

ANNUAL REPORT 2018

VICE-RECTORATE INNOVATION & INDUSTRY RELATIONS
VRIJE UNIVERSITEIT BRUSSEL

- CONNECTING SCIENCE AND SOCIETY -



VUB TECHTRANSFER: BRIDGE BETWEEN THE UNIVERSITY'S RESEARCH-EXPERTISE AND INDUSTRY-SOCIETY

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FACTS & FIGURES 2018

 **3** **CAMPUSES**



- Brussels Humanities, Sciences & Engineering Campus
- Brussels Health Campus
- Brussels Photonics Campus

8 **FACULTIES**

3,322                 **EMPLOYEES**

16,374                   **STUDENTS**

3,691          **EMPLOYEES UZ BRUSSEL**

1,804                   **DOCTORANDI**
IN 3               **DOCTORAL SCHOOLS**

 **EUR 103 M**
RESEARCH BUDGET

 **EUR 30.4 M**
**REVENUE FROM CONTRACT RESEARCH WITH
INDUSTRY AND VALORIZATION OF RESEARCH**



192 **RESEARCH GROUPS**
INCLUDING 16 JOINT INT'L
32 VUB-UGENT AND 13 VUB-ULB

2,208 **ACADEMIC
AND SCIENTIFIC PERSONNEL**                        

*"Innovation leads to collaboration. And the other way around: collaboration leads to innovation.
The world is a laboratory and innovation only works when academics, companies and societal players connect and reinforce each other."*

Caroline Pauwels, Rector



CREATING IMPACT ON SOCIETY

Society invests in our researchers. Through valorization of research the university wants to give something back and create a positive impact on society by providing innovative solutions for a better healthcare and clean environment, by improving work and living conditions. We want to tackle the challenges of the 21st century, which are multidisciplinary and require an integrated approach of fundamental, strategic and applied research involving research groups from different domains. Research and innovation go hand in hand. This is what distinguishes a university and turns it into a unique place.

In turn valorization also creates revenue for the university which can be reinvested in research. The cycle is complete and can start all over again. Hugo Thienpont, Vice-rector Innovation & Industry Relations, is fully aware of the fact that this income has become indispensable for the university: "To depend solely of governmental funding is not good. If we want to remain independent and powerful as a university, we need to actively search for external partners, explore new sources of financial means and respond to the needs of the private sector. We must make a massive effort to stimulate cooperation with industry and the corporate world."

Collaboration with companies and the creation of spin-offs are obvious ways to valorize knowledge. VUB spin-offs create an impact on society offering solutions for present-day problems and creating employment. In 2018 they did extremely well. PharmaFluidics, Camel-IDS, Ablynx or Colibra, the first Belgian tech-startup 'unicorn', might ring a bell. Discover more on page 16. But other means of societal knowledge transfer are also explored and stimulated. And not only scientific, engineering or biomedical research qualifies for valorization. More and more attention is paid to social sciences and the humanities.

The multidisciplinary VUB TechTransfer team facilitates the implementation of this knowledge and technology into industry and society, together with its partners VUB Foundation and Crosstalks. Through Foundation companies as well as individuals can finance research or make philanthropic contributions. VUB Crosstalks creates a dynamic knowledge exchange through thematic and transdisciplinary encounters, always encouraging open and constructive dialogues between academic and corporate researchers, philosophers, artists, designers, policymakers and citizens.

More details on how VUB created impact on society through the valorization of strategic and applied research in 2018 can be discovered throughout the following pages. We hope you will enjoy reading this 4th edition of the Annual Report of the VUB Vice-rectorate Innovation & Industry Relations.

"To depend solely of governmental funding is not good. If we want to remain independent and powerful as a university, we need to actively search for external partners, explore new sources of financial means and respond to the needs of the private sector. We must make a massive effort to stimulate cooperation with industry and the corporate world."

Sonja Haesen,
Director VUB TechTransfer



Hugo Thienpont,
Vice-rector Innovation &
Industry Relations



B-PHOT - Photonics and Light Technologies



BruBotics - Human Robotic Technology



CHIS - Chemical Engineering



ETRO - Crossing Boundaries with Visionary Electronics & ICT



FOBI - 4R-ART - Follicle biology



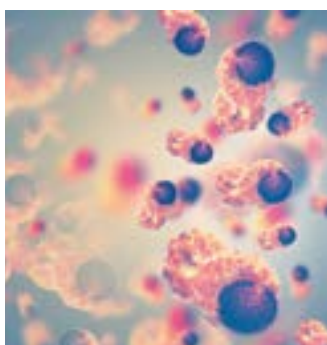
GeneCure - Gene Therapy



IMDO - Industrial Microbiology, Food Biotechnology



IVTD - *In vitro* Toxicology & Dermato-Cosmetology



M2Target - Macrophage-targeted Cancer Theranostics



ORGC - Organic Chemistry



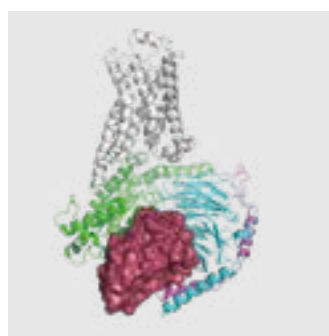
AI - Artificial Intelligence



SOFT - Software Languages



PREDICT - A Generic Toolbox for the Reliable Prediction of Lifetime and Ageing in Electrochemical Systems



SBB - Structural biology research: X-ray Crystallography, Protein-Protein Interactions, Drug Discovery



MOBI - Urban Mobility, Sustainable Logistics, Electric & Hybrid Vehicles, Energy Storage Systems, Life Cycle Assessment



AVRG - Accoustics and Vibration

GOVERNMENT FUNDING FOR STRATEGIC & APPLIED RESEARCH

Contract research and licensing of technologies generates revenue for the university which can be reinvested in research. During the last 20 years this valorization of research results became increasingly important. Without government funding this would not be possible though. Flanders, Brussels and Europe are well aware of the fact that the strategic and applied research output of the universities influences the regional innovation degree and reinforces the economic landscape. In 2018 the governmental funding for strategic and applied research received by VUB amounted to **€ 54.8M**.

