPIT/KISS assay platform. Using this technology, proteome-scale collections of human ORFs can be efficiently scanned for novel protein and small molecule interactions in intact human cells. The latter application is one of the core technologies of Orionis Biosciences, a VIB startup that was recently spun off the CRL. To support analysis and management of the large interactomics datasets generated through the screening platform, a custom software and database tool was created by the Lennart Martens Lab (VIB-UGent Center for Medical Biotechnology).

Lievens et al., Molecular & Cellular Proteomics 2016

12

#auxin transport inhibitor #lateral root formation

Cinnamic acid (CA) is a key intermediate of the phenylpropanoid pathway, which converts phenylalanine into an array of secondary metabolites. CA exists in two isoforms, of which only the *trans*-(*t*)-isoform is channeled into the phenylpropanoid pathway. The *cis*-(*c*)-isoform is made from *t*-CA by light and is detected in trace amounts in plants. In contrast to the *t*-isoform, *c*-CA is a biologically active molecule that affects lateral root formation. The Wout Boerjan Lab (VIB-UGent Center for Plant Systems biology) shows that *c*-CA is an inhibitor of polar auxin transport that controls the spatiotemporal distribution of auxin maxima and, hence, may steer growth and development.

Steenackers et al., Plant Physiology 2016

13

Charcot-Marie-Tooth disease #LRSAM1

Charcot-Marie-Tooth disease type 2G is an inherited peripheral neuropathy that remained without genetic diagnosis for more than 30 years. Longitudinal clinical follow-up and extensive genetic analysis unexpectedly allowed researchers at the Albená Jordanova Lab (VIB-UAntwerp Center for Molecular Neurology) to identify a disease-causing mutation in the ubiquitin ligase LRSAM1 associated with another CMT subtype (CMT2P). This finding redefines the established genetic classification of CMT disease. Detailed clinical evaluation reveals that LRSAM1 mutation carriers might remain asymptomatic until advanced age, and only MRI can detect minimal signs of disease in limb musculature. Notably, transcriptome analysis of patients' cells implies novel molecular players associated with LRSAM1 dysfunction and reveals pathways and therapeutic targets shared with ALS and Alzheimer's disease.

Peeters, Palaima et al., Annals of Neurology 2016

14

#cancer #transgenic mouse model

Over 1 million people worldwide die each year from squamous cell carcinoma (SCC). The p53 family member Δ Np63 α transcription factor is overexpressed in the majority of these tumors, however, little is known on how it affects the different stages of carcinogenesis. Therefore, the team of Wim Declercq within the Peter Vandenabeele Lab (VIB-UGent Center for Inflammation Research) generated transgenic mice overexpressing Δ Np63 α in the skin. They found that these mice were more susceptible to cutaneous SCC development. The researchers explained this by describing its ability to bypass cellular senescence, a tumor suppressing mechanism. A future challenge will be to define how Δ Np63 α influences patient prognosis and treatment, for which their transgenic model presents an interesting tool.

Devos et al, Journal of Investigative Dermatology 2017

15

#gut-joint axis # α 4 β 7 integrins

The gut-joint axis has puzzled researchers for decades. Flares of inflammatory bowel disease (IBD) have been linked to joint flares, whereas spondyloarthritis patients are prone to develop IBD over time, even more so when microscopic chronic gut inflammation is present. Nevertheless, the exact mechanisms of these observations are not well understood. Nowadays, a new therapeutic agent for IBD has taken center stage with vedolizumab, an α 4 β 7 blockade. However, evidence surfaces that through the blockade of these integrins and adhesion molecules, recirculation of activated lymphocytes between the gut and the synovial membrane may lead to induction or flare of arthritis and/or sacroiliitis.

Varkas et al., Annals of the Rheumatic Diseases 2016

MYCOANTAR: FUNGAL BIODIVERSITY IN THE SPOTLIGHT

The name says it all: MycoAntar is an important joint research project that studies the taxonomy, diversity and distribution of fungi in Antarctica. To shed more light onto the species fungi present on the world's coldest and most southerly continent, the research group collects and analyzes samples of soil, rocks, ice, snow, marine sediments, water, plants and algae. Researchers will also collect fungal data in the context of changes caused by climate change and other human impacts.

However, the project isn't just about furthering our scientific understanding of polar fungi; these creatures could be used as sources for bioactive prototype molecules used in the development of drugs that fight microbes, tropical diseases and cancer, as well as friendlier agricultural pesticides. MycoAntar is a multinational initiative with universities and research institutes from Brazil, USA, China, Argentina and Belgium participating. VIB scientists from the VIB-KU Leuven Center for Microbiology will be involved in characterizing the pathogenic potential of Antarctic fungi.

