THE RESEARCH FOUNDATION - FLANDERS

2020
ANNUAL

OPENING NEW HORIZONS

A YEAR IN STORIES

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Hilde Crevits

Flemish Minister for Science and Innovation

"Scientific research will help us out of this crisis"

It has been over a year since a virus turned our lives completely upside down. Many of our freedoms and securities came under pressure. However, one certainty became clearer than ever before: scientific research can shine a light into the tunnel and help us out of this crisis.

That is why last year I made extra budget available for two special calls for COVID-19 projects within FWO. That funding is already bearing fruit today. Professor Johan Neyts (KU Leuven), for example, is developing infection models to test various treatments for COVID-19 and his team is heavily involved in both vaccine development and the search for virus inhibitors and anti-inflammatory strategies. Professor Xavier Saelens (Ghent University - VIB) is leading a project to prevent infection by the SARS-CoV-2 virus that causes COVID-19 by developing a neutralising antibody in llamas.

At the same time, through the other FWO funding channels, the fight against viruses and infectious diseases is being vigorously pursued. In the past five years, no less than 40 million euros have been invested in more than 100 research projects on these themes.

The Flemish Supercomputer Centre also plays a key role in COVID-19 research. Researchers from the Antwerp research group UAMC (University of Antwerp), led by Professor Hans De Winter, have analysed millions of chemical structures using the Flemish supercomputer. The aim is to identify the best candidate structures to inhibit the action of the COVID-19 virus and to have active ingredients ready should new outbreaks occur in the future.

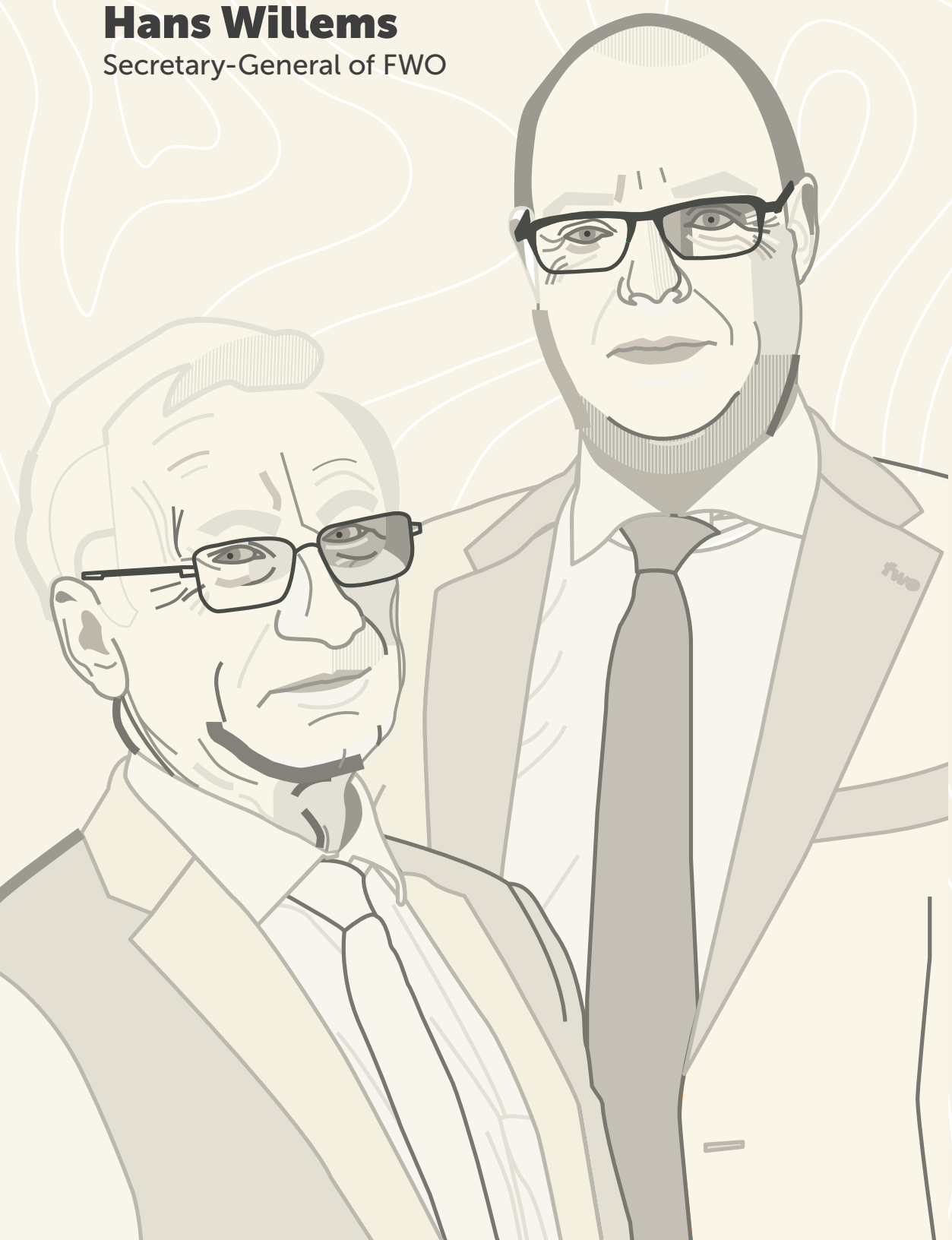
This once again shows that our Flemish researchers are leaders in their field. The interviews in this annual show how our top scientists are to be found not only in Flanders but all over the world. We give the floor to six former FWO researchers who have broadened their horizons to become top players in their field. These include the world-renowned virologist Peter Piot and the CEO of Oxford University Hospitals Bruno Holthof. But also Pattie Maes, who is shaking things up in the field of artificial intelligence at the prestigious MIT, and Marc De Vos, co-founder of the Itinera think tank and dean of the Macquarie Law School.

All these examples highlight the importance of scientific research and top researchers for our society. After all, the results of fundamental scientific research form the basis for countless concrete solutions to the problems of tomorrow. For if we want to avoid building our future dreams on quicksand, we need strong foundations. As the Flemish Minister for Science and Innovation, I hereby thank every researcher in Flanders for taking on this task with passion and dedication.

A heart-felt thank you!

Willy Verstraete
President of FWO

Hans Willems
Secretary-General of FWO



"Researchers today are laying the foundations for the answers to tomorrow's problems"

FWO sends its researchers all over the world. This is once again demonstrated by the list of top scientists featured in this annual. They have reached the top in the most diverse fields of knowledge, and they are now putting their knowledge and skill to work at prestigious institutions abroad.

Each on of them started out as a researcher at FWO. We are therefore incredibly proud of how we have helped these researchers gain ground-breaking insights into topics such as artificial intelligence, the cosmos, experimental psychology, social law, health economics and epidemiology.

The latter disciplines, in particular, reach to the core of something that has held us in its grip for over a year now: a pandemic as unseen as it was unforeseen, which has rocked our society. Our entire society and economy, but also our everyday personal lives, everything we had always seemed obvious, was suddenly not so obvious anymore. We have had to use our ingenuity to crawl out of this hole. And we might not have fully succeeded yet, but the fact that we are making progress and can cautiously hope for a brighter future is due in no small measure to science.

Not only the development of therapies and vaccines against COVID-19, but technology and behavioural sciences too are contributing to a solution that may well mean a change in the lifestyle we knew. But a different approach to things does not necessarily mean a step backwards.

Top science by top talents from Flanders working in world-class institutions across the globe: that, in a nutshell, is what this annual is all about. But it also gives a clear indication of what FWO stands for: training of and support to scientists who make essential contributions in an international context to a world that is slowly but surely improving, through trial and error, for us as human beings and for our environment. Today, our researchers are laying the foundations for the answers to the problems that we sometimes still fail to recognise.
It is precisely yesterday's fundamental research that enables us today to tackle a problem that many did not see coming back then.

May you be inspired by the forward-thinking experts whose life and work is illustrated on the following pages!

INTERVIEWS

Bruno Holthof

CEO of Oxford University Hospitals

"I draw energy from helping to determine what healthcare will look like in the coming decades"

How does one become CEO of one of the largest hospitals in Europe? Bruno Holthof made his name by setting up the umbrella organisation of Antwerp hospitals ZNA. In 2015, he joined Oxford University Hospitals, which together with the University of Oxford and AstraZeneca, developed the Oxford vaccine against COVID-19. An interview with one of Europe's top managers in the social-profit sector about the curse and blessing of making choices.