VUB TechTransfer gives assistance and support to researchers for:

- Projects financed by the Industrial Research Fund (IOF) of the VUB (Flemish government funding)
- Flanders VLAIO & FWO calls
- Brussels-Capital Region funding through Innoviris
- Projects with SOC's and spearhead clusters
- EU-projects with economic purpose
- Financing for applied projects with valorization potential by other (international) organizations or administrations

INDUSTRIAL RESEARCH FUND IN 2018

VUB TechTransfer supports projects financed by the Industrial Research Fund (IOF). Since 2004 Flemish universities receive this government funding according to their valorization output performance: contracts with industry, the number of patents and spin-offs, share in the European Framework Programme for R&D and publications and citations. The VUB invests IOF funding in knowledge centers that exceed the average scale of a standard university's research unit, the 'Groups of Excellence in Applied Research' or GEARs. The funding supports them in carrying out outstanding strategic research and developing new application-oriented inventions with economic potential.

In 2018 16 research groups received IOF funding (see left-hand page). Financing was approved for 4 new GEARs, 4 PoCs and 6 Accelerator projects. 1 GEAR was prolonged.

The awarded **Groups of Excellence in Applied Research** will receive IOF funding for 5 years to realize their portfolio of applied research and its valorization.

IOF GEAR	Promotors
Human Centric Digital Innovation	Pieter Ballon
NLite - Fluorescence lifetime imaging (FLT) with nanobody-based tracers	Tony Lahoutte, Maarten Kuijk, Sophie Hernot, Hans Ingelberts
µFlow Cell - Microfluidic particles for cell therapy	Wim De Malsche, Karine Hellemans
RAINbow-Responsible Artificial Intelligence for a smart connected world	Ann Nowé, Johan Loeckx, Ann Dooms, Kurt Barbé, Woutet Verbeke, Tias Guns, Vincent Ginis
Regenerate - muscle/cardiac directed gene therapy for degenerative muscle diseases	Thiery Vandendriessche, Marinee Chuah

Proof-of-Concept (PoC) projects aim to bring scientific research closer to the market and focus on research in a later transitory stage from proof-of-principle to proof-of-concept.

IOF Proof of Concept	Promotors
Architecture software tool to evaluate the impact of Design for Change	Niels De Temmerman, Waldo Galle, François Denis, Camille Vandervaeren
Use of PDGFRβ as a biomarker of liver fibrosis in blood and urine samples	Leo van Grunsven, Joeri Lambrecht
Realizing a chromatography-mass spectrometry expert facility for protein in support of the biopharma	Sebastiaan Eeltink
Development of dual acting drugs targeting biased Mu opioid agonism and neuropeptide FF antagonism for the treatment of acute and chronic pain	Steven Ballet, Charlotte Martin

Accelerator projects aim to support running GEAR programs with a single injection of funds to realise a substantial acceleration effect in the IOF parameters on top of the already realised multiplier.

IOF Accelerator	
Industrial Valorization of Smart Structural Health and Usage Monitoring Strategies for Key Technologies	Camelidae-derived single-domain antibody fragments for theranosis of cancer
"Cross-KET Photonics": B-PHOT's third industrial innovation and valorization wave	MOBI: Mobility, Logistics and Automotive Technology Research Centre Valorization of MOBI key assets: breakthroughs in sustainable mobility and logistics
BruBotics Human Robotics Lab	A generic toolbox for the reliable prediction of lifetime and ageing in electrochemical systems

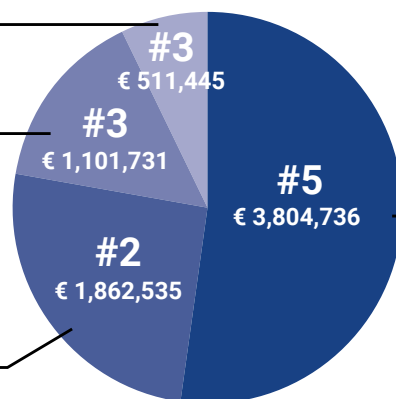


In 2018 VUB received € 7.28M strategic basic research funding from VLAIO and FWO.

Baekeland Mandates (PhD)

R&D projects with industry

SBO-M (societal)



of VUB projects
€ VUB budget

SBO-E (economic)

SBO ECONOMIC

- Robustify: Condition monitoring robust against machine variations and dynamic environments - Jan Helsen
- Fully closed circle for re- and upcycling of used polymers - Frank De Proft
- SNIPPET: Secure and privacy-friendly Peer-to-Peer Electricity Trading - Pieter Ballon
- Computational Modelling of Thermo-Elastohydrodynamic Lubricated Contacts - Thomas Geernaert
- Hi-PAS: High-Precision hybrid laser-based additive & subtractive manufacturing - Patrick Guillaume

BAEKELAND MANDATES

- Modular Distributed Linear Electromagnetic Actuation for Reciprocating Compressors - Francesco Contino
- In situ mRNA vaccination: bringing the fight to the tumor - Kris Thielemans
- Preclinical development of an mRNA cancer vaccine for intravenous administration - Kris Thielemans

SBO SOCIETAL

2 approved as partner

- CAPACITY: Flanders Project to Develop Capacity in Palliative Care Across Society - Joachim Cohen
- Developing training tools for explaining and reducing ethnic discrimination in the fields of education, health care, housing and labour - Pieter-Paul Verhaeghe

R&D PROJECTS WITH INDUSTRY

- A Novel pooled functional genomics strategy in inducible pluripotent stem cells for the identification of therapeutic targets for liver fibrosis - Leo van Grunsven
- MIA: "Multi-gigabit Innovations in Access" - Vincent Ginis
- RECYCAL II: The influence of recycling on the performance properties of 6060, 6063, 6005, 6061 aluminum extrusion alloys - Iris De Graeve



FLANDERS PROJECT FUNDING

In 2018 the Vrije Universiteit Brussel achieved first-rate results in obtaining funding for strategic basic research from the Research Foundation - Flanders (FWO) and 'Agentschap Innoveren en Ondernemen' (VLAIO) with a total budget of **€ 7.28M**.

Below you can find specific information on the different funding channels and in the blue text boxes some more details on the granted projects.

Flanders Innovation & Entrepreneurship - VLAIO

Beginning of 2018 financing of 'R&D projects with industry' was reformed by VLAIO with a clear difference between research and development projects. Cooperations were initiated by VUB for a total amount of **€ 1.1M**. Furthermore 3 Baekeland mandates (post-doc in collaboration with industry) were filed and approved in 2018.

Research Foundation - Flanders – FWO

The Strategic Basic Research programme of Flanders (SBO) supports innovative research projects with economic (SBO-E) or societal potential (SBO-M). End users as well as research centers are involved. This programme focuses on innovative research which, if scientifically successful, will create prospects for economic or societal applications (e.g. a new generation of products, processes and/or services). In 2018 VUB exceeded the average success rate for SBO-E and SBO-M project applications. 5 out of 15 SBO-E were approved, representing 11.2% of the total budget. 2 out of 10 projects with societal purpose were approved, which coincides with 9.1% of the total SBO-M budget.

