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"PLEASE STOW YOUR CARRY-ON LUGGAGE UNDERNEATH THE SEAT IN FRONT OF YOU OR IN AN OVERHEAD BIN. PLEASE TAKE YOUR SEAT AND FASTEN YOUR SEAT BELT, AND ALSO MAKE SURE YOUR SEAT BACK AND FOLDING TRAYS ARE IN THEIR FULL UPRIGHT POSITION."
Welcome on board! Enjoy this journey through the new 2011 annual, a ground-breaking report of events, initiatives and challenges FWO was confronted with in the past year. One of the milestones of 2011 was the signing of the new management agreement, which will determine the course for the next five years (2012-2016). In this annual, FWO is highlighting one of the policy lines of this agreement, namely the further internationalisation of scientific research.

FWO attaches great importance to internationalisation because, after all, high-level research is by definition international. Simply on account of the limited size of Flanders, international cooperation is often a must here. Interaction with foreign researchers, which leads to new insights and the exchange of expertise, offers important added value for successful scientific research.

Experience abroad and contacts with other countries and cultures also benefit the researcher’s personal world view. This also emerged from inspiring interviews with eight researchers who gave their career a boost through international experience. The entire FWO crew wishes you a fantastic trip!
‘THIS IS YOUR CAPTAIN SPEAKING. ON BEHALF OF THE ENTIRE CREW, I WISH YOU AN ENJOYABLE FLIGHT.’
Belgian employees are loyal to their company and prefer not to move abroad. Only 1 in 3 would consider working abroad.

This quote is from a study that was conducted in 2009 by a leading accounting firm and perfectly sums up the challenge faced by FWO.

On the one hand, in the past few years here in Flanders we have made huge investments in a good research environment which offers researchers the opportunity to carry out excellent studies and which attracts talented international scientists. Two examples are the Odysseus programme and the new Pegasus programme. On the other hand, FWO also wishes and aims to encourage Flemish researchers to network with foreign colleagues and gain experience in research groups abroad. Internationalisation is high on the agenda at FWO. In fact, high-level research is by definition international. Simply on account of its limited size, international cooperation is often a must in Flanders. Interaction with foreign researchers, which leads to new insights and the exchange of expertise, offers important added value for successful scientific research. Experience abroad and contacts with other cultures also benefit the researcher’s personal world view.

In 2011 FWO once again made major steps forward in terms of internationalisation. First of all, it launched the new Pegasus programme, which aims to attract foreign postdoctoral researchers to Flemish universities. This programme has a broader scope than the Visiting Postdoctoral Fellowships, which have been incorporated into it, and is being co-financed by the European Commission via the Marie Curie COFUND project. The new programme gives foreign researchers the opportunity to carry out research at postdoctoral level at a Flemish university for 1 year (Pegasus Short) or 3 years (Pegasus Long). In total, FWO will award 30 long-term and 59 short-term fellowships. The massive response to the first call for applications proves that FWO’s programme is answering a real need. Moreover, the new call for applications for the successful “brain gain programme” Odysseus resulted in 14 new researchers being admitted to the programme. Another call was sent out for the Big Science programme, which finances...
Flemish research projects carried out at major international facilities such as CERN, ESRF and Mercator. FWO has also invested heavily in the further development of the bilateral research programme. New calls have been issued or are being drawn up for the five previously selected partner countries or regions: China, Vietnam, Ecuador, South Africa and Quebec. Very recently, Brazil was added to this list. A call for this country is to be launched very soon.

However, FWO does not only see internationalisation as a means to support large-scale programmes. It also offers researchers numerous support tools, such as the attendance at international conferences and funding for short or longer stays abroad, which allow researchers at Flemish universities and knowledge centres to come into contact easily with colleagues from all over the world. Year after year, FWO sets aside an annual budget of over 35 million euros for small- and large-scale programmes which include initiatives that stimulate international mobility, among other things. Statistics show that these initiatives are not without consequence. Currently, 12.8% of FWO applicants have been recruited outside Belgium. For postdoctoral fellows this figure is as high as 16.5%.

In this annual FWO aims to illustrate how researchers experience international mobility and what it means specifically for their research. FWO always plays a central role in this respect. As you can see, FWO is continuing to push the boundaries of Flemish research. Because science knows no borders...

Enjoy reading the 2011 edition of the FWO annual!

dr.ir. Elisabeth Monard
Secretary General
Dear reader,

2011 was a year of great expectations: the split-up of the electoral district of Brussels-Halle-Vilvorde, the formation of a new government, the Belgian railways promising more punctual trains and the Red Devils qualifying for yet another major tournament. Unfortunately, not all expectations were met. And in certain respects, 2011 became a year of missed opportunities.

But at FWO – the Research Foundation Flanders – we mainly looked to the future in 2011. In June the Board of Trustees approved the new 2012-2016 Policy Plan and in November the Secretary-General and myself signed the new management agreement with Minister Lieten.

The policy plan sets the course for the next five years. Our basic strategy remains the same: stimulating excellent, internationally competitive fundamental research in Flanders, coupled with a researcher-friendly policy. Consequently, the new plan mainly concerns the levers used to achieve those strategic goals even better.

A few important themes are, among others, the guarantee of an acceptable success rate and the further development of transparent selection and evaluation procedures. Moreover, FWO aims to continue to stimulate internationalisation, which is also the main theme throughout this annual. In another spearhead, FWO aims to remove barriers for researchers through an intensive gender and diversity policy. And last but not least, FWO will communicate thoroughly about fundamental scientific research, and as such promote its social image.

First and foremost, FWO remains true to its basic mission, which is fundamental research. Every year, FWO finances the best researchers in Flanders based on an inter-university competition. The only criterion in this competition is scientific excellence.
We’ve been doing this for over 80 years now. It is the researcher himself who should take the initiative, driven solely by his scientific curiosity (bottom-up and curiosity-driven approach).

In order to continue to count at a European level, Flanders will have to focus on the key fields where it can achieve a competitive advantage and score internationally. This was translated into a “spearhead policy” by the Flemish government, as set out in the 2009-2014 Flemish coalition agreement, and was further elaborated on in six multidisciplinary innovation axes to implement the breakthrough action by ViA (Flanders in Action), i.e. the set-up of the Innovation Centre Flanders.

Although the “innovation spearhead policy” clearly differs from the FWO’s mission, the innovation spearheads inevitably build upon the excellence of fundamental research that pushes the boundaries of knowledge. The Flemish government clearly recognises the important role of FWO in laying the foundations of this policy.

In this framework, the minister in charge of research gave FWO two pieces of good news in the past year. At the beginning of May, the Flemish government increased the FWO budget for 2011 by 10.3 million euro, which was used to fund an additional 100 researchers involved in various scientific projects. The success rate for the project proposals submitted thus increased once again to almost 20%.

More good news followed at the end of September. In 2012 the Flemish government is investing an additional 14 million euro in FWO, which will be used to support research fellowships and projects. This budget increase will also allow FWO to focus on the priorities of its 2012-2016 Policy Plan.

I am very pleased that in these times of economic turmoil the Flemish government has consolidated its belief in creative and innovative talent. This growth process will allow FWO to continue to develop the foundations of our knowledge society, and to support the innovative pioneers of tomorrow. In a nutshell, FWO is continuing to invest in a future of great expectations.

prof. Mark Waer
President FWO
Rector KU Leuven
"FLIGHT ATTENDANTS/CABIN CREW, PLEASE PREPARE FOR GATE DEPARTURE."
PIONEERING RESEARCH
FWO, driving internationalisation
As a bio-engineer, Nicolaï specialises in techniques to measure the quality of fruit and vegetables after harvest. During his stay in South Africa he wondered whether it would be worthwhile to use the consecutive harvest seasons in Flanders and South Africa to carry out two similar research experiments in a one-year time span, because apples and pears are harvested in September in Flanders, and in March in South Africa.