PARKINSON DISEASE

MOLECULAR MECHANISMS
UNDERLYING PATHOLOGY



Edited by Patrik Verstreken

200 YEARS OF PARKINSON'S RESEARCH

SHAKING PALSY

2017 marks the 200th anniversary of James Parkinson's description of the disease that now bears his name and that affects an estimated 5 million people worldwide. Working as a medical surgeon in London, James Parkinson was the first to connect the dots when confronted with a handful of patients with similar involuntary tremors and symptoms of muscle weakness. In 1817, he published his findings in his seminal 'Essay on shaking palsy'.

PARKINSON'S DISEASE AND THE SEARCH FOR A CURE

Over the following century, many neurologists contributed to a better understanding of 'shaking palsy'. One of the most important figures was Jean-Martin Charcot. He differentiated rigidity from weakness and slow movement, and recognized that the disease was slightly more common in men. Charcot was also the one who proposed the name Parkinson's disease (another neuronal disorder, Charcot-Marie-Tooth disease, would later be named after him). In terms of treatment, Charcot used anticholinergic inhibitors, which—as we now know—influence the balance of cholinergic and dopaminergic neurotransmitters in the brain. Yet, it would take until the 1960s for the first (and still best available) drug for Parkinson's disease to be developed. The dopamine precursor L-dopa entered clinical practice in 1967, exactly 50 years ago. It serves as a symptomatic treatment only, replenishing dopamine levels in the brain to temporarily compensate for the progressive loss of dopamine-producing neurons. Several other treatment avenues, such as

stem cell implantation or deep brain stimulation, are based on the same idea: compensating for (the activity of) the lost neurons.

FAST FORWARD TO 2017

Today, we understand quite well how the loss of dopamine-producing neurons leads to the symptoms of Parkinson's disease, but we still don't know why exactly these neurons die. Yet, we have reason to be optimistic: step-by-step we uncover new insights into the disease mechanisms. Over the past two decades, genetic studies pinpointed several genes and cellular pathways that play roles in disease onset and progression.

VIB is at the forefront of worldwide research efforts on Parkinson's disease. A new book edited by Patrik Verstreken (VIB-KU Leuven Center for Brain & Disease Research) sums up the recent developments and outstanding questions in this rapidly progressing field of research. "We are at the brink of important breakthroughs in this field and new therapeutic insight is emerging," says Patrik Verstreken. "We need to look at parallels between different genes and between different species used to study Parkinson's disease.

Multidisciplinary research, spanning a broad array of technologies and model organisms, is crucial in the search for therapeutic solutions."

LOOKING AHEAD

April 11th, James Parkinson's birthday, is World Parkinson's Day. Each year in April, thousands of people across the globe roll up their sleeves to raise awareness for the disease and the consequences for all those affected by it. To commemorate this year's bicentennial edition, the Flemish Parkinson League is organizing a thought-provoking event on April 23, 2017 in Ghent, where patients, clinicians, family members and researchers can get together, to look back, but more importantly, to look forward to new treatment approaches on the horizon.

We have come a long way since the publication of 'Essay on shaking palsy', but we haven't found what James Parkinson was looking for: a way to stop the disease in its tracks. We'll continue working until we do.

Parkinson's Disease: Molecular Mechanisms Underlying Pathology, 1st Edition. Elsevier Academic Press 2017. Ed: Patrik Verstreken.

SPEAKING UP FOR ANIMAL RESEARCH

POST-TRUTH POLITICS: THE CASE OF ANIMAL RESEARCH

Last November, the animal rights organization GAIA published an undercover movie at the VUB animal facilities. The images shocked many and elicited strong responses from the public and from policy makers. Despite the wide media attention, there was very little room for any scientific context. Why do we still use animals in biomedical research in 2017? What is allowed—and what isn't—and how are researchers held accountable?



ANIMAL RESEARCH INFO POINT

Frustrated by the one-sided media representation, a handful of young researchers from within and outside of VIB got together and founded 'Infopunt Proefdieronderzoek' (Dutch for Animal Research Info Point). Through a web platform and social media presence, they aim to provide up-to-date and clear information on animal research. This initiative has already resulted in a dialogue with policy makers.

WE NEED YOUR HELP

Help us spread the word and support our cause by becoming a member and contribute or participate as much as your availability allows.

www.infopuntproefdieronderzoek.be

MULTIPLEXING CRISPR: THOUSANDS OF MUTATIONS, ENDLESS POSSIBILITIES FOR DISCOVERY

While basic CRISPR experiments are already transforming life sciences research, there are many emerging CRISPR tools that open up previously unimaginable opportunities. An example is CRISPR's potential for multiplex genome editing, which can be used for saturation mutagenesis of not only individual genes, but entire genomes. Below, we describe two technology platforms that have built on CRISPR's multiplexing potential. Both technologies leverage oligonucleotide libraries to generate large CRISPR gRNA libraries for multiplexing.