Strategic Research Centers (SOCs)

SOCs have been created as a result of excellent scientific research in broad domains such as nanoelectronics and digital technologies (imec), biotechnology (VIB), cleantech and sustainable development (VITO) and the manufacturing industry (Flanders Make). They build bridges between fundamental and applied research and are important for Flanders' economy. VUB participates in these Strategic Research Centers.

Spearhead Clusters

The focus of the Flemish cluster policy is on a limited number of large-scale and ambitious spearhead clusters: Catalisti (sustainable chemistry and synthetics), SIM (materials), FLUX50 (energy), VIL (logistics and transport), Flanders Food (agrofood), Blue Cluster (blue growth). These spearhead clusters will develop and implement an ambitious long-term strategy and competitiveness programme for the Flanders strategic domain, in collaboration with companies, knowledge centres and the government (triple helix).

In 2018 financing possibilities for spearhead clusters were extended with SBO- and ICON-projects.

3 SBO-PROJECTS APPROVED (1.7 M EUR)

- EasiChem: Efficiency Affinity Separations for CHEMical Applications - Wim De Malsche
- DISpATch: Digital twIn for Synchromodal Transport - Implementing synchromodal transport in Flanders - Cathy Macharis
- FIBRAXFUN: A Knowledge Base for Exploiting Novel Wheats Rich in Arabinoxylan Dietary Fibre throughout the Wheat Value Chain - Luc De Vuyst

4 ICON-PROJECTS APPROVED (3.7 M EUR)

- PolyFlam: Polyol based flame retardants and lubricants - Guy Van Assche
- OPTIBIDS: Optimized bidirectional & Smart vehicle charging in local energy systems
- MAMuET: Machine learning for real-time Advanced Multi Energy Trading
- ROLECS: Roll-Out of Local Energy Communities
Latter 3 with Thierry Coosemans as promotor

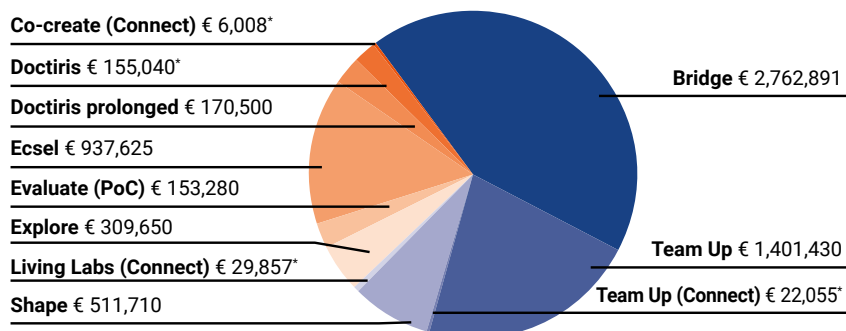
6 R&D FEASIBILITY STUDIES APPROVED (131 K EUR): Experimental Operation Room, Green Datacenter, Thermal Grid, Battery-to-Grid, Vehicle-to-Grid, Co²-neutral Microgrid Researchpark Zellik

BRUSSELS PROJECT FUNDING

VUB TechTransfer supports research groups in finding industrial partners, writing proposals, preparing for jury defenses, drawing up legal contracts, and much more. In 2018 strategic funding from the Brussels-Capital Region granted by Innoviris to VUB amounted to a total budget of **€ 6.46M**.

Innoviris projects approved in 2018

Budget



* Connect: financing by Innoviris to partly cover the cost of writing a full proposal



icity.brussels is a technology hub focused on research, development, innovation and valorization. They help Brussels emerge as the ICT Heart of Europe.

Funded by the ERDF and Innoviris and as a joint initiative of ULB, VUB and SIRRIS, icity.brussels has already launched R&D ICT projects in several key domains like education, e-Health, mobility, Internet of Things or 5G.

A new **Innovation Lab** will also offer a Hardware/Software blending environment to all active regional ICT players.

icity.brussels

Doctiris - University & Industry

Doctiris projects have the purpose to encourage partnerships between the Brussels Region's academic and industrial actors through doctoral projects. New in 2018: a public organization can be partner as well.

1 project was accepted:

- *Economic activity of independent entrepreneurs in Brussels since 1984: Modeling and empirical analysis based on the eClipz database - Ewoud Heyndels /promotor Kris Boudt*

1 project was renewed:

- *Architects' houses in Brussels. Strategies for valorization - Linsy Raaffels / promotors Inge Bertels, Stephanie Van de Voorde*

Launch - Brussels spin-off

Launch aims to stimulate the starting up of new companies in the Brussels Region.

1 project was renewed:

- *OASIS: Opinion Advice and Study Bureau through Internet Surveys – Joeri Minne*

Bridge - Strategic Platforms

Bridge funding mainly targets interuniversity research projects implemented through strategic platforms of minimum 2 research units of Brussels' universities and/or university colleges. Particular attention is paid to opportunities for industrial applications for Brussels' enterprises. In 2018 Bridge focused on "Green Chemistry".

All 4 submitted projects were accepted:

- *CCC-MEP: New routes for CO2 capture and conversion using microwaves, electrochemistry and atmospheric plasma - promotor Joeri Denayer*
- *Sublimus: Becoming modern green urban alchemists: gold and silver mining from Brussels urban sewage - promotors Marc Elskens, Philippe Claeys*
- *Colores: Color Responsive platform technology - promotors Wim De Malsche, Guy Van Assche, Heidi Ottevaere*
- *Fuse: Green approaches towards full solid-state batteries for electric vehicles - promotors Joeri Van Mierlo, Annick Hubin*

Team Up - Collaboration

The objective of Team Up is to foster collaboration between academia and industry in the Brussels-Capital Region. This program involves an active participation of both academic units and industrial teams with the aim of strengthening knowledge, transferring IP from academic research to the industry and turning it into prototypes that lead to new business opportunities. Thanks to Team Up, companies will acquire the knowledge they miss, integrate state-of-the-art and academics will find real-world use cases to apply their findings. This second edition of Team Up focused on "Distributed and Decentralised Systems". A complementary funding Connect could be applied for to cover part of the costs when writing a full proposal.