"I am especially proud of the team I put together"

Many newly-qualified doctors find themselves at a crossroads, unsure of which path to take once they have completed their medical studies. In the mid-eighties, Bruno Holthof initially considered two options: pursuing a career in virology at the Rega Institute of KU Leuven or specialising in ophthalmology. Holthof: "It was a heart-breaking choice *(laughs)*. So what did I end up choosing? Neither! I was also eager to learn about the economics of healthcare. With the support of the Belgian American Educational Foundation, I went to Harvard University for an MBA *(Master of Business Administration, ed.)* . And I have never regretted it. It marked the beginning of a journey around the world with several stops."

At the time, Holthof was known as an outstanding researcher who, with the support of the National Fund for Scientific Research (NFWO), had conducted doctoral research on health economics. "I had created a statistical model that calculated the probability of perinatal mortality and compared it with the mortality rates at the Flemish maternity wards. To do so, I used a unique database with data on risk factors such as twin births, breech presentation, high blood pressure, diabetes, etc. KU Leuven wanted me to stay, but I chose another path: after my MBA and PhD, I became a consultant for the consulting firm McKinsey, working in Belgium, the Netherlands, Denmark and the United States for fourteen years. It was a wonderful time."

In 2004, you became the first managing director of ZNA, the umbrella organisation of the former PCSW hospitals in Antwerp. The merger of ZNA was accompanied by extensive restructuring. Your task was to turn loss-making hospitals into a unified group. Not an easy task for someone taking their first steps as CEO...

"That merger was in fact my last project for McKinsey. After the attacks on the WTC towers in 2001, my family and I returned to Belgium from the States for personal reasons. I was working at McKinsey's Global Healthcare Practice in New Jersey, which was extremely exciting for me, as a consultant in the healthcare sector. But the chance to make a difference in Antwerp, my home town, pushed me in my decision to return to Belgium. Together with a team from McKinsey and other consultants, I drew up a rescue plan for the Antwerp PCSW hospitals. When we proposed our plan, the then-chair of PCSW Monica De Coninck let slip that it was "a beautiful plan, but only doable if I were to take the lead myself." She then asked me to become the first CEO of ZNA."

"We then achieved a great feat with a fantastic team: in the eleven years that I was CEO, ZNA doubled its turnover and became the most profitable hospital in Belgium. We erected new buildings, introduced new technologies, set up new services... I admit that ZNA was a step into the unknown: I had no prior experience as a CEO and the future of the ZNA umbrella organisation did not look very promising back in 2004. But those who know me will tell you that I like to take risks. I do not see myself as a scientist, a health economist or a crisis manager, but rather as someone who feels the need and has the courage to make important decisions. That is a skill I gained in Antwerp."

Which of your choices as a CEO were a hit?

"I am especially proud of the team I put together. Not just the management team or the directors, but also the people in key positions who I was able to personally convince to join the ZNA project. Many of those people still work for ZNA, which makes me very happy. In Oxford, too, I have built a whole new team over the past few years, which is renowned as one of the best management teams in England. Whether in Antwerp, for a newly set-up project, or in Oxford, for one of the best hospitals in the world: if you put the right people in the right place, you can achieve great things together."

"As the CEO of a hospital, you don't just make decisions about people, but also about major investments. For example, I really enjoyed drawing up the plan for the new Cadix Hospital of ZNA in Antwerp *(which will be completed in 2022 on the Park Spoor Noord site, ed.)*, which will replace the Stuivenberg Hospital that has been in use for more than 135 years. We also had a completely new psychiatric hospital built on the Stuivenberg site. We invested in infrastructure and a better environment for both staff and patients."

Is that also what makes your job at Oxford University Hospitals so interesting: having the luxury of being able to deal with so many different aspects?

"Absolutely. You are working with people, buildings and concepts that will determine the look of healthcare for decades to come. That gives me the energy I need to keep going. Oxford University Hospitals is a world-renowned authority in digital applications and cutting-edge genetic engineering. It is an honour that I get to help make decisions on this. I am involved in all the investments of over a million pounds. I have also reached an age where I can increasingly coach people. Colleagues who face the same choices I once faced, ask me for advice. I enjoy helping them out."

In 2015, you joined Oxford University Hospitals as CEO. What attracted you to the role?

"This position offered more at every level: bigger budgets, bigger teams and incredible scientific talents. At the time, I was asked by a headhunter whether I was interested in the vacant position of CEO, but I initially refused: I was really enjoying my time in Antwerp. In the end, we had an introductory meeting. I felt instant chemistry with the Canadian Professor John Bell, an immunologist and geneticist who has been stirring things up in Oxford since the 1980s. He convinced me. Together with John Bell, I developed the plan to build a Life Sciences Campus in Oxford to compete with the campuses in Boston and Silicon Valley."

"As CEO, I take the same decisions as in Antwerp, but in a totally different context. Oxford University is number 1 in the Times Higher Education ranking, which immediately determines your mindset: how do you remain a world-class player? Oxford targets an international market, even more so than the big players in the United States. It gives me great satisfaction to see that a lot of attention is paid to developing countries. Oxford is in close contact with satellite organisations in Kenya, Thailand and many other countries where the average income is very low. Over the past year, during the COVID-19 pandemic, we have made extra investments in those connections, to help the local healthcare services in those countries benefit from our insights in England."

Your hospital developed one of the vaccines in the fight against COVID-19 together with Oxford University and AstraZeneca. 2020 must have been a stormy year for your researchers.

"Yes and no. Again, it was all about making choices. Like any hospital in the world, we have had to deal with a huge number of COVID-19 patients in recent months. We felt it was important to have all our medical staff vaccinated by the end of January this year and we succeeded. Normally, we organise more than two thousand clinical trials every year, for a variety of diseases and treatments. Only the most vital ones were allowed to go ahead. We shifted all those people and resources to the development and validation of the COVID-19 vaccine at lightning speed. By April 2020, we had already started the first clinical trials, in which more than ten thousand of our employees participated."

"Normally you only notice the results of clinical trials after years, but this time it was after mere months. Our staff worked incredibly hard, but at the same time the atmosphere was very cheerful. People realised that they were working on something unique with the potential to have a special impact on society. Moreover, we were able to call on the spin-outs Vaccitech and Oxford Biomedica - the latter now produces vaccines for the entire world. That common focus, across all levels, was indescribable."

Which long-term lessons has this pandemic taught you?

"It became crystal clear that infectious diseases are not a thing of the past and that we must continue to invest in order to meet the challenges that lie ahead. In Oxford, we have therefore invested in our Life Sciences Campus. For example, we are now building a new intensive care unit, where we will have extra capacity to treat infectious diseases and research them at the same time. I hope we can put COVID-19 into perspective. Last year, as many people died from TB, malaria and HIV as from COVID-19. Yet these deadly infectious diseases are hardly spoken about."

"I fervently hope that the COVID-19 crisis will result in increased support for the development of health systems, especially in less fortunate countries, so that we can nip infectious diseases, which can arise anywhere in the world, in the bud more quickly, without having to bring the whole world to a standstill. Scientists have cooperated wonderfully during this crisis, without boundaries or rivalry. I will remember that in particular."

"Scientists have cooperated wonderfully during this crisis, without boundaries or rivalry. I will remember that in particular"

Peter Piot

Director of the London School of Hygiene & Tropical Medicine

"Viruses know no boundaries. If COVID-19 has taught us anything, it is that we need more cooperation across borders"

In the adventure that is his academic career, Baron Peter Piot has broadened his horizon in every possible way. At the end of this year, he will conclude this impressive career as Director of the renowned London School of Hygiene & Tropical Medicine. A conversation with one of the world's most famous virologists about unbridled passion, underestimating viruses and listening to your opponents.

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Does Peter Piot need an introduction? In 2005, Flemish broadcaster VRT set out to find the Greatest Belgian, an honour reserved for Father Damien. Ranking 26th, between painters James Ensor and Jan van Eyck, was the name of Peter Piot, doctor and virologist and, since the 1970s, an advocate of a global approach to deadly viruses. A walk through Piot's career, which spans more than 45 years, is somewhat like a walk through a hall of fame, along achievements, prestigious titles and academic achievements.

His best-known achievement is that in 1976 he was one of the scientists who discovered the Ebola virus, named after the eponymous river in Congo. At that time, Piot was a 27-year-old Belgian doctor who had just graduated and would only start a doctorate in his home country a few years on. In later years, Piot became a world-renowned researcher and lecturer at, among others, the Institute of Tropical Medicine in Antwerp, the University of Washington and the University of Nairobi. For more than a decade, he led the first HIV research programmes in Antwerp and in Africa, in which pioneering work was carried out in virology, epidemiology and clinical sciences. In the 1990s, he changed course, becoming Executive Director of UNAIDS, the United Nations programme in response to the global AIDS epidemic.