MUSE BIO: ACCELERATING CRISPR

CREATE, or CRISPR-enabled trackable genome engineering, is a high-throughput CRISPR technology that enables generation and parallel mapping of tens of thousands of amino acid and promoter mutations in a single experiment. CREATE can be used to identify mutations that are important in traits of interest. CREATE allows generation of gain-of-function mutations important for a phenotype of interest, which is a great advantage of this technique in comparison with other approaches.

This technology works in both bacteria and yeast and, with further tweaks, could also be adapted to work in higher eukaryotes.



The CREATE technology is being commercialized by Muse Bio, which has created a product package called "ForgeCraft". This package includes a powerful combination of design software, a set of reagents and algorithms, and an automated, easy-to-use instrument enabling high-throughput CRISPR editing of genomes.

Garst et al., Nature Biotechnology 2016

ENGINE BIOSCIENCES: COMBIGEM-CRISPR

Combinatorial genetics en masse (CombiGEM) is a technology for rapid, scalable assembly of high-order

barcoded combinatorial genetic libraries. When applying CombiGEM with CRISPR gRNAs, researchers can create barcoded gRNA libraries that can be used to combinatorically modify the genome, screen for a particular phenotype and quickly profile the resulting hits. High-throughput screens are possible in bacteria and human cells.

The CombiGEM-CRISPR technology is being commercialized by the company Engine Biosciences. The company is interested in working with research institutions on exciting, collaborative projects that can leverage the CombiGEM-CRISPR platform.

By linking the technology to single-cell sequencing technologies like Perturb-seq or CRISPR-seq, one could even envision complex combinatorial genetic perturbation screens in single cells.

Wong et al., Proc Natl Acad Sci U S A 2016

PHYSICAL BARRIER IN MICROSCOPY OVERCOME BY VIB BIOIMAGING CORE



Sebastian Munck

Confocal microscopy, which enables scientists to construct 3D representations of objects in the range of hundreds of nanometer, has been the workhorse and method of choice for imaging for decades now and has revolutionized our view of biology and life sciences. Scientists at VIB have taken the potential of confocal microscopy across the diffraction barrier – using innovative software-based image analysis tools. In the past, it was believed that the laws of physics make it impossible for classical confocal microscopy to resolve anything smaller than 200 nanometers. This new, patented methodology now makes this possible and will be further developed through a collaboration between VIB and German microscopy leader Zeiss.

The 200-nanometer diffraction barrier has been considered a physical limit that traditional microscopy could not be expected to cross. Below this barrier, it is impossible to determine the difference between two points using the classical microscopy technology available in many labs. Although in the recent past super-resolution techniques have been developed, they have been limited, as samples were tedious to prepare and/or needed new expensive hardware. With the new development, Sebastian Munck and his VIB BioImaging Core are taking confocal microscopy to the next level, as the standard off-the-shelf devices can be used with no need for additional hardware or complicated sample preparation.

Spurred by the never-ending need for more data to validate scientific research, VIB researchers have developed a completely new and innovative technique that enables super-resolution with confocal microscopes.

THE BEST OF TWO WORLDS: SUPER-RESOLUTION CONFOCAL MICROSCOPY WITHOUT THE HASSLE

Scientists at VIB are well-positioned to be familiar with demands and pain points in microscopy. Some of the hassle involved with other super-resolution techniques include complex sample preparation, optimizing protein labeling, and a limited number of colors channels. Originally titled Point Detection Imaging Microscopy through Photobleaching, VIB's new technique increases resolution in biological samples beyond the diffraction limit and makes 3D imaging possible. One of the great advantages is the versatility of the approach, by making it possible to apply super-resolution on off-the-shelf microscopes. This means that all the benefits and decades of optimization like standard sample preparation and customer oriented developments like multicolor imaging are ready to be used.

CONFO THERAPEUTICS APPOINTS CHAIRMAN AND GETS EUR 2.6 MILLION IN NON-DILUTIVE FUNDING

Prof. Sebastian Munck (VIB Biomedicine Core Leuven):
“We wanted to make super-resolution super easy to be able to focus on our research questions instead of focussing on the technology.”

MAKING THIS TECHNOLOGY AVAILABLE FOR THE ENTIRE RESEARCH COMMUNITY

After inventing the technology, the next step was to engage with industry. Germany base microscopy company Zeiss is charging their confocals with super-resolution powers based on VIB technology. Ralf Engelmann (Product Manager 3D Microscopy, ZEISS):

“Superresolution is still one of the main trends in microscopy and a strong driver for new discoveries. SR-DIP, as we will call the new module for our ZEN blue software platform, makes superresolution available for researchers who don't want to do big hardware investments, but still want to do cutting edge research.”