Because of the success of the call in 2017, Innoviris decided to transfer 4 projects in Artificial Intelligence to 2018:

- *Mobipulse: Big Data Driven Optimisation of Mobility and Smart Advertisement in the City (MIDAS)* - promotor Nikolaos Deligiannis
- *ADVISE: Anomaly Detection in Video Security Footage* - promotor Nikolaos Deligiannis
- *Sentometrics: Tools for optimized textual sentiment indexation* - promotor Kris Boudt
- *The Synaps Project: Real-Time Intelligent Knowledge Sharing for Contact Center Agents* - promotor Ann Nowé

Projects approved in 2018:

- *CAsK: Multi-agent behavioural endpoint models for the detection of cyber attacks across the kill chain* - promotor Ann Nowé, Johan Loeckx
- *DrIVING: Distributed Recognition Infrastructure for Intelligent traffic camera Networks* - promotor Adrian Munteanu
- *ROADMAP: Data-driven monitoring and optimisation of decentralised machining processes* - promotor Johan Stiens, Nikolaos Deligiannis, Patrick Guillaume

Test-it - Living Labs

Through this call Innoviris wants to give innovators the chance to develop and try out their products, solutions and concepts together with end users in living labs.

3 projects were approved:

- *BC-Klet: Test an innovative solution for the delivery of light goods by bike by intelligent containerization in the Brussels Region* - promotor Cathy Macharis
- *ASSUZB: Automated Shuttle Service for Universitair Ziekenhuis Brussel* - promotor Cédric De Cauwer, Wim Vanobberghen
- *BCCC: Brussels Construction Consolidation Centre* - promotor Cathy Macharis

Evaluate - Proof-of-concept

Through this programme the feasibility or socio-economic relevance of an innovative technology, method or idea based on research results can be demonstrated.

2 proof-of-concept projects were approved:

- *MICRODROP: Large scale droplet generator for sub 100 µm monodisperse microsphere production* - promotor Wim De Malsche
- *D-STReAM: Differential Smooth Transient Radar Method* - promotor Johan Stiens

Explore – Industrial Research

This programme aims to finance industrial research projects with the purpose to fine-tune a product, process or service.

1 project was approved:

- *SBB: Solid Electrolytes for high energy lithium battery* - promotor Joeri Van Mierlo

Shape – Experimental development

This action focuses on experimental development projects to convert results of industrial research into prototypes.

1 project was approved:

- *eTailor: accurate AI enhanced 3D body and garment scanning* - promotor Adrian Munteanu

Ecsel

This programme is destined to R&D&I in the domain of electronic systems and is financed by EU as well as national funding institutes (such as Innoviris).

1 project was approved:

- *HiPERFORM: High performant Wide Band Gap Power Electronics for Reliable, energy efficient drivetrains and Optimization through Multi-physics simulation* - promotor Omar Hegazy

EU FUNDING SUPPORT FOR PROJECTS WITH ECONOMIC PURPOSE

The mission of VUB TechTransfer concerning EU research is to develop a unique support for the VUB research groups, resulting in an increase in strategic value, the number of submitted proposals and approved projects. In 2015 a **new concept** to support VUB research groups in **applying for EU funding for projects with economic purpose** was developed and launched.

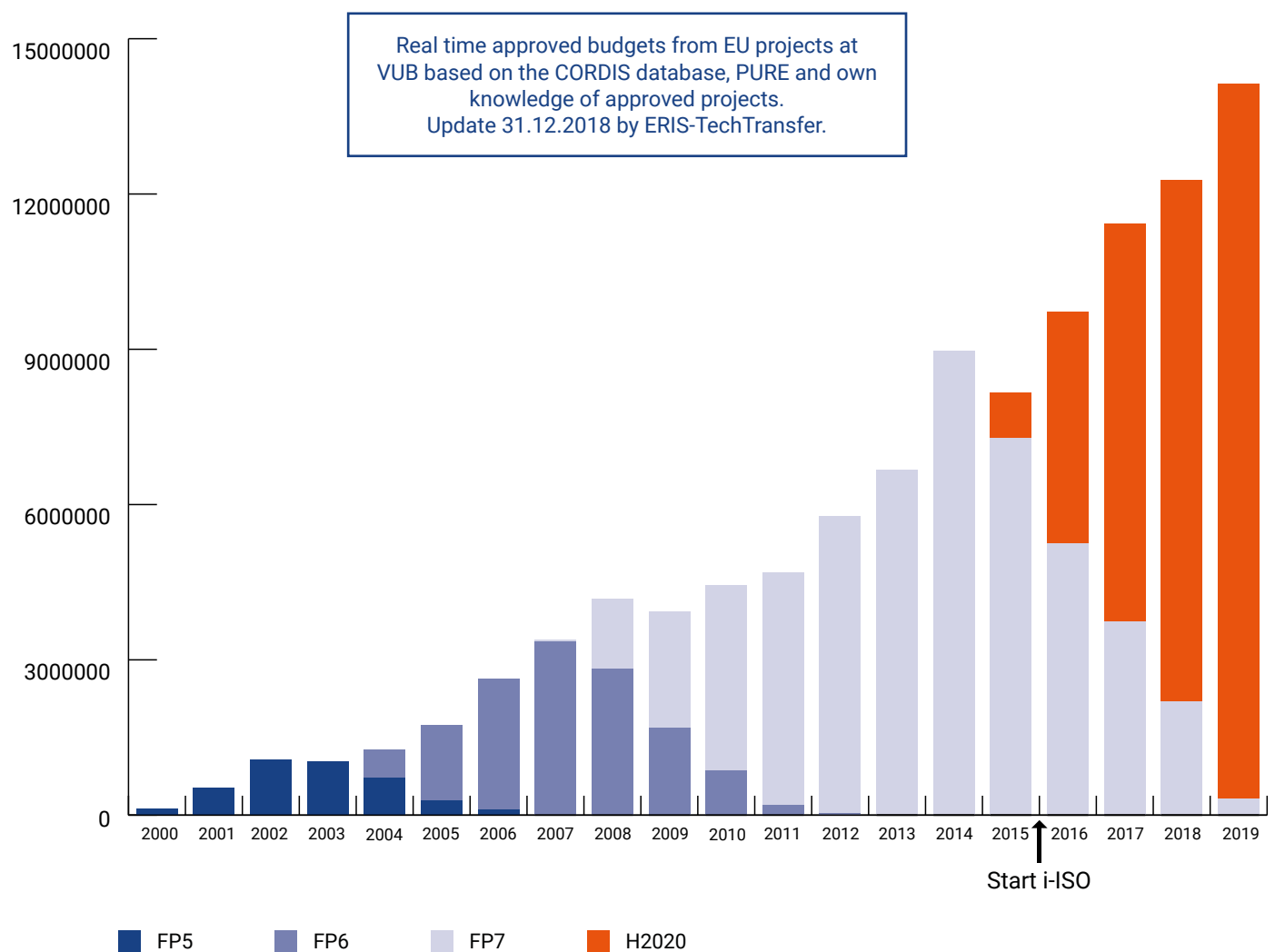
i-ISO is the acronym of:

- **Identifying** (Identificeren) of EU funding programmes and their calls.
- **Informing** (Informeren) the VUB research groups about the programmes and calls.
- **Stimulating** (Stimuleren) through a dedicated approach to reduce barriers for application for funding. An EU roadmap is developed and implemented in VUB. An additional stimulation is given through funding at pre- and post-proposal level.
- **Intensive support** (Ondersteunen) in preparing proposals at programme, call and proposal level.