Thanks to the support of FWO, Professor Bart Nicolaï moved to Stellenbosch, South Africa, for three months in 2005 with his wife and children. He was familiar with the university through a previous, small-scale project for the exchange of PhD students. This trip was part of his usual habit of carrying out research at a foreign university every year, for a minimum of one month. But this time, he wanted to take it a step further. His aim was to investigate whether a more structural collaboration could be set up with the University of Stellenbosch.

His idea suddenly became very concrete when it turned out FWO had decided to set up bilateral collaboration agreements with the South African National Research Foundation (NRF). And as it turned out, Professor Linus Opara, head of the lab in Stellenbosch where Nicolaï was carrying out his research, held the South African Chair in Postharvest Technology at the NRF. An excellent reference.
“In international projects like ours, it’s extremely important to know your research partner in advance. You shouldn’t just get along scientifically, but also on a more personal level. Experience has taught me that if you don’t get along during your visit, it’s difficult to work together in a constructive manner,” says Nicolaï.

Nicolaï had known Linus Opara for a few years as the author of scientific articles, and had met him at several international conferences. Nigerian-born Opara graduated from Massey University in New Zealand, worked for the FAO for a few years and then became a Professor at the University of Stellenbosch. “I knew him and I was familiar with the quality of his research. I knew we’d be all right,” Nicolaï continues.

In 2010 FWO approved the project “Nondestructive measurement of quality attributes of citrus fruit” as part of a bilateral research partnership between the University of Leuven and the University of Stellenbosch.

MeBios is the Leuven-based department where Nicolaï and his team analyse the storage and quality of fruit and vegetables. Over the past few years, they have developed extensive expertise in two highly specific, non-destructive measuring techniques. Nicolaï explains, “Through near-infrared reflectance spectroscopy we can measure the sugar levels of fruit without slicing them open. Moreover, as part of European projects, we use computer tomography for measurements. This is a technique that uses X-rays to scan fruit for internal flaws, such as grainy pulp in oranges. Fruits with that flaw taste dry and are not suitable for consumption.”

Nicolaï and his team consider fruit cultivation in South Africa a highly interesting sector. This type of project allows them to work closely with South African companies that face similar storage and quality issues but often use very different storage and measurement techniques. “Thanks to FWO we can organise exchanges. Master’s and PhD students from Belgium join forces with researchers in Stellenbosch to apply the near-infrared technique to local citrus fruits. Researchers from Stellenbosch come to Belgium to learn about computer tomography because locally they are not familiar with this technique. That is what we call technology transfer. By combining both techniques, we get a good idea of the quality of the South African fruit harvest. And finally, it is also important that this project is yielding new insights that can then be incorporated into sorting lines or used to improve storage conditions in South Africa”, says Nicolaï.
Nicolaï is very happy with the collaboration with Stellenbosch. “South Africa is a very special country,” he says. “The apartheid regime is a thing of the past, but the consequences can still be seen and felt. The Western Cape region has a very European feel to it, but in the north and northeast you’re confronted with situations reminiscent of a developing country. When I first travelled to Stellenbosch in the late ’90s, the university population was almost entirely white. Since then, Africanisation has spread slowly but surely, but the gap between whites and blacks remains. Linus Opara’s team, for example, is made up of black and mixed-race people, but other research groups consist of almost exclusively white researchers. That seems odd, because we think everything is mixed nowadays, but in reality, that’s not yet the case.”

Nicolaï says the organisation is quite good. However, the computerisation of the administration is a little less efficient than in Belgium. “But problems are solved more easily over there with a simple phone call and that typical African flexibility,” he says. “Stellenbosch can definitely be compared to a university like that of Leuven. The labs use our same methods, even though the equipment is less high-tech. That is a matter of budget. Slow internet and data connections are also a major problem.”

How do the students experience the cultural differences between Europe and South Africa? Nicolaï explains, “South African supervisors are part of international networks, they attend international conferences and are generally familiar with the way things work in Europe, the United States and Asia. For exchange students however, the confrontation is usually quite harsh, especially for black students. Many of them come from families with very limited resources and have never been outside South Africa. For them, it’s already quite an achievement to be able to study at a university and to become a researcher. When they come to Belgium, it’s a life-changing experience.”

Bart Nicolaï is very satisfied with the financing of cooperation programmes by FWO. “That way, you can give your research an international dimension,” he stresses. “You’re given the opportunity to choose good research groups and integrate them into your project. Suddenly, your action radius grows. Not infrequently, you unexpectedly come into contact with a research partner from a foreign university or research group, but you have to organise exchanges informally because there is no structural financing available.”
“A while ago, I met someone at an international conference in China who carried out research into the storage of oranges in Valencia, Spain. We agreed that her lab would send us samples to analyse the quality and flaws of the famous Valencia orange with our techniques. We have incorporated that partner into our bilateral project unofficially and unpaid. I’m sure some interesting publications will come about as a result of this collaboration. So with the same resources our initial project is growing. It works, and that is fascinating.”
Research mobility allows for ‘brain circulation’, an important condition to push the boundaries of knowledge transfer. Up till October 2011 the Visiting Postdoctoral Fellowship was one of the main tools for research mobility, apart from the Odysseus programme. From now on, if a research group wants to send out or attract a postdoctoral researcher, the Pegasus programme is the ideal tool. Dr Anabela Resende da Maia was the last researcher who was given the opportunity to carry out research in Flanders under a Fellowship for an entire year.

In August 2011 Anabela Resende obtained a PhD from the University of Rhode Island, USA, with a study on the functional morphology of the shark’s dorsal fin. This was not Resende’s first study. Since obtaining her Master’s degree from the University of Lisbon in 2004, the Portuguese researcher has tested the waters of marine biology through various initiatives.

She gained experience at the Panama City Laboratory, the Lisbon Institute of Oceanography, the Portuguese Elasmobranch Association, the Mote Marine Laboratory in Florida, USA, and the University of Rhode Island. Throughout her research career she has been fascinated by the movements of marine animals.

"Fascinating to see how a sea horse can curl its tail."
When she obtained her PhD from the University of Rhode Island, her supervisor introduced her to Ghent-born biologist Dominique Adriaens at a conference. “The world of functional morphology is a small one,” says Resende. It is a strong field in the United States. Ghent and Antwerp also have a good reputation. Adriaens has become a very respected researcher and is known as an international authority in the field of morphology and histology of marine fauna, mammals, amphibians and reptiles. “At the conference he told me he was looking for someone who is familiar with kinematics for a project about the movements of the sea horse’s tail. How could I say no to that?”

What is so interesting about studying sea horse tails? “Well, the big question is how the animal’s morphology matches its behaviour. To find out, functional morphology relies on a number of subdisciplines like biomathematics and biomechanics, and expertise from the field of engineering sciences. So far, my research has focused on sharks. Sea horses are entirely different. They are governed by different laws and require different techniques to study their morphology. How do sea horses move their tails? From a kinetic point of view, it’s a very complex process. I was very interested in the new techniques that I could learn from Adriaens’ project. My stay in Ghent turned out to be an excellent choice.”

Not only biologists are interested in animals’ strategies to solve certain movement problems. “So are engineers,” explains Resende. “The results of quite a few studies on evolutionary developments in animals can be applied to industry. How do spiders build extremely strong webs? How do caterpillars make silk? How do geckos use their feet to crawl onto vertical walls upside down, no matter how slippery? Researchers discovered that the bumps on whale fins channel the water, resulting in less friction while they swim. This feature was applied to fans, to channel the airflow more efficiently. Recently, I read an article about a chicken farm which has launched a pilot project using these ‘bumpy’ fans. Tests have showed that the energy yield is particularly high.”