2020 was to be a particularly quiet year: his last as Director of the London School of Hygiene & Tropical Medicine (LSHTM). He had planned to retire as a manager and a return to Belgium beckoned. But then COVID-19 hit. Piot himself became infected and was out of action for a while. But he recovered and is now busier than ever, including as special COVID-19 adviser to European Commission President Ursula von der Leyen. Is he struggling under all this pressure? Not at all. Does he have a moment to look back on his career? With pleasure. However, we cannot ignore the main topic of conversation of the year 2020.

Professor Piot, how are you doing? The annus horribilis 2020 was a year you will never forget.

Peter Piot: "It was indeed an eventful year. When I was leading UNAIDS from 1995 to 2008, I was certainly as busy as I am now, because we were rolling out an AIDS treatment programme in Africa. That was very stressful. But this year it all became a lot more personal. I actually wanted to start my eleventh and final year as a Director worry-free, but then came COVID-19 and I myself became seriously ill. While I have never been sick in my life. The first three or four weeks I was completely out of action and I could do nothing at all. Following several relapses, I recovered. This virus is no laughing matter, I vouch for that. COVID-19 is also shaking things up in science. At the London School, we are used to working on epidemics, but this crisis caught us off guard in terms of speed and impact."

Has science outdone itself in its approach to COVID-19 and vaccine development, given the rapid turnaround time? How did you experience that?

"In recent years, I have regularly given lectures on the question, 'Are we ready for the next pandemic?'. My answer, year after year, was no. I always assumed we would be dealing with an outbreak of a new flu virus. Eventually it turned out to be COVID-19, an even more dangerous virus because no one was immune to it. I also did not expect that such a virus would turn the economy and the lives of people all over the world upside down the way it did. But science fought back in an equally fierce manner: never before had we been able to launch effective vaccines onto the market in just ten months. Yet these vaccines did not come out of the blue: they are the result of decades of fundamental research."

"At LSHTM, pandemics are our bread and butter, so to speak. We have a great team that focuses on the fight against epidemics day in, day out. There is a rapid support team that can travel quickly to any country in the world to deal with an Ebola outbreak. We have research groups for clinical studies for virus treatments. We have the best mathematicians and physicists, who create mathematical models and were thus heavily involved in the British COVID-19 policy development from the start. But at the beginning of last year, we were nowhere. That makes our current insights all the more impressive."

You are a man who has lived through a wealth of experiences, adventures and achievements. As a young researcher, did you already have the urge to go abroad as quickly as possible?

"Definitely. After my fieldwork in Africa, I was able to do part of my PhD at the Institute of Tropical Medicine in the United States with the support of the National Fund for Scientific Research (NFWO) and NATO. I realised even then that with my field of expertise, my options would be limited in Belgium. That's why I joined the Institute of Tropical Medicine, partly because I wanted to go out into the world. In 1978, I went to the Centers for Disease Control in Atlanta and then to the University of Washington in Seattle. I noticed that researchers there did not know any more than I did, but they had larger budgets and research groups at their disposal. In addition, there was more cooperation between disciplines and greater flexibility. That period in the US was a lever for my later career. I established important contacts there that would prove particularly useful in my AIDS research. Moreover, most of my research funds would later come from America."

You have been past retirement age in Belgium for several years. Will you continue to work until you are 80 or older?

"No, that is not my intention. Although I plan to continue working. But I don't aspire to be the boss and have management responsibilities anymore - that was my career for almost forty years. When this interview is published, I will be 72. I like the British mentality on retirement: there is no mandatory retirement age, everything depends on your performance. People are not kicked out at a certain age. In fact, that is considered age discrimination. (*Somewhat hesitant*) Of course, pensions are also a lot lower. At the same time, this system is disadvantageous for young people: the budget is not unlimited and older people are more expensive in terms of wages. This makes it difficult for the younger generations to compete with us. That is why I am stepping aside soon: it's time for fresh blood."

"One of the great pleasures of academic life is that, as a researcher, along the way you get to work with young researchers who also go on to have successful careers, partly thanks to the insights you have given them. In Africa, they always say that I have many children and grandchildren - not literally, but spiritually, of course. I am immensely proud that I was able to help all those local researchers and doctors advance a little."

Although the crisis is far from over, we can already look ahead, albeit cautiously: will we be ready for another pandemic like this one in the future?

"In order to be ready, we have to consider that we do not know when such a virus will strike again. And keep in mind how problematic the situation was this past year. In South-East Asia, they fight COVID-19 with our same resources, but even in countries with a much larger population, such as Vietnam, the numbers of COVID-19 victims are considerably lower. We look at them with envy. A country like Singapore had learned lessons from the SARS outbreak between 2002 and 2004. Thus, they were able to launch their rapid diagnostic system at the first COVID alarm: efficient contact tracing, a strong prevention policy and infrastructure for both testing and treatment. Once enough people have been vaccinated, in Europe we cannot rest on our laurels. Viruses know no borders. We need to remain vigilant and cooperate more across national borders. Health does currently not fall under the competences of the European Union, but prevention and control of epidemics should."

"Governments must continue to invest in both fundamental and applied research. Not only in times of crisis"

So what exactly needs to change?

"The policy and the mentality. In Japan, it has been taboo for a hundred years not to wear a face mask at work or in public places when you have a cold. This must also become the social norm here. At the same time, governments must continue to invest in both fundamental and applied research. Not only in times of crisis! Just as we hope to develop a universal vaccine for influenza and HIV, we need a universal vaccine for COVID-19 and its mutations. Furthermore, we still do not understand all the complications of COVID-19: why are the virus flare-ups so exhausting? For example, are there any links with chronic fatigue syndrome?"

"More and more people are refusing vaccines. That may mean that we will not be able to contain this epidemic. The fact that people question the rapid development of vaccines is somewhat understandable. You have to listen to those people, and that is something I regularly do in my position. You have to convince them that vaccination is safe and that it protects not only themselves but also their family, friends and society as a whole. Anti-vaxxers are a different matter: they start from a belief. Having access to more information will not make them change their minds. Yet it is so important to get everyone to jump on board in this context. France, for example, has the highest number of people refusing vaccines in Europe, even among nurses and medical staff. When you know that the majority of the population must be vaccinated in order to protect us all, it is important that the government and scientists - including experts in social sciences - continue to listen while being as transparent as possible."

Pattie Maes

Software engineer and entrepreneur,
Massachusetts Institute of Technology

Only a handful of Belgian scientists are known as world-renowned authorities. Professor Pattie Maes is shaking things up in artificial intelligence, a traditionally male-dominated field, at MIT in Boston. Crossing and expanding borders: meet a modest inspirator. "I don't think I am a cut above the rest. I was lucky more than anything."

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"The pressure is enormous, but nothing can compare to a place like MIT"

If Pattie Maes were a researcher at a top European university, you would surely have heard her name before. In 1989, as a young 20-something woman from Wemmel, she crossed the Atlantic to the east coast of America, where for the past decades, she has immersed herself in artificial intelligence and the relationship between man and computer. Maes is a professor at the Massachusetts Institute of Technology (MIT) in Boston, heads MIT's Media Lab and has been widely recognised for her work in the United States. TIME counts her among the Cyber Elite, the 50 best technology pioneers of the high-tech world. In 2000, *Newsweek* named her one of the 100 Americans to look out for in the 21st century. She has won numerous technology awards and received an honorary doctorate from VUB. Her 2009 lecture on 'The 6th Sense Device' is one of the most watched videos in the entire TED Talk series.

Her track record is impressive. Not only as a scientist, but also as an entrepreneur focusing on practical applications of artificial intelligence. Throughout her career, she has helped found three companies that contributed, among other things, to the way e-commerce works today: Firefly Networks was sold to Microsoft, Open Ratings is currently owned by Dun & Bradstreet and she still owns Tulip Co.

Yet it all started in our own country in the 1980s, with a doctorate at VUB within the artificial intelligence research group of Professor Luc Steels. Maes used the grants of the then National Fund for Scientific Research (NFWO) as a springboard to the States. "I was one of the lucky ones at the time: those funds allowed me to focus entirely on research so I did not have to teach. This enabled me to make rapid progress and seize opportunities. During my PhD, I spent three weeks at Stanford University and MIT in Boston, and later a whole summer at Stanford's Xerox PARC research institute. As a visiting professor, I was then able to go to Boston for a year and I was offered a place at MIT in 1989. Even though I could hardly believe it and I was going to be the first woman in a team of 40 professors working on artificial intelligence, I had to take the leap."