The increase in EU funding with a rate of 1 million euro per year is also achieved in 2018. Our researchers consolidated the activities of 2018 with 198 submitted proposals against 188 proposals in 2017. 34 proposals are approved, which corresponds to a success rate of over 17%, 2% more compared to 2017.

End of 2018, the EU support at VUB has been reorganized, of which we will report the first results next year.

Income (€)



VUB B-PHOT'S SUCCESSFUL CONTRIBUTION TO THE EUROPEAN PHOTONICS R&I SCENE

VUB B-PHOT, the Brussels Photonics Team, plays a key role in the integration of the European photonics R&I landscape and in the coordination and implementation of pan-European initiatives to support European companies and researchers with open access to photonics technology platforms and photonics innovation. Besides developing, managing, and coordinating such strategic initiatives B-PHOT strongly contributes to them with its open access prototyping and manufacturing infrastructure for micro-, mini-, and macro-refractive freeform optical components and systems.

The successful contribution of B-PHOT to the European photonics R&I scene is evidenced by the considerable strategic impact of the European Network of Excellence in Micro-Optics **"NEMO"** that it coordinated (2004-2009). With this large-scale initiative B-PHOT developed and tested novel open access instruments to support European researchers and companies, based on newly integrated joint technological facilities. From 2010 until 2013 B-PHOT rolled out this early support experience in the EC-funded Access Center to Micro-Optics Services and Technologies **"ACTMOST"**, a small-scale open access test-bed to support European SMEs with photonics innovation. This initiative was so successful that it was scaled up in the Access Center for Photonics Innovation Solutions and Technology Support **"ACTPHAST"**, an initiative from 2013 until 2017 with B-PHOT coordinating the joint efforts of 23 European top photonics research centers in support of 100 European companies. Currently VUB B-PHOT is coordinating **ACTPHAST 4.0** and **ACTPHAST4R, Europe's photonics innovation incubators for SME's and entrepreneurial-minded researchers** and is teaming up with Europe's photonics pilot lines to help companies - in particular SMEs - to bridge the photonics innovation valley of death. Besides the strong innovation focus in the ACTMOST and ACTPHAST projects, VUB B-PHOT also participated and coordinated different other types of EU projects. In total **14 projects in FP7** and currently **9 in H2020** were approved.

The future will be completed through projects that allow to control the full value chain from research or product idea up to pre-production scale, using its freeform optics pilot line facilities as part of a larger European pilot line network.





REVENUE FROM VALORIZATION AND CONTRACT RESEARCH WITH INDUSTRY

Through contract research and licensing of technologies with industry and other third parties (profit/non profit), the university can develop and maintain long-term cooperations and implement its knowledge in society. Since 2008 the revenue from these kinds of collaborations has been steadily growing, with or without governmental financial support.

2018 was an extremely good year with an increase in revenue from valorization and contract research from € 12.3M in 2017 to € 30.4M. The acquisition of VUB spin-off Ablynx by Sanofi plays an important role, but income from contract research also grew with more than € 1M. These funds can be reinvested in the university's excellent research.

INTELLECTUAL PROPERTY (IP) MANAGEMENT & LICENSING

The commercial application of promising VUB technologies. VUB TechTransfer facilitates it. That is how economic activity is attracted and initiated in Brussels and the Flanders Region and how relations are built with industry. And how tangible impact is given to VUB R&I: by transferring results to industry, government and society.

An important way to valorize is the licensing of intellectual property rights (patents and patent applications, software, confidential know-how, design rights, trademarks, etc.) to existing companies or university spin-offs. A privileged relationship between a lab and a spin-off company is beneficial to the growth of the company, in particular in its early development stages.

VUB technologies available for licensing or for R&D partnerships are communicated through bilateral contacts with industry, networking and matchmaking events, the VUB TechTransfer website and newsletter, conferences such as Knowledge for Growth, and other specific channels.

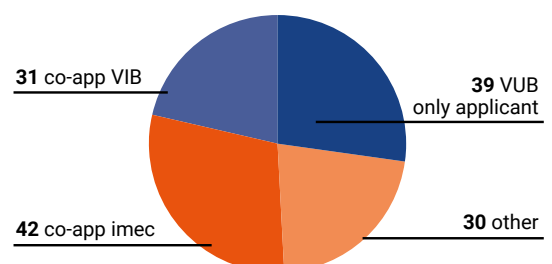
In 2018, 38 inventions were disclosed. 24 priority patent applications were filed. The total portfolio included **142 active patent families**, of which about one fourth owned exclusively by VUB. 75 % of VUB's patent portfolio is co-owned by third parties such as VIB, imec or other research institutes and companies, illustrating the substantial amount of R&D collaboration with third parties.

Licensing of research results generates income for the university and creates structural collaborations with companies.

Reuters TOP 100: Europe's Most Innovative Universities - 2018

VUB ranks number 47 in Europe's Most Innovative Universities TOP 100 by Reuters, a list that identifies and ranks the educational institutions doing the most to advance science, invent new technologies and power new markets and industries. In this ranking not only the number of patents is taken into account but also their 'value'. VUB is the third Flemish university in the ranking which is an excellent result considering the size of the university. Moreover this proves that VUB's valorization strategy works. The list also shows how small countries like Belgium are very well represented in the world of innovation.

active patent families: 142





UNIVERSITY SPIN-OFFS

University spin-offs are companies whose main activities are based on the formal transfer of research results originating from the university or university college. This transfer can take different forms, e.g. through a license agreement or share capital participation, depending on the specific case.

In **2018 VUB's spin-off portfolio** contained **34 active companies** based on research in various fields: engineering, life sciences, economics, ICT, sports, etc. In this context, VUB also cooperates with strategic research centers such as VIB, imec, Flanders Make and VITO. VUB TechTransfer plays a crucial role in identifying, developing and evaluating VUB spin-off projects. To maximize the survival of a start-up, a lot of attention is paid to other factors than the innovative technology, such as market strategy, value proposition and a complementary team.