Resende will present the results of her research in July, at a conference in Liège, Belgium. In her study, she observed how sea horses use their tails to cling onto things and to let go of them. “It is fascinating to see how a sea horse can curl its tail,” says Resende. “Based on kinematic research of those movements, we can find out which muscles the sea horse uses and how it moves its tail. We discovered it not only bends its tail ventrally, but also laterally. We hadn’t expected that and it hadn’t yet been described in the literature. This is very interesting information for engineers because, when developing a model, they can use it to validate their data. That way, we can simplify parameters or make new ones to develop a model that reflects reality as closely as possible.”
For the development of models Resende has joined forces with Ibitech, the Institute of Biomedical Technology of Ghent University. Ibitech’s activities focus on biomedical engineering. The institute researches the first phases of possible applications. It is also where the prototyping takes place for companies interested in developing a new product.

Resende’s office is on the third floor of a 1960s building at the botanical gardens of Ghent University. It is a stuffed room that she shares with a few colleagues. She keeps her sea horses in a large aquarium in the basement of an adjoining wing. Compared to universities in the United States, working areas are quite small here. “That’s because in Europe campuses are often in the city,” she explains. “That also has great advantages. You’re swept into student life. You’re surrounded by historical buildings, all while working with the most advanced technologies. The quality of life in Flanders is excellent. And life is a lot cheaper than in the U.S. and even Lisbon in Portugal.”

She is equally enthusiastic about FWO’s approach and assistance. During her studies she received a PhD grant from the Portuguese Science and Technology Foundation, as well as a Fulbright grant. She finds the policy much more flexible here than in the U.S. or Portugal. She explains, “There is more diversity, both in terms of programmes and the target groups they aim to attract. In Portugal there is only one call for projects a year and one call for postdoctoral researchers and PhD students. That limits the possibilities. In the U.S. the initiatives of the National Science Foundation are only accessible to American citizens. I was lucky to be given some help by my supervisor. In the U.S. research is highly competitive and everyone fights for his share of the market.”

Resende’s research grant ends in September. She has been offered the opportunity to carry out postdoctoral research at Tufts University in Boston, U.S, where she will be able to use the techniques that she discovered here to research the behaviour of fish influenced by the water flow of water turbines. The knowledge and experience she gained during her collaboration with Ibitech will be particularly useful. “The key discovery I’m taking away with me from Ghent is the use of data from my kinematic research for the validation of models. My research fellowship in Ghent is coming to an end but I am sure we will continue to cooperate. In fact, my research at Tufts is very similar to my activities here,” says Resende.
Plasma chemistry is a highly specialised niche in the broader field of micro-electronics. The Antwerp-based research group PLASMANT (Plasma, Laser Ablation and Surface Modeling – ANTwerp) headed by Professor Annemie Bogaerts is a world leader in its field. Bogaerts and her team use computer models to simulate the behaviour of complex gas mixtures in a plasma reactor. The interaction between the gas particles causes chemical reactions. By managing this process very accurately, it is possible to etch nano channels that form a bed for the integrated circuits on computer wafers. The density of the gas particles, the fluxes to the surface, the energy flows generated, the depth of the channels... everything is calculated, analysed and described in meticulous detail.

"Without FWO, this type of research would not have been possible."

A few international conferences and a visit by two postdoctoral researchers from the Dalian University of Technology in China to Professor Annemie Bogaerts’ Antwerp-based research group. That was all it took for FWO and the Chinese Ministry of Science and Technology (MOST) to set up a successful collaboration in the field of plasma chemistry.
But all those computer-simulated research results must also be validated on an experimental level. “We are a team specialised in simulation; we do not have the necessary expertise for further validation,” says Bogaerts. “That’s why we are constantly seeking teams that can test our results experimentally in a lab.”

Since PLASMANT is one of the best-known groups specialising in plasma research worldwide, Professor Bogaerts regularly receives letters of application from postdoctoral researchers. “Once I got an e-mail from a researcher with a PhD supervised by Professor You-Nian Wang at the Dalian University of Technology in China. Professor Wang’s group specialises in the physical aspects of plasma research and in the validation of data in a lab environment. In other words, very complementary to our own research. We were able to offer him a job through an FWO grant. He put us in touch with Professor Wang himself. We later met Wang and we have come to appreciate his work via publications and presentations at international conferences. That marked the beginning of our collaboration.”

In 2010 FWO launched a call for bilateral collaboration agreements in the field of micro-electronics. “Usually, research fields are interpreted in a broad sense, but this time, the call was focused on a niche field,” says Bogaerts. “The collaboration agreement with Dalian ends in September 2012. The results are striking. Both Wang’s team and ours publish articles regularly, but we had never joined forces before. Since the start of our cooperation, we have produced five joint publications, which are all the result of our complementary research. That is truly exceptional. Without FWO, this type of research would not have been possible.”

Despite the two teams being geographically very far apart, the cooperation is going very smoothly. They mainly communicate via e-mail and Skype. “Via Skype you can discuss so much. When we’ve done our simulations, we send them our data and they send us their experimental data. Then we discuss it via Skype or via e-mail. We also e-mail and discuss paragraphs for our articles. Wang his team are quick and efficient. That is very nice. We are not competitors, but co-authors,” Bogaert stresses. The only aspect that can be improved in this otherwise excellent cooperation is the English language. Bogaerts explains, “I’ve noticed that I’m more critical in the assessment of texts than Wang’s team. I think it’s mainly a language issue. Apparently, English is not that straightforward for Chinese researchers. I often need to ask for clarification, but mostly they accept my corrections and they welcome my suggestions.”
Meanwhile, the groups have strengthened their ties on a practical level. Last year, Wang's group organised a conference in Dalian. Bogaerts sent a delegation of two postdocs and one PhD student, who all gave a lecture. One of them had even been invited as a speaker! In July this year a group of six Chinese researchers is expected to attend a small symposium on plasma chemistry in Antwerp.

As a result of this smooth cooperation and mutual contacts and visits, a plan came about to set up a new cooperation agreement. “Considering how fruitful our complementary research is and the fact that the collaboration agreement expires in September, I asked Wang whether he would be interested in continuing our cooperation. He immediately said “yes”. So I’ve drafted a first project proposal for complementary research into plasmas in new gas mixtures that are suitable for etching larger wafers. Wang’s team immediately showed an interest.”

Let’s not forget that developments in micro-electronics never come to a halt. IMEC is currently developing 300 mm wafers. In the long term, they will be replaced by 450 mm wafers. That poses great challenges in terms of uniformity. The chips in the centre of the wafer need to have the same characteristics as those on the sides. Bogaerts explains, “Once again, this requires simulations of the chemical process generated by the gas mixtures to optimise the uniformity of those larger chips. Subsequently, the research results need to be validated experimentally in the lab. And that can only be done through a collaboration agreement with an experienced group. So we will no doubt rely again on FWO to safeguard the continuity of our research.”
After obtaining her PhD in 2004, Leen Slaets joined the Biomedical Research Institute (BIOMED) at the University of Hasselt. Multiple Sclerosis is the result of the immune system failing and the brain being damaged as a consequence. What exactly happens in the immune system and what is the role of oncostatin?

Over the course of five years, Leen Slaets had used all the techniques available at BIOMED for her research. If she wanted to push her boundaries, discover new techniques and get a breath of fresh air, she needed to cross the border. Literally.

In April 2011 Leen Slaets went to Heinrich Heine University in Düsseldorf, Germany, for six months. Her aim? To explore new possibilities in the research she had lost her heart to: the role of oncostatin in the repair of brain damage in MS patients. Düsseldorf exceeded her expectations. Not only was she introduced to new research techniques, she also – above all – was given the opportunity to broaden her view on cooperation in the world of scientific research.