Jérôme Van Biervliet (Senior Business Development Manager, VIB): “We are excited that this technology will be available for research via the commitment of Zeiss. This is a tool for even better research, enabling even more thorough understanding of how molecular players in disease functionally interact during the disease onset and progression – with the ultimate end goal of developing even more effective interventions.”

In September 2016, VIB-VUB spin-off Confo Therapeutics welcomed its new CEO and board member, Cedric Ververken. Last December, the company also appointed John Edward Berriman as non-executive director and chairman of the board of directors. And more recently, the emerging drug discovery company was awarded EUR 2.6 million in non-dilutive funding for the discovery of new fibrosis treatments and for expanding the use of its unique Confo® technology.

Founded in 2015, Confo Therapeutics is a spin-off of the VIB-VUB Center for Structural Biology and is building a portfolio of first-in-class programs on pathway selective drugs. “Using its breakthrough Confo® technology to go after G-protein coupled receptors (GPCRs), the company is building a unique portfolio of first-in-class compounds to address various unmet medical needs,” says Ververken.



BUILDING CRITICAL MASS

“The grant award from both VLAIO and Innoviris represents a total of EUR 2.6 million in non-dilutive funding over a period of 2 years. This will allow us to speed up our efforts to find new disease-modifying therapeutics for patients with fibrosis of the liver, lungs or other organs, who currently lack effective treatment options. In addition, this enables us to further strengthen our technical capabilities and to build internal critical mass in GPCR biochemistry and Confobody discovery.”

Commenting on his appointment as Chairman, John Berriman says: “I am delighted to be joining and chairing the board of Confo Therapeutics. I believe the company's technology is one of the industry's most promising platforms for cracking currently undruggable GPCRs, especially when an agonist is required.”

Confo Therapeutics has started its operations on the VUB campus in Etterbeek, Brussels. Since January, the company has opened a second site at Zwijnaarde Science Park in Ghent.

GPCRs: DRUGGING THE UNDRUGGABLE

G-protein coupled receptors, or GPCRs, are valuable molecules that hold the keys to treating many diseases, from Alzheimer's to cancer. However, their conformational flexibility causes most drugs screening efforts to fail. To tackle this challenge, Confo Therapeutics is developing a way to lock proteins into active, druggable conformations.

AGILENT TECHNOLOGIES ACQUIRES VIB SPIN-OFF MULTIPLICOM

"Enabling personalized medicine" is the baseline of Multiplicom, a spin-off from VIB and the University of Antwerp. Its cutting-edge molecular diagnostic tests make it possible to detect genetic defects leading to certain illnesses at an early stage. Now that the company has been acquired by US-based multinational Agilent Technologies, scientific founder and CTO Jurgen Del Favero talks about the company's remarkable growth trajectory and future opportunities.



“The classic method for analyzing DNA or RNA is via PCR, which is laborious, costly, and time-consuming,” explains Jurgen. “My goal was to create a method that would make it faster and easier. That’s how Multiplex PCR, the technology that underlies Multiplicom, was born. Here, several hundred target DNA sequences can be amplified at once. This is a huge advantage to diagnose diseases linked with different mutations. As a result, health-care professionals can now easily diagnose patients with a genetic disease or predisposition, steer cancer therapy, and identify prenatal defects.”

HEAD-SPINNING GROWTH

Jurgen started Multiplicom – then called Multiplicon – in 2010 as a spin-off from the VIB-UAntwerp Center for Molecular Neurology.

Jurgen: “At the time, there were only three people in the team, all of whom were academics. In April 2011, after a successful series A funding, the name changed to Multiplicom and two seasoned entrepreneurs Dirk Pollet (CEO) and Luc Segers (VP Sales & Marketing) joined the company. Today, there are more than 90 people working for Multiplicom.”

Multiplicom’s flying start hasn’t been without its fair share of challenges. Els Beirnaert, Senior

Manager New Ventures VIB: “In contrast to other spin-off opportunities, we didn’t have a patent portfolio at the start to rely on. What we did have, however, was an effective product design and development pipeline, serving the need of the new upcoming market around next generation sequencing, which meant a lot of market research.”

BRIGHT FUTURE AHEAD

Multiplicom has established itself as a leading European diagnostic company with a significant European market share. In 2012, Multiplicom became the first company to receive a CE marked test to indicate an increased risk for breast and ovarian cancer. And just last year, the spin-off was nominated for the Most Promising Company of the Year by the Government of Flanders. The recent acquisition by Agilent Technologies creates a lot of new opportunities for Multiplicom and its team.