"BI3 Fund has been a great partner throughout our growth. As the very first investor in Collibra, they believed in our founding team and our vision before anyone else did. That takes courage. They have always been supportive, when things were good and when things were difficult. It's been a great pleasure working with the whole BI3 team as we've scaled Collibra from an idea to a successful, high-growth software company."

Felix Van de Maele, CEO and co-founder of Collibra

VUB BI³ Fund made a difference

The **BI³ Fund** was established in 2002 as a risk capital fund with financial contributions from Brustart, KBC Bank, BNP Fortis Private Equity Belgium, Ethias and the VUB. Combining its three driving forces - **Imagination, Innovation and Incubation** - the BI³ Fund wanted to create sufficient space for an **innovative VUB policy for valorization-oriented research and entrepreneurship**. The aim was to provide seed capital, financial and business know-how to spin-off companies of the Vrije Universiteit Brussel **in an early high-risk stage** when other investors were not interested to take the risk. BI³ invested in 8 spin-offs of the Vrije Universiteit Brussel. **One of them was Collibra, the first Belgian unicorn**. The initial support of the BI³ Fund helped start the spin-offs and **gap the first bridge to external investment**, which amounted to more than €200M. Furthermore, the VUB spin-offs that were supported, and especially Collibra, ensured **important job creation**, with currently over 470 jobs that have been created, a number that is still expansively growing. **The university fund was successfully closed at the beginning of 2019.**

Qbic II interuniversity Fund

The **Qbic Fund** is a multi-sector seed and early stage fund supporting spin-off companies of the Ghent, Brussels, Antwerp and Liège university associations and of VITO. In 2016 the investment period of Qbic I came to an end. Beginning of 2017 Qbic launched a second venture capital fund 'Qbic II' to successfully continue investing in university spin-offs. Shareholders of Qbic confirmed their confidence by stepping into the new fund. Moreover new private and public financiers came on board. With in aggregate close to € 100 million (Qbic I and Qbic II) under management, Qbic is one of the largest interuniversity spin-off funds in Europe. Qbic II has analysed several VUB dossiers and is ready to invest in 2019.



VUB spin-off highlights in 2018

- Collibra first Belgian Unicorn (Jan 2019)**
 Brussels-based Collibra provides data governance solutions. Through a Series E funding led by CapitalG, Google's growth equity investment fund, the tech startup is now valued more than \$1 billion – making it Europe's newest unicorn. (Source: De Tijd, VRTNews)
- Camel-IDS collects 37m euro in a Series A investment round**
 The proceeds will enable Camel-IDS to run a phase Ib/II trial with its lead program CAM-H2 targeting HER2-positive brain metastatic breast cancer, while further progressing and broadening its preclinical pipeline. (Source: De Tijd, Trends, de Standaard)
- eTheRNA opens state-of-the-art manufacturing facility in Niel (Flanders) to support the development of its TriMix-based mRNA cancer immunotherapies.** (Source: De Tijd)
- Collibra on Forbes Cloud 100 list**
 Collibra, VUB spin-off and leader in enterprise data governance, has been named for the second consecutive year to the Forbes Cloud 100, the definitive list of the top 100 privately-held cloud companies in the world. (Source: Forbes)
- Sanofi acquires Ablynx for 3.9 billion euro**
 This VUB biotech spin-off is pioneer in the use of camelid Nanobodies® discovered by professors Hamers, Casterman and Muyldermans in 1989, and developed its first medicine for rare blood disorders. This takeover represents the biggest Belgian deal since 2015. (Source: De Tijd, De Standaard, De Morgen, GlobeNewswire, Financial Times)
- PharmaFluidics gets top investors on board**
 Biotech investors Rudi Mariën en Annie Vereecken invest in VUB spin-off PharmaFluidics, participating in a capital round of more than €7 million. (Source: De Tijd)

New spin-offs in 2018:



Gulliver Biomed

UGent/VUB spin-off Gulliver Biomed was founded in 2018. Their aim is to foster nanobody research in general and bring these powerful tools to the scientific community and private industry at large. Camelid nanobodies were discovered at the VUB at the end of the 80s. The technological expertise at Gulliver Biomed is based on research in the UGent Nanobody Lab.



Fertiga

The VUB Research Group FOBI under the direction of Prof. Dr. Johan Smits developed extensive knowledge and expertise in gene expression of cumulus cells. This resulted in the Corona Test, which is used for determining the oocyte quality in the process of in-vitro fertilization (IVF) and social freezing.

RESEARCH PARK & INCUBATORS

Companies committed to supporting research and collaboration with the VUB can find space, appropriate facilities or infrastructure in the research park or one of the incubation centers.

- The **Researchpark Zellik** is an area near the Brussels Ring purchased by the Flemish Government in 1983 to attract high-tech or research-based companies. VUB was involved from the beginning to monitor the research character of the companies that applied for establishment. End of 2015 Flanders decided to give new impulses to this research park with Agentschap Innoveren en Ondernemen (VLAIO) as driving force. In 2018 VUB TechTransfer actively supported the launch of a new project '**Green Energy Park Zellik**', together with UZ Brussel, several VUB research groups and Flux50. This CO2 neutral smart grid will include solar and wind energy and will serve as a test-ground for innovative energy systems and electric mobility. www.researchparkzellik.be
- Situated near the Brussels Humanities, Sciences & Engineering Campus, **ICAB Business and Technology Incubator** offers an ideal work environment for innovative start-ups in the ICT and engineering sectors. www.icabrussel.be
- The **Innovation & Incubation Center Brussels (IICB)** offers high quality services to starting and young enterprises to enter the market of high-tech products or services and is situated in the Researchpark Zellik, not far from the university Health Campus and the UZ Brussel. www.iicb.be
- **Usquare.brussels - Bringing people, city and knowledge together**
The Usquare project combines the ambitions of VUB, ULB and the Brussels-Capital Region to **bring people, city and knowledge** together. An **innovative interuniversity cluster** for sustainable development research, knowledge dissemination, entrepreneurship and innovation will be established. During the reconversion phase of the barracks at Ixelles, **Start.VUB**, the new incubator for entrepreneurial students of the VUB, and **Fablab Brussels**, VUB's fast prototyping for engineers and makers, have found a suitable place at the site. usquare.brussels - start.vub.be - www.fablab-brussels.be

ENTREPRENEURSHIP EDUCATION

BOOST YOUR ENTREPRENEURSHIP AND BUILD YOUR OWN BUSINESS

To raise more awareness of (technological) entrepreneurship among master and doctoral students, researchers and young professionals, VUB TechTransfer organizes 2 evening courses:

- Since 1995 the **Starter Seminars** provide a short but intensive course on the fundamentals of entrepreneurship and business. A variety of topics is covered such as developing a business plan, finance, marketing and the complex issues surrounding patenting.
- In 2014 the **Advanced Starter Seminars** were introduced, a follow-up course where business aspects and starting up a company are treated more in-depth.