"Short stays abroad often produce interesting opportunities."
Slaets’ research at BIOMED was going quite well. What’s more, while finishing her PhD she had come across a few leads that she was convinced would result in at least one publication. “In some labs things are very different, very competitive. Here, we work in a constructive setting. I liked working here and I didn’t want to let go of that,” she continues.

Via several professors Slaets found out about FWO’s grants for researchers who want to work abroad for a short period of time, provided that they have a contract with a Flemish university. That seemed the perfect solution. Slaets had the opportunity to learn new techniques abroad and broaden her horizons, without leaving her habitat at BIOMED. “It would allow me to return to the team I’ve always liked working with, and give me some extra job security as well,” Slaets says.

In her search for the perfect location, Slaets had set her sights on a research group at the Neurology Department of Heinrich Heine University in Düsseldorf, Germany. This lab carries out research into the mechanisms involved in the repair of brain damage in MS patients, which really complements Slaets’ research. The group was set up by a German professor from Berlin, a colleague of one of her professors at BIOMED. So Slaets received the information first-hand and knew that the German lab excels in its research. Moreover, she knew the atmosphere would be
pleasant and very amicable. Precisely what she was looking for. She was invited to Düsseldorf to present her work, which was considered good. She handed in a detailed case file and FWO also approved her application.

“I’ve learned so much from the way Germans handle research,” says Slaets. “In order to deal with a research item efficiently with a view to having it published in a top journal, they first analyse the techniques and resources required. Then they check whether they can actually obtain them. When carrying out neurological research, animal testing is essential, mostly on mice. Either to inject a substance, such as oncostatin, into animal cells and analyse its effect, for example. Or to deactivate a certain gene or receptor. Transgenic or knock-out mice are used for this purpose, but they are not easy to find.

It takes years to create such a mouse, and often they are linked to a patent. So labs are not too keen on releasing them. So first, the team in Düsseldorf checks whether they can get hold of such a mouse. If not, the research project is not launched, because, in their opinion, you can never carry out the experiments required for the results to be published in a top journal.”

“I would never have adopted that approach for my research”, says Slaets. “Take oncostatin. First I looked at whether it would be interesting to research this substance. Then we would test it on cells or animal models. If this yielded results, I would look for a knock-out mouse to continue the research. The group in Düsseldorf decides whether a research project is relevant in the initial phase. If the answer is “yes” and the team believes it can be done, the entire research group is involved in the project and every researcher is given a slice of the large research cake. At BIOMED we do things differently. Here, every researcher has his own field of expertise within the bigger picture. On a personal level, I prefer that approach. If a researcher at BIOMED makes a discovery in his field, he or she becomes the first author of the publication.

In Düsseldorf several people work on a publication and at the end of the process, the main author is chosen by the professor. As a researcher, you can consider yourself lucky if your name is added to the list of authors.”

When Slaets left for Düsseldorf, she took a few samples of oncostatin with her. She wanted to test the substance immediately in experiments with new techniques she would learn there, and subsequently integrate them into her research at BIOMED. “Those experiments yielded quite a few new insights,” she says. “They weren’t expecting that in Düsseldorf. They are currently concluding the last experiments, because we didn’t manage to complete everything in six months. The results will be included in a joint publication. And I should become the main author.”

Slaets also noticed that at the Düsseldorf lab, postdocs assist PhD students on a daily basis. They help them immediately if they’re stuck with their research. “Here, one professor is
responsible for several PhD students, but apart from that, also has many other responsibilities. The students are given suggestions, but at times, when they’re stuck, they remain in the dark for a long time. Of course, the system of the University of Hasselt is to blame. We have far more educational tasks in addition to our research tasks. In Düsseldorf, the postdocs can carry out research full-time."

Back in Hasselt, Slaets’ experience unleashed a discussion between postdocs and professors. “At BIOMED we try to continually improve our research. In doing so, we can learn from other labs and adopt their good practices. We eventually decided to maintain our approach in our lab, taking into account several aspects of the German approach. In a nutshell, each lab has its own methods, but we do now focus more on cooperation, mutual help and support when a researcher has achieved interesting results or discovered interesting leads. And in the future, more postdocs will be recruited to assist PhD students more swiftly.”

But there is more. Everyone was so excited about the research, that Slaets and her German colleagues are preparing an application for a fully-fledged collaboration agreement. Slaets explains, “Such short stays abroad often produce interesting opportunities. Since my return, we have also made contact with Düsseldorf regarding other research fields. Simply because I told them what we do here in Hasselt. The professor at the German lab is also a neurologist at the local hospital. He can provide us with extra samples from MS patients. And samples are still a limiting factor in our research. First we need to wait for samples, then we need to divide the cells and subsequently distribute them among the researchers who want them for their work. We have now made a concrete agreement with Düsseldorf for them to provide us with more samples.” What a six-month stay can bring about…
As a clinical practitioner, how do you know that the information from various studies is sufficient to conclude that a certain type of psychotherapy will probably lead to a decrease in behavioural problems among children and youngsters? Before leaving for Boston, Sofie Kuppens had carried out research for more than two years into the further development of methods and techniques to answer that question. Through several publications she got acquainted with John Weisz’ work. “Weisz is a true pioneer and has years of experience in the field of psychotherapy for children and youngsters with behavioural and emotional issues,” she explains.

How can a physician know which psychotherapeutic treatment best suits a patient? Start the treatment and see what the results are? That should be avoided. Clinical practitioners want to be able to make decisions about treatments based on the best information available and on its efficiency. For a few years now, Sofie Kuppens has been optimising methods to synthesise the results of studies. She applies these methods to, for example, efficiency studies for psychotherapeutic treatments in children and youngsters.

From February to December 2011 she travelled to the Judge Baker Children’s Center of Harvard Medical School, in Boston, U.S., with an FWO-grant. There she had the opportunity to work with John Weisz, who has developed one of the largest databases of studies on the efficiency of psychotherapeutic treatments for children and youngsters.

“A year of postdoctoral research abroad with a top scientist is not only an asset professionally, it also enriches you personally.”

Sofie Kuppens
Boston, United States
“He is also known for synthesising results across various studies. That perfectly matches what I do, but on a much larger scale. I wanted to test my method on the unique, large database that he has developed through fifteen years of research. This database encompasses close to five hundred studies on psychotherapeutic treatments used on children and youngsters in the past five decades. This was a unique opportunity to give my own research a serious boost.”

Things moved quickly after that first Skype conversation between Weisz and Kuppens. “He was immediately interested in joining forces with me,” Kuppens says. “The only thing that needed to be done was to give three references and submit an application to FWO for a long stay abroad. It was really last-minute. The entire procedure - from my first contact with Weisz to the submission of my application, obtaining a visa and seeking accommodation - took barely five months. Of course, the fact that FWO knew me from my three-year postdoctoral fellowship at KU Leuven helped. It was all a matter of building on my previous research project.”

At Weisz’ lab Kuppens was given the status of research scientist, which is granted to researchers who have their own research project, as well as the necessary resources. Kuppens explains: “Unlike the regular postdoctoral researchers who work for a professor, this status offers quite a lot of independence. You’re not working on the professor’s project, you’re working with him. Openness is therefore very important. You exchange mutual experiences and information, which is mainly reflected in publications. During my stay we worked on four joint publications. I was chief editor for the methodological publications. In terms of content, however, Weisz was the main author, even though I had written much of the paper and had carried out the data analysis. That’s how things are usually done at the lab.”

“A year of postdoctoral research abroad with a top scientist is not only an asset professionally, it also enriches you personally,” explains Kuppens. “If you’re a postdoctoral researcher and you’re offered this opportunity, grab it with both hands! Boston is a melting pot of various cultures. The Greater Boston Area has over a hundred universities, colleges and research institutes. This was a unique experience personally, socially and professionally. My experience at John Weisz’ lab was truly enriching. For an entire year I carried out research full-time, with top scientists. I found myself surrounded by an excellent professor, five postdoctoral researchers and three research scientists, each with extensive expertise in their field, as well as a large team of research assistants.”