"Being the first woman in a team of forty professors: I told myself I had to take the leap"

Today, artificial intelligence is an established concept. Surely things were very different in the 1980s, when you first sank your teeth into the subject.

Pattie Maes: "At the start of my academic career, there was already a lot of interest in artificial intelligence. Not necessarily with the general public, but with numerous companies at home and abroad. I like to put it this way: artificial intelligence has already experienced several summers and winters. At the time, there was a lot of interest in expert systems. These are systems that can make decisions autonomously, for example, to help doctors make a diagnosis. But there were also other possibilities. At VUB, for example, I was involved in a research project for NMBS, the national railway company of Belgium. Together we explored how artificial intelligence could help their locomotives operate more efficiently in the train schedule."

"With rule-based decision making, where an algorithm is composed based on the parameters *if*, *then* and *not*, we could theoretically optimise numerous processes. However, it proved too much of a challenge to put the expert systems into practice. They were built manually and could not yet be improved based on new data as they can now. Moreover, there was little confidence in this new technology. As for the medical world, many doctors did not believe that technology, a programmed computer, could make the same diagnoses as they did. After the hype - we could call this the first summer - a long winter followed. Conferences became smaller and companies lost some of their enthusiasm. Today we are experiencing a new summer. Artificial neural networks and machine learning, with systems that can make themselves smarter based on data, identify patterns and take decisions autonomously, are giving software engineers renewed hope."

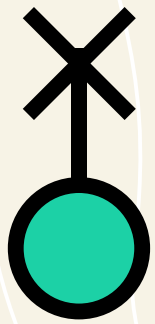
Will expectations around artificial intelligence always present peaks and troughs? Will there be another winter?

"There is always too much hype and too much hope when it comes to artificial intelligence. A winter is sure to follow. A striking example is Watson, IBM's supercomputer, which is trying to push the boundaries of artificial intelligence on the basis of question-and-answer software. However, the practical integration of such a computer

is not straightforward *(IBM initially deployed Watson as a quiz computer, later also in the medical field to advise doctors on the treatment of cancer patients, ed.)*. What exactly do you use such a computer for and how do you use it? On average, the system makes better breast cancer diagnoses than doctors, that's for sure, but do you still let doctors take another look? Do you deny them access to that expertise? Do you put the diagnosis of patients entirely in the hands of a computer? At fundamental scientific level, a great deal is already possible in terms of artificial intelligence. In practice, however, we very often run into friction: social or economic problems, ethical objections or management issues."

What is the focus of your current research?

"Currently, I am focusing mainly on wearables, intelligent wearable systems that can make our lives easier. An example are headphones that can respond to the user's preferences. It will soon be possible to programme headphones in such a way that they can read brainwaves and respond to them. When you want to be creative or just relax, the headphones play music that stimulates the right parts of the brain. We are working on such future applications in the Media Lab."



In what ways does MIT differ from other universities? What attracted you to it?

"Compared to Belgian and even European universities, the focus is more on research, which I only welcome. You can feel that in the way the workload is distributed. A professor in Belgium has an average of three classes per week, which amounts to six hours of lectures. However, preparing a class can easily take a day and a half, which is why many Belgian professors hardly have time for research. At MIT things are different: you teach one class a week and you can devote the rest of your time entirely to your research. In addition, research funding is structured completely differently. Companies in America devote an enormous amount of money to research universities such as MIT. IBM alone has USD 90 million worth of projects running at MIT. 70 per cent of the Media Lab funds come from companies such as Google and Bose. We work closely with the private sector to address the Achilles' heel of artificial intelligence: making applications as targeted as possible and anticipating friction."

"Given these major investments, research universities like CMU (*Carnegie Mellon University, a research institute in Pittsburgh, ed.)*, Stanford and MIT have a vibrant culture of spin-offs. Students are even encouraged during their studies to start up their own businesses through venture capital funds *(capital to finance high-risk ventures, ed.)*. The entry conditions are deliberately kept low. The Media Lab at MIT has its own venture fund called 'E14': one A4 sheet detailing a strong idea is enough to raise a sum of start-up money. At the same time, there is a huge network of former students and entrepreneurs who advise and support student-entrepreneurs and budding entrepreneurs from the university."

You have a fantastic track record at MIT. Are you planning to end your career in the United States?

"Yes, there's no doubt about it. In my career, I have received many nice offers from other countries, but none of them were interesting enough for me to even consider leaving MIT. The environment I work in is creative, international, intellectual and interesting. The atmosphere and culture here are unique. At the same time, this job is extremely demanding. Since everyone works so hard, you pick up that mentality almost automatically. At first, I was surprised at my colleagues' work pace, but their enthusiasm is contagious. You want to get the best out of yourself and your work, do a lot of research, undertake a lot, accomplish a lot. It's all or nothing: either you choose a life where you are always working, or you find yourself another profession. The American system can be brutal and overwhelming. Students take out loans of more than USD 50,000 a year to enrol at MIT or other top universities. This creates enormous pressure, but at the same time it also results in a drive to perform that makes people push their limits. Professors put the same kind of pressure on themselves: get the best out of yourself. Therefore, there is no better place in the world for me to pursue my passion than here in the States, at MIT."

"The enthusiasm of my colleagues is contagious. You want to get the best out of yourself, undertake a lot, accomplish a lot"

Marc De Vos

Dean of the Faculty of Law,
Macquarie University in Sydney

Few academic thinkers are as concerned about democratic dialogue as Marc De Vos: professor of social law, dean, author, columnist, Twitter enthusiast and globetrotter. We spoke to him at a 'tipping point', with the populist right and COVID-19 threatening to erode our shared values. "From Australia I can look at the Belgian situation from an even more critical point of view. I am getting more and more concerned."

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"Let academics contribute to policy-making"

By coincidence, Marc De Vos is in Belgium for a few weeks, so we can easily meet him, albeit online. This would have been more difficult during his regular office hours. De Vos has been Dean of the Faculty of Law at Macquarie University in Sydney since October 2018. His arrival in Belgium is in reality not so coincidental: despite his busy schedule in Australia, he regularly returns to his home country to give lectures, attend conferences and take part in public debates. De Vos is an authority on the social side of law, specialising in the labour market, welfare state, pensions and social security. In a conversation about his career and ambitions, these themes naturally come up.

Mr De Vos, FWO gives you a lot of credit. Do you also owe a lot to FWO?

Marc De Vos: "Without a doubt: I owe my career to them. I graduated in the early 1990s, in the middle of an economic crisis. For those who aspired to an academic career, like me, places at universities were limited. Like many students in a crisis, I continued studying, as many are doing now too. At the same time, I joined the Bar. I succeeded in getting an FWO PhD fellowship grant. That set the ball rolling."

"I then became a post-doc thanks to the support of FWO. In those years, I could devote myself almost entirely to my research, which is an incredible luxury. That is when you gather the knowledge and expertise you can use throughout your career. Moreover, I was able to spend a year at Harvard after winning the Frank Boas Scholarship *(via the NGO Fulbright, which awards scholarships to students in Belgium and Luxembourg, ed.)*, a scholarship that is only awarded once a year across all scientific disciplines. That happened at the end of my PhD, which left me at a crossroads: I could go into law or I could stay in the US, but I also had my sights set on a career as a researcher. In the end, I never chose."

In 2006, you helped set up the national think tank Itinera. What did you set out to achieve through this move?

"During my stay in the United States, I got a first taste of what was to come. In the US, socio-political think tanks, fed by academia, had been a reality for many years. Fifteen years ago, our country had no think tank worthy of the name. At the same time, I noticed how both myself and many of my academic colleagues were growing increasingly frustrated. The main frustration was our limited impact on society. Within the current academic landscape, there is an increasing dictatorship of publications in a closed circuit of ranked journals, controlled by a handful of academics and read mainly by those same academics. Project research, on the other hand, is made to order and is strongly determined by the clients. Get academics out of the vicious circle of publications, rankings, peer reviews and assignment research. Let us contribute to policy-making. That comes with a sense of responsibility, which is something I feel strongly about. A sense of duty to give something back in return for all the opportunities and funds we are given as scientists."

"With Itinera, We want to actively contribute to policy-making but without getting involved in politics or lobbying"

"That is why we founded Itinera, to provide useful insights to policy-making in the long run. We want to actively contribute to policy-making but without getting involved in politics or lobbying. Another important factor is that a country like Belgium finds it difficult to take strategic decisions. The ageing population, pensions, taxation, energy issues: there is a very long list of reasons why decision-making is postponed. In a country that is not performing well, there is a lot of scope for politicians to benefit from academic expertise."

In 2014, you stepped down as Director of Itinera, but you remained involved as a visiting fellow. Do you feel that Itinera is effectively feeding policy-making?