Marc Goldchstein, Officer Entrepreneurship Education at VUB TechTransfer, is the main lecturer and content coordinator. Expert-speakers from VUB or the business world are also involved. In addition to the programme a workshop on scaleups was organized in 2018 with Roland Siebelink, Author of "Scaling Silicon Valley Style" as renown speaker.



Interesting to know

- Entrepreneurs from VUB spin-offs Camel-IDS, Optrima/SoftKinetic (now Sony DepthSensing Solutions), PharmaFluidics and Double Pass shared their start-up experience in 2018. Some of these successful entrepreneurs participated at the starter seminars in the past.
- New in 2018: students and researchers in Jette can follow the course through teleclassing.
- Since 1995 more than 1000 people interested in entrepreneurship participated. Attendance is very high. More than 62% regularly attended and received a Certificate of Participation in 2018.
- The VUB TechTransfer Entrepreneurship community on LinkedIn with over 160 followers lists interesting posts on entrepreneurship issues.

TECHTRANSFER COMMUNICATION & EVENTS

VUB TechTransfer's mission is 'the valorization of research results with the purpose to deliver an innovative contribution to society.' The financial return can be reinvested in excellent research at the university. To achieve this our researchers are crucial. The Communication & Events unit takes care of raising awareness within the VUB research community concerning all aspects of valorization as well as promoting the university's knowledge and expertise to the outside world.

The communication tools include a website, an electronic newsletter 'VUB TechTransfer News' and Twitter account, promotion material and publications, taking into account the VUB's corporate identity. In 2018 the reconversion towards a new website has been prepared to be implemented in 2019. For communication through press releases, VUB Today and HENRI, the communication cell appeals to VUB corporate Marcom. External partners and communication channels are also called upon to promote licensing opportunities and project calls. In 2018 VUB TechTransfer (co-)organized 2 events to launch the Green Energy Park Zellik project. The unit also takes care of the organization of the VUB (Advanced) Starter Seminars.

VUB TechTransfer is member of TTO Flanders, a unique portal of the knowledge and technology transfer offices of the 5 Flemish universities. The joint communication cell takes care of TTO Flanders' corporate identity and communication tools such as a website and promotion material. In 2018 TTO Flanders participated with a booth at SuperNova in Antwerp and Knowledge for Growth in Ghent. A second separate booth was organised by VUB at SuperNova, logistically supported by VUB TechTransfer. A yearly interuniversity IOF-TTO event is organised destined to tech transfer staff as well as business developers and mandatories from the research groups which receive financing of the Industrial Research Fund.

Some of the realizations in 2018:



Flyer 'Groups of Excellence in Applied Research'

A new template was designed to promote research groups that perform outstanding strategic research.



SuperNova, first edition of technology and future festival in Antwerp

Support of TTO Flanders booth and VUB booth. 4 VUB research groups showcased innovative technologies in photonics, electronic & informatics, robotics and artificial intelligence.



Biotech fair Knowledge for Growth 2018

At the TTO Flanders booth VUB's *In Vitro* Toxicology and Dermato-cosmetology research group showcased their innovative skin-derived hepatic cell technology.



New in 2018: Twitter account @techtransfervub

- goal is to promote VUB's strategic research with a broader audience
- since start in May 2018, 183 followers and 257 tweets or retweets
- about 200 impressions per day



VUB TechTransfer News

Informs on project calls, matchmaking events, innovative research @VUB and much more.

- 51 weekly newsletters
- about 3000 receivers, open ratio of 30%
- link to 144 news and 74 calendar items posted on vubtechtransfer.be
- 32 links to articles in the press highlighting strategic research or VUB spin-offs
- **New weekly item with focus on Social Sciences & the Humanities**



VUB FOUNDATION

VUB. EVERY DONATION RETURNS.

The [VUB Foundation](#) was created in 2012 to raise philanthropic funds. Due to the ongoing economic crisis, cuts have been made in public funding. Unfortunately, this downsizing also affects the VUB. The VUB Foundation is a strategic component of the VUB and is part of the vice-rectorate Innovation & Industry Relations.

[Chairs](#) are an excellent means to financially support education, research and innovation and to develop a long-term relationship with companies. End 2018 VUB counted 32 active chairs among which five newly created: Andulation Care Research Chair in partnership with Health Home Products, VBO-FEB VUB-ULB Chair in cooperation with the Federation of Belgian Enterprises, Asia-Pacific Studies Chair in collaboration with Aviation Education Foundation, Data Protection On The Ground Chair with support of BNP Paribas Fortis and finally Human Resources Data Analytics Chair, in alliance with Acerta Consult.

Last year's most successful fundraising project was [VUB Children's University](#) (Research & Data Management), a project to encourage young children from schools in Brussels to choose a career in science and/or technology. In 2018 the VUB Foundation continued raising funds for two other projects: [FabLab 2.0](#) (Faculty of Engineering), an improved Fabrication Lab at the new Usquare Site in Etterbeek for engineers and makers in Brussels to shape their ideas and [Arabic language courses](#) for children (International Relations & Mobility Office), offered to children between the ages of 6-15, embedded in a pedagogic and neutral school environment, academically supported by highly educated teachers.



Additionally, the VUB Foundation introduced a new fundraising project, the renovation of the [Braem building](#). Throughout the years, this masterpiece of architect Renaat Braem grew to be an icon, an embodiment of the ideology of the VUB.



At the end of 2018 a group of 12 enthusiastic VUB students called more than 5000 VUB alumni during the annual [Telethon](#). The alumni were informed about either FabLab 2.0 or the renovation of the Braem building and when interested asked for their financial support.

With their legacy people can have an important impact on the society of today and tomorrow. By including the VUB in their testimony people assure that their money is used for research, projects or educational purposes that are close to their heart. In 2018 the Foundation received a legacy intended for scientific research in the Faculty of Medicine and Pharmacy.