Kuppens was impressed with the enthusiasm young American researchers have in their educational and research career, particularly in terms of mobility. In Flanders you can easily obtain your Bachelor’s and your Master’s degree from the same university, and even your PhD. In the U.S. things are quite different.
“I didn’t know that after obtaining their Bachelor’s degree students usually work as research assistants at a research lab because, in order to start your Master’s programme or your PhD, you need to present a reference letter. After having obtained your Bachelor’s degree, you need to submit applications to various universities, hoping one of them will accept you. The same goes for postdoctoral researchers. That concept of mobility is a given for American students and researchers. That is how they develop their research career. In many respects, competition is far greater than in Flanders. Also, their work is their life. Fellow researchers rarely take longer periods of time off work. Usually they are expected to be available 24/7. So their social network comprises mainly colleagues from their lab,” Kuppens explains.

Since Kuppens’ return to Europe, she has been appointed assistant professor at VU Amsterdam. What did she put in her luggage on her way back from Boston? Kuppens says, “In Leuven I built my own small databases or I used cases from colleagues’ databases or from publications. Setting up large databases requires time, staff and money. In Boston all this information was readily available. I was very closely involved with the management of the enormous database comprising almost five hundred studies. I discovered the issues and problems associated with the setting up and management of such large databases.”

Kuppens’ research is not only focused on the identification of research priorities, but also aims to support clinical practice. That is its main added value. “It is particularly important for clinical practitioners to know what the best therapy is for each patient and when it should be applied,” explains Kuppens. “If synthesising and comparing results across various studies demonstrates the efficacy of a specific therapy in certain groups of children or youngsters in specific circumstances, clinical practitioners are one step ahead.”

This synthesising research also yields information about methods that don’t work and about the gaps in current findings. Kuppens explains, “Research-based psychotherapy is given a lot of attention. However, currently we cannot confidently state that it is more effective for children than the commonly used psychotherapeutic treatments. There are many other ‘grey areas’ which warrant further research. It is not only clinical practitioners who are calling for such research. Policy makers can also call on that information to find out which research is most interesting and useful from a social perspective, with a view to financing.”
What are Sofie Kuppens’ plans now that she has returned from Boston? She wants to further optimise her research methodology so that the available information in her field becomes more accessible. She has therefore submitted a joint project application with John Weisz to the National Institute of Mental Health. “I will contribute my expertise in terms of methodology and data analysis and Weisz will be responsible for the content-related aspects,” explains Kuppens.
For four months, Professor De Clercq and his Dutch colleague Nico Roymans brainstormed and discussed. They perfected their project proposal and made some changes along the way. But it was worth it, because only three of the forty-nine projects submitted were selected. And theirs was one of them. De Clercq and Roymans have known each other for years. Their work focuses on Romanisation in history, history of art and archaeology at large. De Clercq carries out research in Flanders, while Roymans does research in the Netherlands.

The cooperation between FWO and NWO (Dutch Organisation for Scientific Research) in the field of cultural sciences and humanities is quite atypical. One year, one organisation is responsible for assessing and processing the applications. The next year, it is the other organisation that takes on these tasks. Both organisations fund their own researcher who is involved in the project. In the joint research project on the fall of the Roman Empire in the Low Countries, Professor Wim De Clercq (UGent) and Nico Roymans (VU Amsterdam) found a cross-border initiative that perfectly matched this philosophy.

"If I hadn't secured this project, I would've felt defeated as a researcher."

For their joint research and publications, lectures and seminars on the subject, they got the idea of handing in an application for a joint research project as part of the cross-border collaboration between FWO and NWO. The 4-year project “Decline and fall? Social and cultural dynamics in the Low Countries in the Late Roman empire (AD 270-450)” was launched on 1 April. Upon conclusion it will give an overview of the cultural, social and economic dynamics in our regions in the Late Roman empire.
The research group that FWO and NWO first set up jointly in 2010 is part of a European programme to strengthen transnational cooperation in the field of humanities. This pilot project consists of two parts: in 2011 NWO was Lead Agent, in 2012 FWO will take over. This Lead Agency approach has a number of advantages for the researchers interested in taking part. They needn’t hand in two applications and are not subject to two or more evaluation rounds in the two different countries. Researchers who wish to pursue a cross-border research project now have a one-stop shop to turn to. The condition is that the research is carried out at a Flemish and a Dutch university, and that the scientific complementarity of the project brings added value to the collaboration.

De Clercq's colleague Roymans handed in the application. De Clercq is very satisfied with NWO's approach as Lead Agent for 2011. “The standards were high. It was a bumpy ride, but in the end I felt we really did achieve what we were aiming for. We have managed to defend ourselves. We were heard and got feedback,” says De Clercq. “First, our project was sent to two external, anonymous reviewers. They gave us very good feedback, but also an extensive list of questions for further clarification. We provided them with very detailed answers. Then, the selection committee invited us for an in-depth interview. The committee members wanted to know all about the practical aspects of our project, the collaboration between the two universities, the added value, the methodology used, the source material, the scientific argumentation and the output. If I hadn’t secured this project, I would’ve felt defeated as a researcher.”

Many people still think that, around 400 AD, the tribes of the northern regions crossed the borders of the then-Roman Empire and put an end to the occupation. That is the traditional version of the “rupture” of Roman domination, but according to De Clercq there was no sudden, total schism: “Recent research of settlements and materials shows that during the Iron Age, so before the arrival of the Romans, Germanic influences from the North had seeped into the Southern regions. We call that process Germanisation. It has always existed and during Roman times it simply continued. Instead of a schism, we should call it a phased transformation. What is so original about our research is that we look at that transformation not from a Roman point of view, but from a Germanic one.”

Roymans and De Clercq enlisted the help of a postdoctoral researcher and a PhD student to help them with their cross-border research. The study of plans of houses, farms and other settlements will form a key element in their research. De Clercq explains: “You don’t build a house just like that. It is a tradition that is passed on from generation to generation. A house tells you a lot about the culture of a tribe, and also about the external influences that are incorporated into the architectural style.” The material culture is also important: stoneware, ceramics, glass, metal objects, jewellery... Home-made or imported. Which raw materials were
used to make jugs, pots, pans and brooches? Where did they come from? Where did the copper, iron or tin used for kitchen utensils and jewels come from? Which power blocks and processes played a role in that transformation of raw materials into utensils or cultural objects?

“Our research will also call for mineralogical, chemical and geological studies. These are complex research phases that will definitely yield a nice result,” says De Clercq.
“The fact that we both live and work in the same geographic and natural environment inevitably makes Roymans and myself ideal partners,” says De Clercq. “We look at processes in the same geographic area. The Low Countries did not exist back then. From a historical perspective, a collaboration makes sense, and that in itself is already of added value scientifically.”

Nico Roymans will mainly focus on studying the settlements. The Netherlands are much more advanced in this field than Flanders. De Clercq explains: “In Flanders we have only studied very few farms from 300 to 500 A.D. We don’t have more objects to study, but we have analysed them more thoroughly than the Dutch in terms of material and technical aspects. They can integrate our data into their broader knowledge about settlements and vice-versa. It’s like cross-pollination. From a methodological point of view, we can learn a lot from this approach. But it also truly provides added value to both parties in terms of content and knowledge acquisition.”