Jurgen: “Where our market used to be limited geographically, we now have access to global distribution. The sky truly is the limit now. But no matter how successful we are or will be, Multiplicom wouldn’t have been possible without VIB Tech Transfer and the VIB-UAntwerp Center for Molecular Neurology. I’m incredibly grateful for all the people that have helped us along the way. If anyone reading this

is considering starting his or her own spin-off, I’d say go for it. It is an incredible and exciting learning opportunity.”

Els: “This acquisition by Agilent is not only good news for the company and the investors, but also for VIB and the biotech ecosystem in Flanders. It confirms the quality and the unique portfolio of Multiplicom and creates a global consumer base. Next to that it means a considerable return on investment, for VIB and other partners, that can be reinvested into research and new start-ups.”

Products described above are CE-IVD and are not available for sale in the US and other geographies.



IN MEMORIAM HERMAN VANDEN BERGHE

It is with deep regret that we announce that Professor Emeritus Herman Vanden Berghe passed away on January 23, 2017. He was one of the founding fathers of VIB and the inspirer and founder of the Center for Human Genetics in Leuven.

People who knew him well recall him as a man of great intellect, a real renaissance man. He was an inspiration

to many of our scientists. In addition to being a world-renowned scientist, he was also a passionate music lover, active as a horn player and as a choir member of the Schola Cantorum in Leuven.

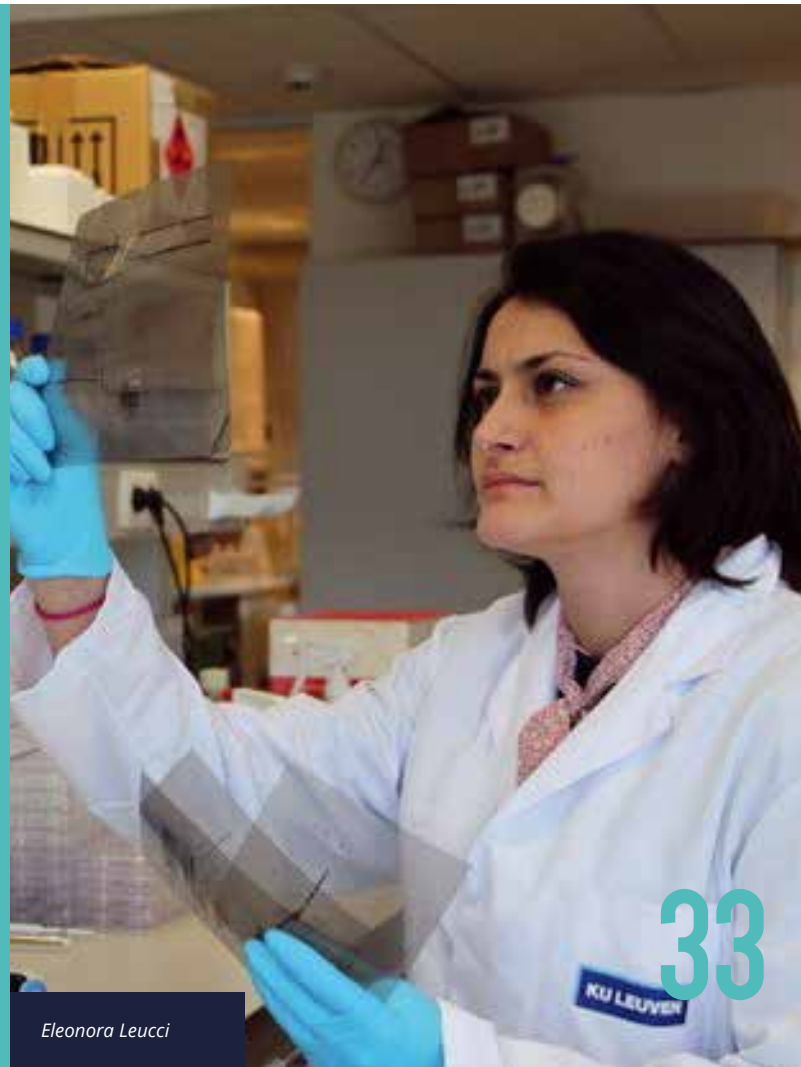
We will remember him not only for his groundbreaking research in the field of human genetics, but mainly for the great man he really was.

AWARDS

VIB talent attracts the attention of esteemed supporters of science from around the world. Here's a quick look at the achievements of VIB scientists who have been recognized for their vision, curiosity, dedication and excellent science. A hearty congratulations to every one!