Finally, 2018 was an important year regarding the establishment of new funds by name. A total of five [funds by name](#) were founded:



[VUB Yamina Krossa Fund](#) for breast cancer research to support the fundamental research for a cancer vaccine of prof. dr. Damya Laoui (VUB-VIB) and her team;

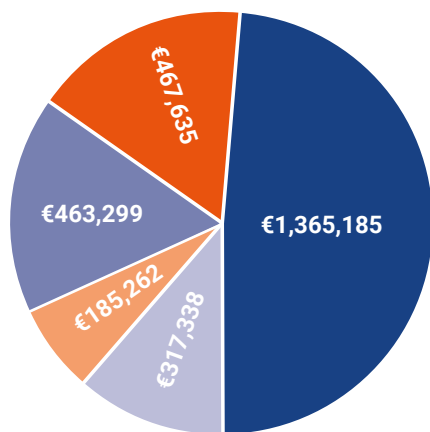


[VUB-UZB Paul De Knop Fund](#) for immunotherapy to support the clinical and fundamental immunotherapy research of prof. dr. Bart Neyns and his team;

[VUB Luc Bucquoye Fund](#) for literature to finance an annual prize for an author of a Dutch literary work which reflects on reasoning and engagement; [VUB AVN Fund](#) for research in the field of nuclear safety and radiation protection to grant PhD scholarships for research in this domain and finally [VUB Andr  e and Franz Bingen Fund](#) to finance annual thesis prizes and scholarships for students of the Vesalius College.

THE NUMBERS

In 2018 the VUB Foundation had a total income of €2,798,719, in-kind sponsorships not included.



CHAIRS	LEGACIES
FUNDS BY NAME	SPONSORING
DONATIONS FOR PROJECTS AND FACILITIES	



WWW.VUBFOUNDATION.BE

THE FELLOWSHIP PROGRAMME

ACADEMIA MEETS SOCIETY

The Vrije Universiteit Brussel initiated its Fellowship programme in 2012. This had a significant impact on our university. The Fellows have improved the quality of our research and our education, the employability of our graduates and our overall capacity for innovation and competitiveness.

A total of 37 top-level business people, visionary decision makers and socially relevant personalities were introduced as new VUB Fellows in 2018. In total, the VUB has now 96 outstanding Fellows and 63 Honorary Fellows who have agreed to commit in connecting our university with society on a voluntary basis.

Through the VUB Fellowship programme, all who are involved discuss joint challenges, exchange experiences, share good practices and learn from one another for the benefit of research, academic education and society in general.

WWW.VUB.AC.BE/FELLOWSHIP



VUB CROSSTALKS

A UNIQUE KIND OF ACADEMIC AND CORPORATE NETWORKING



(04.2018)

Coping with Complexity

An evening looking into the different perspectives of coping with complexity

Are mathematics, statistics and data hoarding the ultimate ways to organize what seem random phenomena? Maybe, maybe not. Arts e.g. bring in other dimensions of ordering. This meeting explored scientific and artistic ways of coping with complexity: from brain cracking science to visual arts and music.

Date: 27/04/2018
@ BOZAR

Speakers:

- Lawrence Malstaf (artist)
- Michel Tombroff (ULB/University of California Santa Barbara)
- André Ariew (University of Missouri)
- hosted by Jean Paul Van Bendegem

Part of the Chair History and Philosophy of Sciences



(05.2018)

Entr'Acte Luc De Vuyst

Luc De Vuyst received the Prize for Social Valorization, awarded by the research council of the VUB

The honored researcher invited five guests who inspired him with their work for an interdisciplinary and festive Entr'Acte, organized by Crosstalks. Entr'Acte is an alternation of conversations, images and music.

Date: 17/05/2018
@ Het Brouwershuis

Participants:

- Hendrik Dierendonck (Atelier Dierendonck)
- Maarten Van Essche (Brussels based Belgian chef)
- Tia Hellebaut (track and field athlete, Olympic and EU champion)
- Jack Knapen (Bakery Knapen)
- Gert Christiaens (Brewery Oud-Beersel)



(06.2018)

Cyborgs out of necessity, not by choice

A seminar exploring the merge between human bodies and technologies

Technology has given us the opportunity to heal the human body. What is the difference with 'enhancing the human body'? Will technology make us more humane? Or merely transhuman?

Date: 21/06/2018
@ BOZAR

Speakers:

- Bernard Dan (neurologist)
- Kristien Hens (Bioethics UA/KULeuven)
- Bart Demyttenaere (Medical Advisor National Union of Socialist Mutual Health Insurance Funds)
- Christophe Van Geel (Handicap International)
- Sébastien Vanderlinden (Ortho-Medico)



(11.2018)

Ecopolis

A Just Transition for All, was the topic of the annual Ecopolis event

Meeting at the Kaaithheater in Brussels for a day of debate. Attendees joined over 35 speakers from both national and international organizations to explore social justice, the world of work and climate action.

The program was organized in collaboration with Crosstalks.

Date: 25/11/2018
@ Kaaithheater

Participants:

- Kate Raworth (economist)
- Rachida Lamrabet (writer of a.o. Vertel het iemand)
- Jeroen Theunissen (writer, teacher at the Brussels film- and theatre school RITCS)
- Yasmien Naciri (author, columnist)



(11.2018)

Literary tribute to Fatima Mernissi

Three Belgian authors commemorate the Moroccan sociologist and writer Fatima Mernissi

Fatima Mernissi died on 30 November 2015. She played a major role in the development of feminism in the Muslim world. Her work explores the relationship between power, gender and Islam and builds bridges between the West and the Arab world. During the commemorative evening on 29 November 3 authors and slam poets paid tribute to Fatima Mernissi in their own creative ways. Musical intermezzos by Fatoum.

Date: 29/11/2018
@ BOZAR

Authors:

- Aya Sabi (author)
- Anissa Boujdaini (spoken word artist and cultural critic)
- Yousra Benfquih (slam poet and columnist)

Part of the Fatima Mernissi Chair



(2018-2019)

Redelijk Eigenzinnig

Reason and Engage: Just Peace

Edition 2018-2019 explored the origins and impact of war and conflict. Reason and Engage brings together academics, researchers, professionals and citizens to stimulate critical reflection on some of the policy probing and challenging issues of our times. The lectures take place at various locations in Brussels and are organized in collaboration with a.o. Crosstalks.

Participants:

- 16.10: Gertrudis Van de Vijver: On Kant's 'To Perpetual Peace' @BOZAR
- 30.10: Joes Segal: Art and Crisis @ Faro
- 27.11: Sophie De Schaepdrijver: Remembering the Great War in Public Space @ BELvue Museum
- 11.12: Nils Duquet: Guns for sale. Legal and illegal arms trade in Belgium @Vredesinsituut

CROSSTALKS.NET

Launched by the VUB in 2003, Crosstalks wants to create a new dynamic of knowledge exchange through thematic encounters; beyond specific disciplines and with the active participation of key players from all levels of society. An open and collaborative approach is crucial in every initiative, ranging from small scale professional workshops to big public events.

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