De Clercq and Roymans have clear ambitions for their research. To crown four years of intensive research they aim to jointly publish a book about the transformation the Low Countries experienced during the transition from the Roman Age to the Middle Ages. To spread the word, that is their ultimate goal. Moreover, they will write peer-reviewed articles for scientific journals. First of all, a status questionis about the late-Roman settlements in Flanders and the Netherlands. They will also publish articles about the various material groups in journals about archaeology, mineralogy and chemistry. “And to conclude the entire project in style, we will organise an international conference in 2015. We will invite foreign researchers and experts, and present the results of our research,” says De Clercq.
The human gastrointestinal tract is an incredibly complex processing system that never takes a break. The only thing we do consciously is ingest food. Everything else happens automatically, without us even feeling it. Until our stomach or bowels protest, that is. A tummy ache, a bloated feeling, a lack of appetite, premature satiation, a burning sensation, cramps... all symptoms that point to disorders. In his clinical practice Jan Tack is confronted with these issues on a daily basis. In his research as a gastroenterologist he tries to find out what went wrong from a medical perspective. Which pathogenic mechanisms play a role? Which proteins are involved? What is the role of the gastrointestinal system in controlling food intake? How does it react to the patient’s sensitivities?

In Japan, gastrointestinal problems are viewed differently than in Belgium. That is what emerged from a detailed 3-year study by Tatsuhiro Masaoka at the lab of Professor Jan Tack, gastroenterologist and head of the Internal Medicine Department at UZ Leuven. Masaoka is a postdoctoral researcher from the Keio University School of Medicine, the oldest and most highly renowned medical university in Japan. What better reason to submit a project proposal to continue this research as part of a collaboration agreement between FWO and the Japan Society for the Promotion of Science (JSPS), thought Tack.

"This project is a step towards the internationalisation of research into gastrointestinal disorders."
Tatsuhiro Masaoka’s work at Tack’s lab resulted in a very fruitful exchange of insights, views and findings between the two cultures. “Take premature satiation for example. This is a very common complaint”, explains Tack. “You start your meal feeling very hungry, but you have to stop before you’ve actually eaten enough because your stomach feels full. This is caused by a disorder of the stomach’s storage capacity. We have managed to study this phenomenon thoroughly in a Western population, looking at different types of sensation the patient feels and linking them with specific disorders of the gastrointestinal system. In Japan, however, the concept of satiation is expressed using a word that might translate as “feeling bloated after a meal”. There are dozens of similar examples of such differences.”

How do patients feel about their gastrointestinal health? How do they express what they feel? And do doctors understand what their patients are trying to say? Tack explains, “There are quite a few differences between Japanese society and our own in the cultural and linguistic approach to these sensations. And these lead to difficulties in understanding each other. We gave a lot of thought to whether it would be worthwhile to give an overview of those differences. At one point, we decided to go ahead. We turned this issue into a project proposal and submitted it to FWO. And it was accepted! In the next two years, four of our lab researchers will be travelling to Keio. And JSPS will be funding a return visit to Leuven.”

The project led by Tack and Professor Hidekazu Suzuki, his colleague from Keio University, consists of two parts. In the linguistic and cultural part they use images, cartoons, videos, drawings and other educational and information material to create a uniform definition for the concepts used to describe a particular disorder and to harmonise the surveys. That is important for contacts with the patients, for the diagnosis of the disorder and for the treatment in clinical practice.

The second part of their research focuses on genetics. Tack explains, “TRPV-1 is a protein in the gastrointestinal system that reacts to stimulating substances in foods. Genetically, there is a more active variant of this protein. People who have it do not tolerate certain nutrients, or tolerate them badly. That results in a wide range of unpleasant sensations, the most common of which is a burning sensation in the stomach. We want to analyse which complaints are associated with this protein variant. Is it the same in Japan? We also want to measure its impact on the quality of life in both continents. Is that similar or not? What is the effect on local dietary habits? How do patients react to gastrointestinal problems psychologically? This is important bearing in mind that Japan has a high rate of stomach cancer, while this type of cancer is very uncommon over here. Professor Suzuki and his team possess the necessary expertise to study these issues. We are going to take samples and send them over for analysis, to see if the genetic variants in our patients are the same as those in Japanese patients.”
So do the Japanese findings match the Belgian situation? In other words: can the results of this research be transposed between different continents, cultures and dietary habits? This two-year comparative study aims to provide an answer to this question. This joint project between KU Leuven and Keio University is also expected to lead to closer, more integrated collaboration in the longer term. And Tack's third ambition is for this project to form a stepping stone for the internationalisation of research into gastrointestinal disorders.

High expectations? “That’s right,” says Tack. “I’m also a member of something called the Rome Committee, an international consortium that focuses on the universal description, categorisation, diagnosis and treatment of gastrointestinal symptoms that are difficult to explain. Within that committee we are also looking for more global links and similarities. So far, North America and Western Europe have been the dominant players in this respect.

Through our project, we can now add Asia to this list. The data we’re collecting in collaboration with Keio University is a good stepping stone to the further globalisation of this project, in which we’re trying to find a universal pattern of symptoms, but with a wide range of cultural and social variations.”

Throughout the duration of the project, Tack and his Japanese colleagues are aiming for four or so publications in top gastroenterology journals. And once this project has been completed, there will probably be a follow-up. “Once we’ve mapped out, measured and quantified the pathology and the underlying links, the question is whether we can use our treatment methods for gastrointestinal disorders in Japan,” explains Tack. So an important part of the research will be focused on treatments, a topic for another project application at a later date.

Jan Tack is very satisfied with FWO’s approach. His experiences with the foundation date back to 1988, when he started working as a PhD fellow at KU Leuven through FWO. When comparing FWO’s procedures with those of similar institutions in other European countries, or those of European research projects, it strikes him how smoothly the services are provided and how much trust is put in the researcher. Tack explains, “I think FWO adopts a very open approach. In other European countries the government often limits the topics of calls to very specific issues. If researchers submit a proposal with a broader scope, it is rejected. FWO works with Expertpanels specialised in a number of integrated fields. This means that projects with a broad research topic can also be submitted. And that’s a plus. Otherwise it would have been very difficult to launch this project with Keio University.”
The Keio University School of Medicine is located in Shinjuku, a ward of the Tokyo Prefecture.
Since its founding by Paul Devroey and André Van Steirteghem in 1983, the Brussels-based Centrum voor Reproductieve Geneeskunde (Centre for Reproductive Medicine) has become a world-famous institution. In a study from 2008, the American journal Fertility and Sterility ranked the fertility centre of UZ Brussels (VUB) third after CNRS (France) and the Baylor College of Medicine for its publications on reproductive biology. “Quite a few researchers are interested in completing a placement here, not only medical practitioners, but also non-medical staff,” says Professor Johan Smitz.

Smitz trained as a medical practitioner and later specialised in clinical biology. His dream was to run a research lab one day, and thanks to a “senior clinical research fellowship” granted by FWO he was given the opportunity to develop his own line of research in parallel with his clinical activities. Today he runs the Follicle Biology Lab at UZ Brussels. He has always been very motivated to share his knowledge and assist in the professionalisation of researchers from other, less advanced countries. In that regard he has been in close contact with researchers in several South American countries, such as Peru and Argentina, for about eight years.

Cows and sheep are the flagships of the Argentinian economy. The livestock population consists of 50 million cattle and 30 million sheep. Meat is therefore one of Argentina’s main export products. Good reproducibility of quality animals is therefore essential. FWO and the Argentinian Ministerio de Ciencia, Tecnología e Innovación Productiva (Ministry of Science, Technology and Productive Innovation, MINCyT) gave Professor Johan Smitz (VUB) and his Argentinian colleague Professor Pablo Cetica (University of Buenos Aires) the go-ahead to optimise in-vitro fertilisation for cattle and sheep.

“I find it highly stimulating and interesting to broaden the scope of my own research.”