"If you want to steer clear of political clashes, you have to live up to the expectations. This means: no lobbying, no advocacy. Only then can you remain independent, but on the other hand, you have no direct, daily impact. You reach out. If you look at it this way, a think tank like Itinera has its limitations, but if you analyse the evolution of terms in political debates or political priorities over the last 15 years, you can see a lot of added value from Itinera. However, it is impossible to measure its real impact. We offer suggestions and ideas that everyone can use. We have no intellectual property rights on that."

"During the COVID-19 crisis, it is striking that there is once again a lot of scope for scientists to inject their insights into policy: look at the role virologists, bacteriologists and other medical experts are playing. There is a real need for that input and feedback from scientists. I am not saying this with schadenfreude, but the Belgian political parties are organisations with feet of clay. They are hardly professionally organised and their research departments focus mainly on the policies of the day and the upcoming elections. They hardly think long-term. There is a need for the input of think tanks like Itinera in this regard."

In 2018, you moved to the other side of the world for your appointment as Dean of the Faculty of Law at Macquarie University in Sydney. Did Australia come your way by chance?

"Honestly, no. I had had my heart set on Australia for some time. In the US, I had my first taste of a multinational, highly diverse work environment. I was hooked and not ready to let go of that. The cross-fertilisation in such an environment is worth its weight in gold. In that respect, Australia is the best place to be. The country presents itself as the hub for higher education in South-East Asia, bringing together a mix of different nationalities."

"There is also a tradition here of policy-makers and scientists from different disciplines working together on strategic political issues like the energy transition, migration policy and so on. To give you an example, as Dean, I am a member of a large research group that focuses on energy transition, in which law students specialising in environmental law work together with engineers and economists to investigate the possibilities of hydrogen technology and economics. That open-minded world view, that multidisciplinary approach and that level of ambition are unheard of in Flanders and Europe. In that respect, Australia felt like coming home."

How do you spend your time as a dean? Do you still dabble in research?

"Let me illustrate the difference. In Belgium, a dean is the primus inter pares, elected by his peers, who spends hours meeting with faculty councils and defends the interests of his faculty. In Australia, they opt for a business-like model, in which, as Dean, you are the CEO of your faculty. You are given a mandate, draw up a strategy, manage and spend budgets, achieve results and make decisions. We miss this approach in Belgium. When it comes to management culture and organisational strategy, we have a lot to learn from the Anglo-Saxon world."

"I am not expected to teach or do research, but I can't help it. I still teach a little and divide my time so that I can conduct research. Combining jobs and activities: that gives me job satisfaction. I have spent my life standing with one leg inside and the other outside the university. The business challenges that I lacked in my academic career, I sought and found outside the university."

"In times like these, concerned scientists like myself owe it to themselves to take up a role in the public debate"

You still regularly publish columns in Belgian newspapers and are known as a passionate opinion maker. Do you look at Belgium differently now that you no longer work here?

"From Australia I can look at Belgium from an even more critical point of view because I am no longer at the heart of its society. I think it is my duty to continue to express my opinion and certainly not to look away from Belgium and Europe just because I am on the other side of the world now. My concern is growing, because things are not going well. How do we ensure that the younger generations grow up in a world based on the European values of freedom, respect for one another and respect for human rights and democracy? This is becoming an even greater challenge because of COVID-19, Brexit and right-wing populist figures like Donald Trump. Will it still be an option to go to Australia and become a dean? Will young students with scholarships still be able to go to top universities? How long will Europeans be given credit for their fading values? In times like these, concerned scientists like myself owe it to themselves to take up a role in the public debate."

"Those educated in Belgium can compete with students from all over the world"

Are top researchers also competent administrators for a university? Koen Lamberts shows that these two roles can co-exist seamlessly. From experimental psychologist to rector, from Leuven to Chicago and the United Kingdom: with down-to-earth flair and a great deal of optimism, Lamberts guided the University of Sheffield through turbulent times.

Koen Lamberts

President & Vice-Chancellor,
University of Sheffield

Digital is the new normal. The main creed of 2020 - the year of COVID - stays on in 2021. And in that spirit, we arranged a video call with Koen Lamberts. Home for Lamberts is Sheffield, where since the autumn of 2018 he has held the prestigious position of President & Vice-Chancellor, which is similar to the rector at a Belgian university. Forming an imaginary triangle with Leeds and Manchester, Sheffield has shed its image as a drab industrial city and, thanks in part to its highly regarded university, is now presenting itself as a vibrant, innovative city.

Unlike in his own country, where a foreign rector would be a curiosity, Lamberts is the textbook example of a modern British rector: he does not live on campus, has an open-ended contract and is mainly considered a CEO. "A foreign rector, that's not questioned here, and it has been this way for a while now. My job is both academic and business-oriented, and I was appointed on the basis of an open and competitive procedure: if the appointment committee finds your profile the most suitable, it does not matter whether you are British or foreign. Moreover, I have lived in Great Britain longer than I have lived in Belgium and I have dual citizenship. The British do consider me one of their own now."

2020 will go down in history as the year of COVID-19. How did the University of Sheffield weather the COVID-19 storm?

Koen Lamberts: "I have to be honest: the impact has been enormous. As a British university, we enjoy little direct government support and our funding model is largely dependent on enrolment fees. Once that income is lost, our model collapses. It was therefore a great risk that many students were unable to come to Sheffield in the spring of 2020. However, in the end, this situation caused less damage than we had initially feared. We did what we could to bring our students and professors to Sheffield while offering remote learning. At the moment *(mid-February 2021, ed.)* our university campus is no longer in a red zone. Our research labs and libraries are all open again, with the necessary precautions of course. Our digital education offer is on point. But of course, we are longing for the easing of the measures later this spring."

Were you attracted to British academia as a young researcher?

"Not at first, to be honest. As an experimental psychologist at KU Leuven, I was particularly keen to go to the United States in the late 1980s to carry out my PhD research there. The large research groups and budgets put American universities in a higher class at the time. But then it turned out to be very difficult to apply for a position in the US. They stumbled over untranslatable terms such as kandidatuur and licentiaat, there were few contacts with the best American universities and you were asked to take an *entrance exam* every time. If I had had the chance, I would have left then, but I made a different choice: with the support of the then National Fund for Scientific Research (NFWO) I did my PhD at KU Leuven. It gave my expertise and confidence an enormous boost. Once I had completed my PhD 1991, I left for Chicago, where I had secured a position as a researcher."

What did your research focus on?

"I was able to immerse myself in many subjects through experimental and mathematical psychology. For example, I developed mathematical models of how people recognise and classify objects. If you see a chair, you immediately know it is a chair and identify it as a chair, but between perception and recognition there is a very complex process that takes a few hundred milliseconds and is still not fully understood. I studied those fractions of seconds, the brief moments that follow the perception of an object. I also conducted research on our memory and the relationship between perception and memory, I did consultancy work on modelling and the analysis of complex data sets, and I was a member of a research group on cybersecurity and cognitive systems."

How big a factor has luck been in your career?

"Big, very big. At the same time, you seek happiness yourself too, of course. I moved to Chicago in 1991 with long-term ambitions, but was due to move to Britain the following year. One day I received a handwritten note from Glyn Humphreys, Professor of Neuropsychology in Birmingham, whom I had spoken to briefly at a seminar in Leuven. Apparently, that meeting had made an impression. He wrote to me that there was a vacancy in Birmingham that I should definitely apply for. The world wide web already existed, but information about jobs was hard to find. I didn't even know exactly what job I was applying for, but I did go to Birmingham, and ended up staying there for almost eight years."

"Those years in Birmingham were unique and unforgettable. Just one year after obtaining my PhD, I got a permanent,

"I would advise young researchers not to be too careful. Take risks, don't be conservative and don't underestimate the sound education you enjoy in Flanders"

full-time academic appointment as a lecturer there: that doesn't happen anymore today. I conducted research as part of a very large research group, which in five years, under Glyn Humphreys' leadership, grew into one of the best departments in Europe. *(On a personal level, this resulted in a number of achievements too: in 1996 Lamberts received the Cognitive Award of the British Psychological Society and in 1997 the Experimental Psychology Society Prize, ed.)* This is where part of my luck lies. If that note from Professor Humphreys had been lost in the post in 1992, I might have stayed in the States for good, or been back in Belgium or elsewhere, who knows?"

Do you need the mindset of a fortune seeker to launch your academic career abroad, as you did?