Eleonora Leucci, postdoc at the VIB-KU Leuven Center for Cancer Biology, and Pieter Mestdagh of Ghent University, were chosen as the winners of the Academy Prize presented by the Royal Academy of Belgium. This prestigious award recognizes the importance of their basic research project entitled "Targeted inhibition of the long non-coding RNA SAMMSON as a new therapy for melanoma". The award, along with a cash prize, was presented during a special ceremony on December 3, 2016.

Just a few days earlier, on November 22, 2016, Eleonora also received a Special Mention during ITWIIN 2016, a yearly event that recognizes remarkable achievements of female professionals, entrepreneurs and researchers of Italian nationality. The ITWIIN association aims to promote the talent and creativity of Italian women in research, technology and innovation. Eleonora was lauded for her impressive track record in research abroad.



Eleonora Leucci

Stein Aerts (VIB-KU Leuven Center for Brain & Disease Research) is one of three researchers to receive an AstraZeneca Foundation Award, along with a prize of 25,000 euros. The AstraZeneca Foundation rewards scientific achievements in clinical and translational research in oncology that focuses on how the host influences tumor development. A jury of FWO members chose Stein for his groundbreaking work in bio-informatics.



Stein Aerts



Dirk Inzé

Dirk Inzé (VIB-UGent Center for Plant Systems Biology) was the first European ever to receive the Grace Chen Lectureship Award in Taiwan, China. It was awarded by the Institute of Plant and Microbial Biology of the Academia Sinica for his talk entitled “the complexity of drought stress responses in Arabidopsis and maize”.

Jeroen Raes (VIB-KU Leuven Center for Microbiology) has been awarded the Belgian Francqui Chair for the academic year 2016-2017 by the University of Antwerp. Each year, the Francqui Foundation enables all Belgian universities to invite two visiting professors to present a series of high-level lectures. The goal is to further the development of higher education and scientific research in Belgium. And of course, it also provides Belgian scholars and scientists with indisputable moral support.

This is not the first Francqui Professorship to be awarded to a VIB scientist. Other laureates of the Chair were Marc Van Montagu (VIB-UGent), Joël Vandekerckhove (VIB-UGent), Lode Wijns (VIB-VUB), Peter Vandenabeele (VIB-UGent), Wim Robberecht (VIB-KU Leuven) and Adrian Liston (VIB-KU Leuven). Next to the Chair, Walter Fiers (VIB-UGent), Désiré Collen (VIB-KU Leuven), Dirk Inzé (VIB-UGent), Peter Carmeliet (VIB-KU Leuven) and Bart Lambrecht (VIB-UGent) have also received the Francqui Prize.



Jeroen Raes



Andreas Pincher

Andreas Pincher (VIB-KU Leuven Center for Cancer Biology) has won a Futura advancement award for young South Tyroleans in foreign countries. The aim of the award is to support young South Tyroleans who have professionally distinguished themselves in economics, science or culture outside of South Tyrol. Andreas received the award for his leading-edge research into new strategies to fight various types of cancer.

GRANTS

Stichting Alzheimer Onderzoek (Foundation for Alzheimer research) has awarded research grants at the VIB-KU Leuven Center for Brain & Disease Research: Wim Annaert, Matthew Holt, Joost Schymkowitz and Lucia Chavez have been awarded 150,000 euros over two years, while Annerieke Sierksma and Elise Pepermans received a pilot project grant of 75,000 euros over two years. Kristel Slegers from the VIB-UAntwerp Center for Molecular Neurology has also received a grant from the Stichting Alzheimer Onderzoek. Her research project is backed by 150,000 euros over two years.

Stichting tegen Kanker (Foundation against cancer) has awarded clinical grants to four researchers from the VIB-KU Leuven Center for Cancer Biology. Jan Cools (300,000 euros), Georg Halder (492,109 euros), Peter Carmeliet (600,000 euros) and Diether Lambrechts (345,000 euros) have all received support which will give a tremendous boost to their research.

REPORTER ON THE ROAD: AN AMERICAN SCIENTIST WAKES UP IN BREXIT BRITAIN

On the morning of 24 June 2016, the results of the EU referendum were announced. What I never expected had really happened: a majority of British voters decided to leave the European Union. "No way," was all I could think at first. Now that the dust has settled, researchers in the United Kingdom are beginning to realize what this massive step might mean for UK science. Unfortunately, it's not a pretty picture.

My name is Eisuke Koya. I'm an American neuroscientist and I've always been fascinated by how our brain links different types of complex stimuli, and how it stores and retrieves these associations. In the summer of 2012, I started my own research group at the University of Sussex (UK) to focus on this question, more specifically regarding how the brain establishes and maintains learned associations about food and the stimuli that predict their availability.