Johan Smitz
Argentina
One day Smitz received an e-mail from a researcher at the Instituto de Investigación y Tecnología en Reproducción Animal (INITRA) of the faculty of Veterinary Medicine at the University of Buenos Aires. “She had read some of our publications and contacted us regarding a problem she could find no solution for. She had started setting up a system for the in-vitro maturation of cow egg cells. However, she was in the dark regarding the effect of a certain stem cell factor on the growing follicle. We submitted her issue to FWO and MINCyT as a subject for a multidisciplinary cooperation. Our application was accepted.”

Smitz is happy that FWO stimulates and honours such cross-fertilisation between research fields. He has always promoted cross-boundary research. “I find it highly stimulating and interesting to broaden the scope of my own research and to collaborate with researchers from other fields. We work with human samples. Our Argentinian colleagues work on animal samples. Two totally different target groups, but the techniques used are the same. So why not join forces?”

Most calves in the gigantic Argentinian cattle farms are born following in-vitro maturation of egg cells in the lab. “That’s been a routine task for a few years now,” explains Smitz. “Nowadays there are few natural inseminations in cattle farming. It’s much easier to take semen from a local award-winning bull, fertilise selected egg cells in the lab, freeze them and then send them to the breeder. That offers a much better guarantee of good selection and therefore top-quality meat.”

For his research, Smitz mainly uses mice and sometimes guinea pigs as testing models. In Argentina they use cows, sheep and horses. Smitz explains: “Our techniques have a high yield in terms of reproducibility. That is interesting to them. We help them raise the bar for their own techniques. As part of this collaboration the Argentinian researcher came to our lab for four months to learn the techniques. Four months is a short period of time, in which you can carry out three to four serious experiments, not more. So the bulk of the work will have to be done in her own lab. That’s why two of our researchers then went to Buenos Aires for a month to follow-up and fine-tune the implementation in her lab. And this year another two VUB researchers are returning to Buenos Aires. Apart from that, we use e-mail and Skype to communicate. This exchange of information is extremely enriching and can only speed up the further development of this field of research. This is a two-year project in which we will see each other four times, enough to get the research running smoothly.”
The state university of Buenos Aires has 300,000 students, but the students granted research fellowships are subjected to a very strict selection procedure. They are well-trained and are among the very best students. They are also very well-acquainted with the progress of research. “But once they’ve got their degree,” Smitz explains, “they should be given the opportunity to use their knowledge in concrete research projects. And that’s where the shoe pinches, because the infrastructure is often lacking. Moreover, the people leading the research – the managers – are not as well-trained as their Belgian counterparts. In Flanders, in order to lead a research project, you need to have at least a PhD. Over there, the standards are lower.”

So what happens with South American researchers who train in Flanders or Europe as part of a PhD project and then return to their home country? They have discovered the latest techniques here. Wouldn’t it be useful to set up collaboration agreements with Belgium to exploit that knowledge to the full? They would then be able to implement it in their home country. “My collaboration with South America is not confined to Argentina,” explains Smitz. “Over the past few years I have also developed good contacts with San Marcos University in Peru. So far, we’ve trained four Peruvian researchers. We’re also working on a collaboration agreement with the University of Ceará in Brazil. Twenty years ago, a Brazilian vet obtained his PhD from the University of Liège (ULg). He has since set up a veterinary lab with equipment that is very similar to ours. Two years ago we got back in touch. Last year I visited his lab. It is impressive what this man has managed to achieve in a decade. There is a possibility that a postdoctoral researcher from his lab will come to ours for four years to further develop her research in molecular biology.”
Meanwhile, in Peru, Argentina and Brazil, many more research institutes and labs are opening their doors. There is, however, a lack of experienced managers to run these establishments. South America is desperately seeking managers capable of assisting highly-qualified, ambitious researchers in the development of their career. “The demand for such people is enormous,” continues Smitz. “That is one of the biggest challenges in South America today. Through collaboration agreements like the one between FWO and MINCyT, we can contribute to the career development of talented young researchers.”

Buenos Aires, Argentina

Argentina has about 30 million sheep
"WE STRONGLY SUGGEST YOU READ THIS BEFORE TAKE-OFF. IF YOU HAVE ANY QUESTIONS, PLEASE DON'T HESITATE TO ASK ONE OF OUR CREW MEMBERS."
ANNEX 1
Financing and allocation of funds 2011
Financing and allocation of funds
2011

Financing

FWO relies on various financing sources to support researchers. In 2011 the budget totalled 199.5 million euros, which were subdivided as follows:

**Flemish Government**
Subsidy, including the Odysseus programme, international collaboration and research at international research facilities: 144.7 million euros (73%)
Subsidy from the National Lottery: 11.5 million euros (6%)

**Federal Government**
Grant for additional researchers (Federal Science Policy): 7.5 million euros (4%)
FGWO subsidy: Fund for Medical Scientific Research (Federal Public Service Health, Food Chain safety and Environment): 2.1 million euros (1%)
IIKW subsidy: Inter-University Institute for Nuclear Science (Federal Public Service Economy, SMEs, Self-employed and Energy): 2 million euros (1%)

**Benefactors**
National Lottery: see above, Flemish Government
Donations from companies and individuals

**Fiscal and parafiscal measures**
For its postdoctoral fellowships FWO is granted a 75% income tax exemption, which results in an estimated extra budget of 9.6 million euros (5%). Moreover, FWO is exempt from employers’ social security contributions for Postdoctoral Researchers, which have been added to the reference list dated 31 December 1995. This gives FWO an estimated extra 5.5 million euros (3%) to spend. Finally, FWO can rely on the employment programme for fundamental research, the Scientific Maribel Plan, which brings in 16.6 million euros (8%).
## Subsidies from the Flemish and Federal Governments (in kEUR)

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### Diagram

- **Flemish Government**
- **Federal Government**
- **Total Subsidies**

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**FWO Annual report 2011**
EVOLUTION 2005 - 2011

DISTRIBUTION OF SUBSIDIES ACROSS FWO’S INSTRUMENTS (IN %)

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SUBSIDY DISTRIBUTION 2011

44% Fellowships
2% Scientific contacts
1% Research grants
51% Research projects
2% Administrative management
EVOLUTION 2005 - 2011
FELLOWSHIPS PORTFOLIO AND SUCCESS RATE

FELLOWSHIPS PORTFOLIO

SUCCESS RATE FOR FELLOWSHIPS

- PhD Fellowships
- Postdoctoral Fellowships
### RESEARCHERS IN OFFICE ON 1 OCTOBER 2011

#### PHD FELLOWS IN OFFICE

<table>
<thead>
<tr>
<th>Field</th>
<th>Fellows</th>
<th>%</th>
<th>Postdoctoral Researchers</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>114</td>
<td>13</td>
<td>131</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>160</td>
<td>19</td>
<td>119</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Social Sciences</td>
<td>163</td>
<td>19</td>
<td>105</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Medical Sciences</td>
<td>214</td>
<td>25</td>
<td>262</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Science and Technology</td>
<td>201</td>
<td>23</td>
<td>214</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>Interdisciplinary</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>
RESEARCHERS IN OFFICE ON 1 OCTOBER 2011

PERCENTAGE OF FOREIGN RESEARCHERS

- PhD Fellowships
- Postdoctoral Fellowships

FWO Annual report 2011
NUMBER OF RESEARCHERS IN OFFICE ON 1 OCTOBER 2011

NUMBER OF RESEARCHERS PER TYPE AND GENDER

PhD Fellowships
- 397 Male
- 450 Female

Postdoctoral Fellowships
- 464 Male
- 299 Female
RESEARCH PROJECTS AND RESEARCH GRANTS
2005 - 2011

NUMBER

Research projects
Research grants
RESEARCH PROJECTS AND RESEARCH GRANTS
2005 - 2011

SUCCESS RATE RESEARCH PROJECTS (%)

SUCCESS RATE RESEARCH GRANTS (%)

Success rate n
Success rate amount

Success rate n
Success rate amount
RESEARCH PROJECTS AND RESEARCH GRANTS ON 1 JANUARI 2011