"In my case, that was incidental. A basic prerequisite for making it is a competitive spirit: wanting to be the best at what you do. To become the best, I wanted to work with the best in my research field. And the best were in the US and Britain: so to me, there was no question that I would seek my fortune there. I would advise young researchers not to be too careful. Take risks, don't be conservative and don't underestimate the sound education you enjoy in Flanders. Embrace that awareness to compete with people from across the globe."

You became Rector of the University of York in 2014, having been Vice-Chancellor at the University of Warwick for a number of years. In 2018, you became President of the University of Sheffield. What do you focus on as a manager?

"My main concern is to run this university in the best possible way. We are in the top 100 of the best universities worldwide and in some fields we are truly world-class. For example, we have the largest engineering department, with the largest budgets, in the whole of the United Kingdom. We also attach great importance to the international character of our institute and the influx of foreign students, who make up 30 per cent of our student body. Together with my team, I aim to reinforce these strengths in education and research as much as possible in the years ahead."

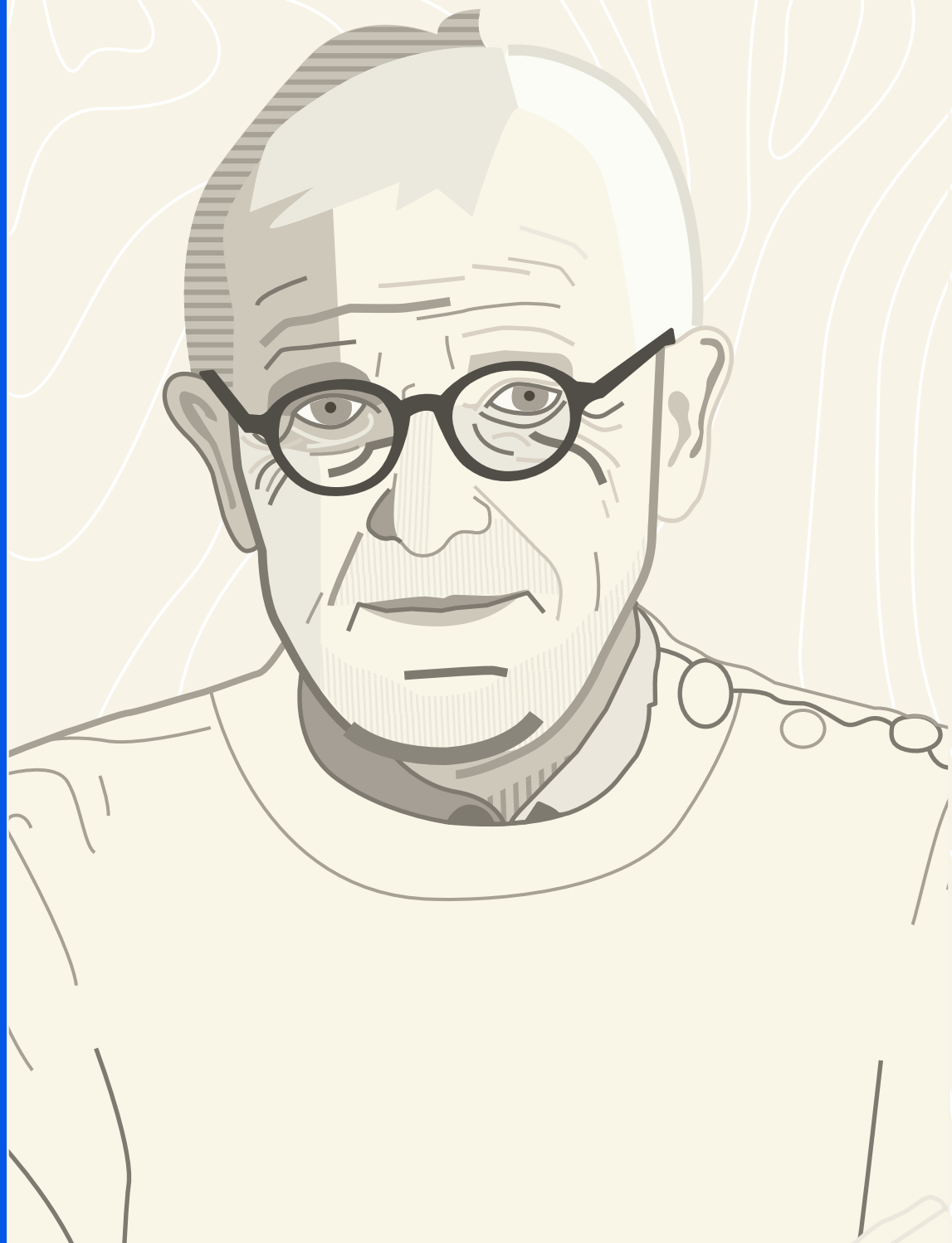
You emphasised the international character of Sheffield. What's your view on Brexit? Did it cut ties with Europe for your university as well?

"It is still too early to fully assess the impact of Brexit, especially amid the COVID-19 pandemic. What makes me hopeful is that as a university we will remain connected to European universities through Horizon Europe, the research and innovation network of the European Commission. In this way, the mutual mobility of researchers is, in principle, not impaired. As for our students, there is no way to tell yet. In any case, no longer having access to the Erasmus programme is a significant loss. Great Britain has launched its own alternative, the Turing Scheme, but that will only fund outgoing British students. In previous years, Sheffield welcomed many students from all over Europe, who paid the same enrolment fees as British students and could also obtain a student loan from the British government. They will now have to pay the higher fees for international students and will no longer be able to get student loans. We will soon go through that process for the first time: we will then have to assess what the effects are."

"In any case, we are thoroughly preparing for the future post-Brexit. Our contacts with European universities are even more intense than ever because we do not want to lose our place in the European research landscape. We are looking into whether we can convince other universities in Europe to admit our students to exchange programmes through separate agreements. We go through fire for the mobility of our students and researchers: if we lose that, we lose something very valuable. Moreover, the United Kingdom and Europe also need each other on a geostrategic level. We have a reputation for research, but we are not big and strong enough to compete with the budgets of big players like China or the United States. If that awareness prevails on both sides, I am hopeful that we will see little impact from Brexit in practice."

Francis Halzen

Director of the Institute for
Elementary Particle Physics,
University of Wisconsin, Madison



"The best researchers, the biggest budgets: I just had to go to the US"

Is modesty the highest virtue for a scientist? Or is obsession a better character trait? Particle physicist Francis Halzen is not as well known as his colleagues such as François Englert, but he is world-famous for his pioneering research into the building blocks of the universe. In search of the elementary particles of a modest genius.

Behind our limited knowledge of the universe lies a scientific world of data centres, vast research labs and hard-working physicists. This projection applies, for example, to the CERN research institute in Geneva, where in 2012 the existence of the Higgs boson was demonstrated, an elementary particle that gives all other particles mass. That achievement instantly made the particle's predictors, Robert Brout and François Englert, world-famous and earned Englert and his British colleague Peter Higgs *(Brout had died in 2011, ed.)* the 2013 Nobel Prize in Physics. But this projection also applies to research that is much less known to us in Europe: the pioneering work of American universities from the 1950s onwards, focusing on the existence and origin of elementary particles.

A quick refresher: elementary particles are the building blocks of the universe and all life on earth. They are called electrons, neutrons or quarks. All around us, tens of thousands of these particles are flowing through the air at any given time. In their orbit and through collisions, they form new particles. One of the scientists who contributed to this general knowledge is a Belgian by the name of Francis Halzen. As a particle physicist at the specialised University of Wisconsin in Madison, he has made a name for himself, particularly in the last ten years. Thanks to the construction of IceCube, a gigantic particle detector under the ice of the South Pole, his team and him were able to demonstrate the existence of cosmic neutrinos, the collective term for all high-energy particles.

The creation of the IceCube project reads like an adventure novel set against the backdrop of the Cold War. It was Halzen who learned that the Soviets were attempting to detect neutrinos at the South Pole via radio antennas. He came up with the AMANDA project from Wisconsin, in which he proposed burying light sensors deep in the ice. Because of its brightness and sterile environment, it would be possible to capture neutrinos from the cosmic rays that find their way through the ice.

Professor Halzen, between 2005 and 2010 your team at the South Pole built IceCube, the world's largest particle detector: the size of a cubic kilometre. What makes this detector so important?

Francis Halzen: "In physics, you learn that you can observe different rays in the universe. Some rays we cannot see as humans, because of their very short wavelength or the large amount of energy they contain. For example, you cannot take a picture of cosmic rays, which contain high-energy neutrinos. That is a pity, because these neutrinos can tell us a lot about how our universe is structured. For example, the particles with the highest energy levels in the universe appear to come from the direction of massive black holes. If we can detect neutrinos here on earth, they will help us unravel the secrets of the universe."