THE DAY THE RESULTS CAME IN

When the EU referendum was announced by former Prime Minister David Cameron, I immediately worried that a Brexit could hurt international

scientific collaborations between the UK and EU – amongst many other things. I think the worrying feeling really sank in on that day. Needless to say, I was baffled when the results came in. My colleagues were shocked, and I started to see a less attractive side of the UK. An increase of hate crimes and the uncertainty surrounding residence permits left me feeling slightly anxious.

THE ROAD AHEAD

A few months after the referendum, the road ahead is still unclear. No state has left the European Union before and the rules for such an exit, contained in Article 50 of the Treaty of Lisbon, are brief. Prime Minister Theresa May stated

that she would trigger the article no later than the end of March 2017. Once that happens, the UK has two years before the actual divorce. I'm wondering if the UK government will be able to negotiate a good deal with the EU within that period. Outlining the potential impact of Brexit on the UK is difficult, but when it comes to science, I have a few guesses in mind.

A DARK DAY FOR UK SCIENCE

First of all, if the UK loses access to EU funding agencies, then a lot more UK researchers will be competing for Research Councils UK (RCUK) funding. I doubt that the UK government will be able to make up for this shortfall. If this was to happen,



then competition for RCUK funding will intensify, and only high-profile PIs may survive – and I do not consider myself to be high-profile. Furthermore, getting out of the single market

“Science has always been a collaborative endeavor without borders, and research in the UK has thrived because of this.”

might lower investments into the UK which, in turn, may have a detrimental impact on the British economy. In the long term, this would result in a decreased tax base and, as such, decreased RCUK funding. This domino effect could be worsened still, as the continued devaluation of the pound may further increase research costs – not to mention the already high living costs in the UK. Senior scientists in Britain such as Paul Nurse have called Brexit a dark day for UK science. I’m afraid they might be right.

POTENTIAL BENEFIT FOR EU LABS

If UK university PIs get fewer grants, then the university income may drop, an effect worsened by lower EU student numbers. One can only wonder whether a significant income decrease would result in certain faculties being made redundant in the near future. Aside from this, the UK could also become a less attractive place for post-docs and PhD students from continental Europe because visa requirements will become costly and time consuming. Postdoc and PhD applicants from the EU will probably turn towards other countries, like the USA or Canada.

In the opposite direction, I think EU labs will have a better chance of attracting British PIs or even non-British PIs in Britain. They will simply go where there are more available research funds. So, if competition for RCUK funding becomes intense, organizations like VIB might actually benefit. By the way: I’ve never worked with VIB myself

but I’d be glad to visit, as I really love Belgium – especially the beer and chocolate.

A COLLABORATIVE ENDEAVOR

I firmly believe that science flourishes in an international context. I don’t have the answers for the many questions that Brexit raises, but I do hope UK research groups will be able to safeguard their collaborations with researchers in continental Europe. Even if we have to pay for it, we are better off by being part of Horizon 2020, Europe’s current science program.

Science has always been a collaborative endeavor without borders, and research in the UK has thrived because of this. Programs like Horizon 2020 have helped establish EU-wide collaborations and have fostered the next generation of researchers. Backtracking on this could be a huge loss for UK science.

Eisuke Koya’s research started out in the field of drug addiction when he was a graduate student at the Vrije Universiteit Amsterdam. During that period, he met Floor Stam (VIB tech transfer) and Joris de Wit (VIB-KU Leuven Center for Brain & Disease Research) who were also graduate students. After a post-doc at the National Institute on Drug Abuse in Baltimore (USA), Eisuke joined the School of Psychology at the University of Sussex (UK) in July 2012 to start his own research group. The central aim of Eisuke’s laboratory is to investigate how memories about drugs and natural rewards are stored and retrieved in neuronal ensembles in motivationally relevant brain areas. In April 2015, the lab began conducting a Biotechnology and Biological Sciences Research Council (BBSRC)-funded project to study how learned associations about food rewards and cues are established and maintained in the brain.



THE VIB BIOTECH TOUR: FINISHING IN STYLE

All good things must come to an end. That's also the case for the VIB Biotech Tour, our cross-country road trip celebrating our 20th birthday. For 5 months, we awed people with showpieces of life sciences during expositions in Flanders' 5 provincial capitals and our 'biotech talks'. On February 20, 2017, our tour came to a festive close at the Flemish Parliament in Brussels.

LAST TWO BIOTECH TALKS

On December 14, 2016, about 100 people learned from Bart Lambrecht (VIB-UGent Center for Inflammation Research) and Wout Boerjan (VIB-UGent Center for Plant Systems Systems Biology) why basic research is the very stepping stone to understanding the functioning of organisms. After all, these insights are required before we can start thinking about solutions for global problems relating to health and sustainable food production.