"The ambitions around detection date back to the 1950s, when the idea was first conceived. In the 1980s, here in Wisconsin we came up with the idea to build our own particle detector, following the same principle as in CERN, yet not in an underground tunnel, but in nature. In the ice of Antarctica, it is simply easier to take up a cubic kilometre of space."

"In addition, the conditions are optimal for detection. Of the approximately one million neutrinos that make their way through the ice in cosmic rays, one collides with a proton or neutron in the nucleus of a hydrogen or oxygen atom. At that moment, we can observe a neutrino through one of our optical sensors and start analysing it. When we first launched this project, it was a gamble; we were not sure we would succeed, but we did. Two years after completion, in 2012, we already discovered the first neutrinos from the universe at the South Pole."

Do you feel the impact of climate change at the South Pole?

"Our detector is located at the geographical South Pole, right in the centre of Antarctica. Since the American National Science Foundation has a research centre there *(the South Pole station Amundsen-Scott, ed.)*, it was an obvious choice to start our work there. Good to know: the South Pole rests on a gigantic glacier, which has a depth of three kilometres. We built IceCube at a depth of one and a half kilometres. At that depth, the natural ice is completely stable. The glacier moves, but it is not impacted by climate change. The ice there has a constant temperature of -50 °C, which has an amazing effect. Building an installation like IceCube above ground would quickly wear out the electronics and sensors. That is not the case in the Antarctic ice. The detector has 5,160 sensors, none of which have malfunctioned in the last three years."

Do you consider IceCube your life's work? Is this what you dreamt of as a young researcher?

"No, I dreamt of other things. I actually wanted to become a teacher. There was already a vacancy for me at the secondary school in Landen. Fortunately, the National Fund for Scientific Research (NFWO) saved me by offering me a PhD scholarship *(laughs)*. I knew very early on that I wanted to be an astroparticle physicist, but I could never even have imagined working on a project like this. For a long time I also thought that I would not be competent enough for it: until I was 45, I had hardly paid any attention to

neutrinos. But this whole project was unplanned. In the first part of my career, I profiled myself as a particle physicist and theorist. That eventually formed the stepping stone to IceCube, which would suck me in all the way."

After your PhD, you worked for some time at CERN, one of the most renowned places in the world when it comes to particle physics. Yet you left for the University of Wisconsin in Madison in 1972, never to return. Why did you take this step?

"I had the choice between a new temporary position at CERN or a contract as a certified researcher at KU Leuven, funded by the National Fund for Scientific Research (NFWO). I was struggling so much to choose that I found a way out: I ended up as a visiting fellow in Wisconsin, which turned out to be a very pleasant experience. At first I had no intention of staying, but they ended up convincing me. Since there was no budget to keep paying me as a visiting fellow, I got a permanent appointment right away!"

"I chose the States and Wisconsin because that was the epicentre of research into particle physics: the largest particle physics group in the US was right there, in Madison. Moreover, we work closely with Fermilab and Brookhaven National Laboratory, two world-class research labs. Today, CERN is a world-renowned institute, but back in the 1970s that was not yet the case. The best researchers, the biggest budgets, top-class expertise: if I wanted to advance as a researcher, I just had to go to the United States. I love big cities and I had always hoped to live and work in New York or Tokyo, but that never happened. So I really struggled to live in Wisconsin at first. Fifty years ago, Madison was an unremarkable village, where it often snowed and which happened to be home to a recently built large campus. With the roll-out of the AMANDA and IceCube projects, I made a choice: I cannot do this work anywhere else but here, so I am staying. I have come to terms with that."

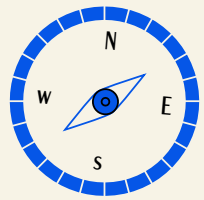
What makes the American research culture so unique?

"I was always a theoretician. That means I concentrated on analysing data from experiments. America was already very strong in data analysis in the 1970s; only later would CERN catch up with them. Today, Madison is making a difference through its financial strength and commitment to building large projects such as IceCube. To give you an idea: the construction of the detector cost almost 280 million dollars and more than 300 people from 50 countries are currently involved in the project. Such budgets are available in America."

"It means that a successor to IceCube is already being considered. As I explained, ten years ago we wanted to find an answer to the question, 'What is the origin of cosmic rays, where do the charged particles in our universe come from?'. The detection of neutrinos at the South Pole does not yet provide an answer. We are collecting more and more data, but we are still none the wiser. We can solve this riddle by building a detector ten times bigger, at the South Pole or in the ocean. As a 77-year-old, I would still like to be part of such a project during my career. As you can see, it is an obsession *(laughs)*."

"What is the origin of cosmic rays? As a 77-year-old, I want to help build a detector that can solve this riddle. It's an obsession"

ABOUT FWO



OUR MISSION

SCIENCE OPENS UP NEW HORIZONS

The Research Foundation - Flanders (FWO) stimulates and financially supports fundamental scientific research, strategic basic research, clinical scientific research, the purchase of large-scale and medium-scale research infrastructure and the management of large computing capacity in Flanders. With the financial resources we receive, mainly from the Flemish Government, we subsidise fellowships and research projects, infrastructure, travel grants and international scientific cooperation.

SCIENCE CREATES OPPORTUNITIES

Fundamental scientific research focuses on deepening the knowledge of man and his environment. As the level of knowledge in our society increases, so does our quality of life in general and the quality of education in particular. This gives young people every opportunity to develop their talents in a wide range of disciplines. Research funded by FWO, in particular strategic basic research, is also an important step in the valorisation of the scientific breakthroughs.

SCIENCE IS ESSENTIAL TO OUR WELL-BEING

In the long run, a high level of knowledge combined with human capital results in targeted and applied research, which also has a policy-supporting function. Thus, certain economic or social choices can also be driven by excellent research groups. And that comes as no surprise, because research that pushes the boundaries of knowledge can become the basis for a solution to today's major societal challenges, such as the environment, mobility and health.

SCIENCE DRIVES INNOVATION

In the short term, fundamental research rarely leads to economic or social valorisation. In the long term, however, it is essential for our prosperity and well-being. That is why FWO relies on the financial support of the government. There is a need for a balanced distribution of resources between targeted and non-targeted research.

By financing strategic basic research in the broadest sense, FWO itself is already taking an important step towards valorisation.

FWO AND THE INTERNATIONAL COMMUNITY

Europe has a tradition of non-governmental research councils. FWO is a member of Science Europe and supports the activities of the European Research Council (ERC) through various initiatives, for example. In addition, FWO is closely involved in various European research initiatives (ERA-NET, JPI, ESFRI etc.) through a range of programmes. Furthermore, FWO has signed a large number of bilateral cooperation agreements with leading funding agencies worldwide, including in China, Russia and Quebec.

FWO SUPPORTS THE FLEMISH SUPERCOMPUTER CENTRE

The Flemish Supercomputer Center (VSC) is a virtual centre for both academia and industry. It is managed by FWO in collaboration with the five Flemish university associations.

WHICH RESEARCHERS DO WE SUPPORT?

Young talents who want to prepare for a PhD, researchers who have obtained their PhD and want to further develop their skills as post-doctoral researchers, or professors who want to set up a fully-fledged research project with their team all qualify for FWO support. Our aim is both to help train the researchers of tomorrow and to assist experienced scientists in their explorations. Moreover, FWO covers all scientific disciplines.

The main focus is on the quality of the researcher and their research proposal, regardless of their scientific discipline, the institution where they are working, their gender or political or religious convictions. We implement family-friendly measures and offer flexible working conditions in order to achieve a good balance of male and female researchers. Scientists with disabilities can count on additional support to purchase adapted material.

FWO stimulates international cooperation within the European Union and beyond. We promote international mobility by giving researchers the opportunity to gain experience abroad or by attracting foreign researchers.

Every year the FWO awards scientific prizes. Not only do we reward excellent research, we also highlight the social relevance of scientific research.

For more information and lists of beneficiaries go to www.fwo.be/en.

HOW DOES THE DECISION-MAKING PROCESS WORK?

In order to decide which researchers and research proposals will receive funding, FWO calls upon independent experts from Belgium and abroad. They are brought together in expert panels. Their composition and the procedures they follow depend on the funding channel.

For the fundamental channels there are 30 subject-specific panels and one interdisciplinary panel.

Applications for PhD fellowships strategic basic research are processed by 24 thematic panels. At least one third of the members of these panels have a background in industry.

The expert panels for strategic basic research projects are generalist panels, which evaluate thematically linked economic and social projects.

For the Applied Biomedical research programme with a primary Social goal (ABS) the submitted project proposals are divided into thematic groups based on their subject when the call is closed.

For the evaluation of research infrastructure, FWO relies on the Science Committee for the scientific evaluation and the Invest Committee for the financial feasibility.

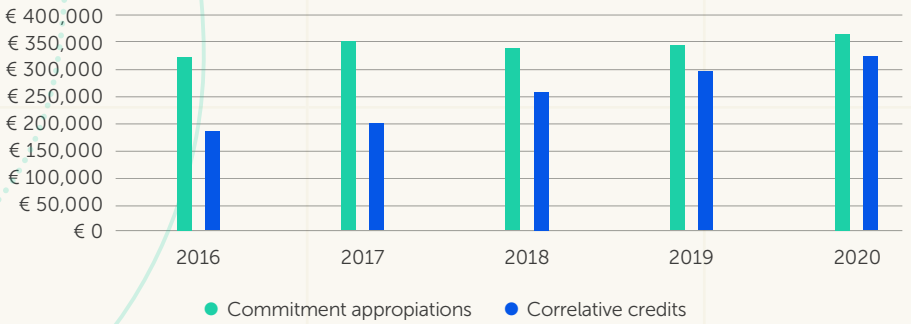
The Cross-Domain Panel (CDP) assesses applications submitted for various scientific fields, which may or may not have an international dimension.

The International Collaboration Committee (CIWC) provides advice on applications concerning the international mobility of researchers, the organisation of scientific meetings in Belgium etc.

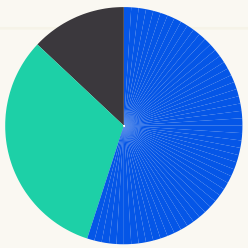
For a complete overview of all panels and members go to www.fwo.be/en.

FACTS & FIGURES

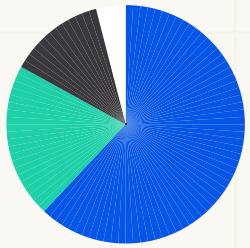
EVOLUTION OF REVENU



SUBSIDY DISTRIBUTION

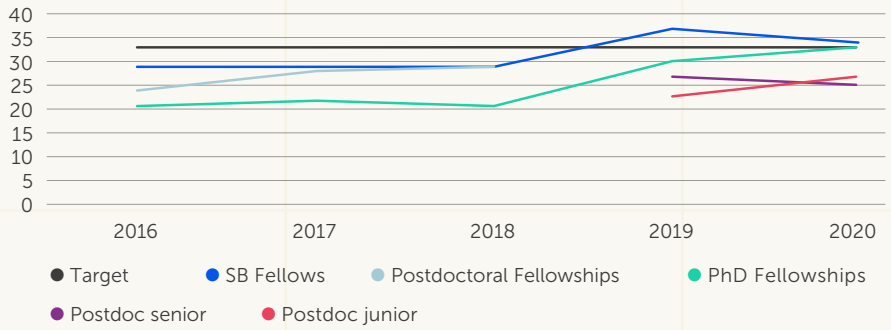


- 55% Research projects
- 32% Fellowships
- 13% Infrastructure

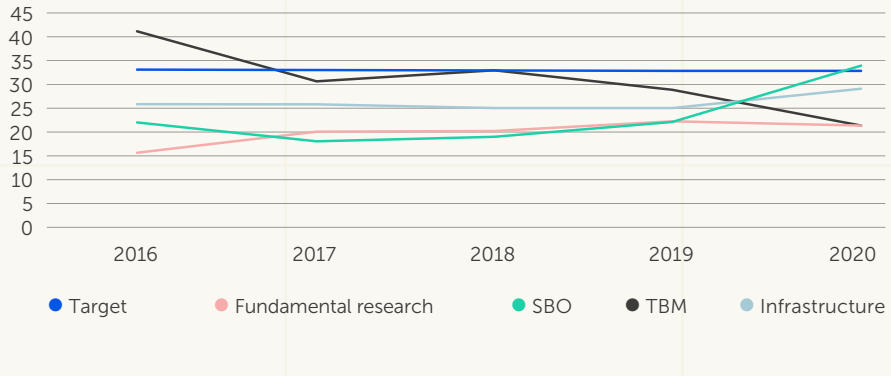


- 62% Fundamental programmes
- 21% SBO projects and SB Fellows
- 13% Infrastructure programmes
- 4% TBM projects and Fundamental Clinical Mandates

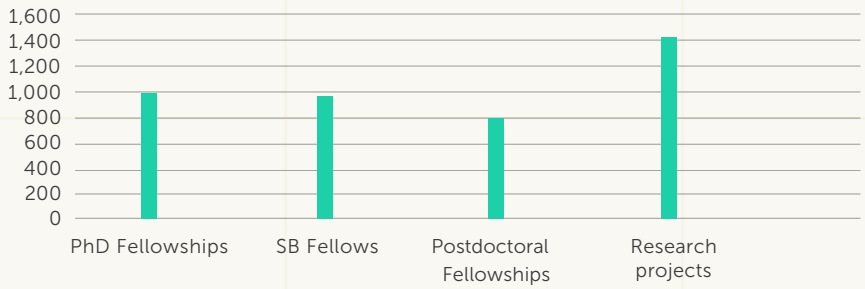
EVOLUTION SUCCES RATE FELLOWSHIPS



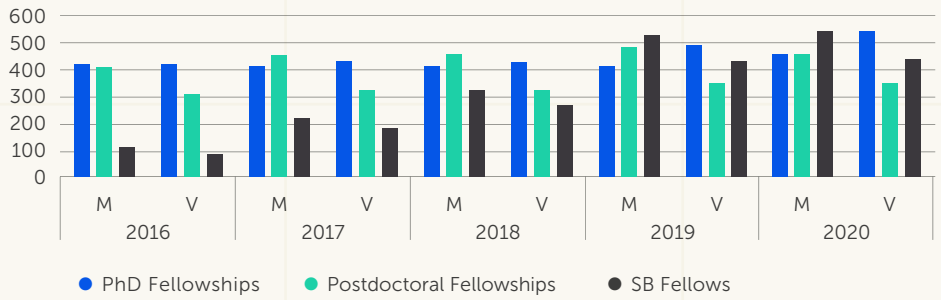
EVOLUTION SUCCES RATE RESEARCH PROJECTS



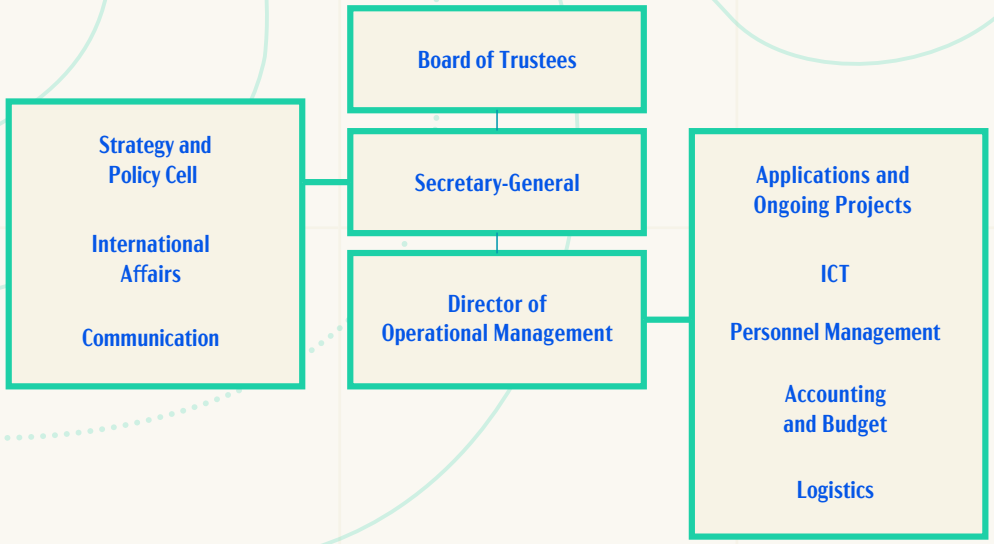
RESEARCHERS IN FUNCTION (1.11.2020)



RATIO MALE / FEMALE



OUR ORGANISATION



ADMINISTRATION

The FWO team is always ready to assist researchers. It ensures the efficient organisation of the various evaluation processes within FWO to guarantee that the various projects and fellowships are awarded and followed up in a timely and qualitative manner. Our administration always aims for a researcher-friendly approach.

BOARD OF TRUSTEES

The Board of Trustees takes decisions on, among other things, the advice of the expert panels and other committees, the FWO operations, the budget and the accounts.

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