At the last biotech talk on January 25, 2017 in OPEK Leuven, Diether Lambrechts (VIB-KU Leuven Center for Cancer Biology), Patrik Verstreken (VIB-KU Leuven Center for Brain & Disease Research) and Kevin Verstrepen (VIB-KU Leuven Center for Microbiology) shared tidbits of their experience in cancer biology, neurobiology and microbiology. In addition, they talked about the nature of scientists in general: who are they, what do they do, and what drives them?

CULMINATING IN THE FLEMISH PARLIAMENT

The VIB matinee on February 20, 2017 was the cherry on top of a successful Biotech Tour. In the Flemish Parliament, Jo Bury and Johan Cardoen (VIB Managing Directors) demonstrated how and why basic research is indispensable to moving forward as a society, after which our 8 Science Directors presented their centers' scopes. Philippe Muyters, our Minister for Work, Economy, Innovation and Sport, concurred with the researchers, and stressed VIB's added value for the Flemish biotech sector and, as a result, for the Flemish knowledge economy.

Later on, these words were put into practice when VIB and the Flemish Government signed the renewed Management Agreement (2017-2021), the financial backbone of our organization.

Philippe Muyters: "VIB is internationally recognized for its research excellence and proactive approach to translating research results into economic and social added value, a powerful showpiece for Flanders. As a driving force in the Flemish biotechnology sector, VIB makes a large contribution to the success of this thriving industry. VIB's new strategic plan can only reinforce the role and impact of the institute. The Flemish Government fully supports this and is providing a €59 million budget annually for the next five years."



Ajit Shetty, Philippe Muyters, Jo Bury and Johan Cardoen

CELL-VIB SYMPOSIUM: HALLMARKS OF CANCER

Last December, Cell and VIB organized 'Hallmarks of Cancer' in Ghent. Close to 400 researchers attended, of which more than a quarter were from outside of Europe. VIB was represented by 44 researchers, including Peter Carmeliet as one of the outstanding invited speakers. Cédric Blanpain, Diether Lambrechts and Jean-Christophe Marine (VIB-KU Leuven Center for Cancer Biology) were part of the organizing committee.

BRINGING TOGETHER THE BRIGHTEST MINDS

Hallmarks of Cancer' was organized with the goal of bringing together global leaders in the cancer research arena to enhance our understanding of the key aspects of cancer, and explore ways to promote translation of this knowledge into the development of more effective therapeutics. The organizing committee aimed at providing a high-impact, high-profile forum for exchanging ideas and establishing a dialogue among clinicians, scientists and drug development companies.

Keynotes were given by Lewis Cantley (Weill Cornell, US) and Laurence Zitvogel (Gustave Roussy, FR). OC member Chris Marine: "This meeting has been a fantastic opportunity to explore the key outstanding questions of tomorrow with the very best in the field. It has been by far the most stimulating and inspiring meeting I attended in 2016. A sincere thanks to both Cell Press and VIB for organizing such an excellent meeting right next door."

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FIRST VIB ALUMNI AWARD

On the same day at the Flemish Parliament, Peter Van Loo (Francis Crick Institute) was unanimously recognized as the very first winner of the VIB Alumnus 2017. From four nominees – including Rafael Van Den Bergh (Médecins Sans Frontières), Nathalie Pochet (Harvard Medical School) and Emmanuel Buys (Harvard Medical School) – VIB's founding fathers and mother (Marc Van Montagu, Walter Fiers, Désiré Collen and Herman Van den Berghe († Jan 23 '17)) selected Peter based on criteria such as scientific endeavors, social relevance and personal engagement.

In their words: "Peter Van Loo represents the mission of the VIB Alumni Award, he is an excellent scientist and his research results and findings have already been translated into clinical practice such as CALR mutation testing, which is already used in the clinic for diagnosis of myeloproliferative neoplasms."

Peter van Loo: "I'm deeply honored by this award. I have very fond memories of the time I spent at VIB and I have been profoundly shaped as a scientist by the training in the lab of Peter Marynen."

Congratulations to all nominees and thanks to everybody who cast a vote!



Désiré Collen, Peter Van Loo and Philippe Muyters

MARK YOUR CALENDAR

Wine & Cheese Party

March 31, 2017 – Ghent

VIB Quiz

April 21, 2017 – Ghent

Phase Transitions in Biology and Disease

May 2-3, 2017 – Leuven

At the Forefront of Plant Research

June 15-16, 2017 – Ghent

VIBes in Biosciences

September 27-29, 2017 – Ghent

VIB Biotech Day

October 22, 2017 – Ghent