PROJECTS PER FIELD

<table>
<thead>
<tr>
<th>Field</th>
<th>Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>164</td>
<td>€ 10,508</td>
</tr>
<tr>
<td>Humanities</td>
<td>118</td>
<td>€ 7,527</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>176</td>
<td>€ 11,828</td>
</tr>
<tr>
<td>Medical Sciences</td>
<td>446</td>
<td>€ 25,547</td>
</tr>
<tr>
<td>Science and Technology</td>
<td>289</td>
<td>€ 23,057</td>
</tr>
<tr>
<td>Interdisciplinary</td>
<td>16</td>
<td>€ 1,527</td>
</tr>
</tbody>
</table>
RESEARCH PROJECTS AND RESEARCH GRANTS
ON 1 JANUARI 2011

RESEARCH GRANTS PER FIELD

<table>
<thead>
<tr>
<th>%</th>
<th>Field</th>
<th>n</th>
<th>amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>Biological Sciences</td>
<td>13</td>
<td>€ 296</td>
</tr>
<tr>
<td>3%</td>
<td>Humanities</td>
<td>2</td>
<td>€ 17</td>
</tr>
<tr>
<td>3%</td>
<td>Social Sciences</td>
<td>2</td>
<td>€ 26</td>
</tr>
<tr>
<td>50%</td>
<td>Medical Sciences</td>
<td>32</td>
<td>€ 781</td>
</tr>
<tr>
<td>22%</td>
<td>Science and Technology</td>
<td>14</td>
<td>€ 311</td>
</tr>
<tr>
<td>2%</td>
<td>Interdisciplinary</td>
<td>1</td>
<td>€ 10</td>
</tr>
</tbody>
</table>
INTERNATIONAL MOBILITY

NUMBER OF TRAVEL GRANTS

SUCCESS RATE OF TRAVEL GRANTS

Applications
Allocation
ANNEX 2
FWO overview 2011


Mission

The mission of the Research Foundation-Flanders (FWO) is to stimulate and support groundbreaking fundamental research in all areas of science at the universities in the Flemish Community, including collaboration agreements between Flemish universities and other research institutes.

FWO funds excellent and promising researchers as well as research projects following an interuniversity competition and an evaluation by national and international experts.

The only criterion is the outstanding quality of both the researcher and the research proposal, regardless of scientific discipline, host institute, gender, political or religious beliefs.

Social basis

Fundamental scientific research that focuses on expanding knowledge about human beings and their environment helps raise the social and cultural standards of our society. By maintaining a high level of knowledge through scientific research, the high-quality education of talented young people in a broad range of disciplines can be guaranteed. In the longer term, this knowledge and the resulting human capital lay the groundwork for focused, applied, technological, strategic, policy-supporting and policy-preparing research; they are a key element in the creation of wellbeing and welfare. Groundbreaking research is also at the heart of knowledge expansion, which is particularly necessary for the major challenges facing our society today (environment, mobility, health, etc.).

Decisions in economic or social strategic fields will be made not only on the basis of social and socio-economic needs, but also through excellent research groups.

Fundamental scientific research is the first crucial link in the innovation chain and a breeding ground for new technologies and economic and social developments.

In contrast to other research types, fundamental research primarily relies on government funding, since it seldom leads to short-term economic or social valorisation.

A balanced distribution of resources between focused and non-focused research is therefore an absolute necessity.

Non-governmental “research councils” are a tradition in Europe. In fact, the European Science Foundation (ESF) consists of 80 such institutes from 30 countries. FWO is also a member of ESF and is involved in various European research initiatives. ESF encompasses a host of different institutes, but a recurring factor is government funding for fundamental scientific research via independent scientific institutions. Input from the scientific community as an initiator and evaluation body is key in this respect.
Research

FWO research initiatives

(For a description of these initiatives, go to http://www.fwo.be)

1. FWO provides financial support to individual researchers through:
   - Grants for young researchers (PhD fellowships) for 2x2 years *
   - Special PhD fellowships for 1 year *
   - Clinical PhD fellowships for 2 years, part-time *
   - Postdoctoral Research Fellowships for 3x3 years *
   - Senior Clinical Investigator for 2x5 years, part-time *
   - Bench fees for every PhD fellow and postdoctoral researcher
   - Research grants for 1 year
   - Travel grants
     - for participation at a congress in Europe and beyond
     - Short and longer study visits in Europe and beyond
   - Research mobility
     - Postdoctoral FWO researchers’ stays abroad (mobility grants)
     - Visiting postdoctoral fellowships
     - Bilateral exchange projects

* See our website for a list of beneficiaries

2. FWO awards grants to research teams as follows:
   - Research projects up to 4 years, but can be further extended (including: staff, activities and equipment)
   - Support for projects at large international research facilities, such as CERN, DUBBLE at ESRF-Grenoble, Mercator telescope-La Palma, DESY-Hamburg, ...
   - Odysseus

3. FWO stimulates national and international collaboration through support for:
   - Scientific research networks
   - The organisation of congresses in Belgium
   - Sabbatical leaves for Flemish professors
   - Participation in research initiatives and collaboration with the European Science Foundation (ESF)
     - European Collaborative Research Projects (EUROCORES)
     - Exploratory workshops and Forward Looks
     - European Research Conferences
     - Scientific Networking Programmes
     - Related expert groups
   - Coordination grants for large-scale international collaboration agreements
   - Bilateral scientific cooperation

* See our website for a list of beneficiaries
Scientific awards and grants via patronage activities

Private patronage offers companies and institutions an opportunity to get involved with fundamental research at FWO and recognise the social importance of scientific research. For young researchers, this can open doors to those companies, thus broadening their future horizons. Various patrons offer fellowships and grants, and reward scientific excellence. Applications for these prizes are assessed by the FWO’s scientific jury.

FWO Excellence Prizes

Every five years, FWO grants the following awards through donations and legacies (next selection in 2015):

- 2 Dr A. De Leeuw-Damry-Bourlart Prizes, one for Physical Sciences and one for Applied Sciences;
- 2 Dr Joseph Maisin Prizes, one for Fundamental Biomedical Sciences and one for Clinical Biomedical Sciences;
- The Ernest-John Solvay Prize for the Humanities.

These prizes are worth €100,000 each and, in terms of importance, can be considered the “Flemish Nobel Prizes”.

For the scientific evaluation of the submissions, the FWO Board of Trustees calls upon juries made up exclusively of foreign top scientific experts.

In 2011 the following scientific prizes were awarded:

- AIC Scientific Prize
  € 10,000
- Scientific Prize Callataë & Wouters
  € 10,000
- Scientific Prize Alcatel-Lucent Bell
  € 8,000
- Scientific Award Foundation AstraZeneca Asthma & COPD
  € 25,000
- Barco Thesis Awards
  3 x € 2,500
- Barco Scientific Award
  € 5,000
- Scientific Prize IBM Belgium for Informatics
  € 3,000
- InBev-Baillet Latour Health Prize
  € 200,000
- InBev-Baillet Latour Prize for Clinical Research
  € 75,000
- Scientific Prize McKinsey & Company
  € 5,000
- Umicore Scientific Award
  € 10,000
- Umicore Thesis Awards
  2 x € 2,500
- Acerta Scientific Award
  € 5,000

A list of recipients can be found on the FWO-website.
Donations and legacies

The FWO fulfils its mission partly thanks to financial donations from benefactors and testators. The desired goal and type of scientific research can be set out in the conditions of the act of donation or will, as long as the research topic is sufficiently generic. The government has ensured that the tax levied on these donations is very limited, so that the money goes almost entirely to scientific research through the following instruments:

- Monetary donations are tax deductible under Art. 104, 3° b of the 1992 Income Tax Act, provided the sum donated is at least 30 euro (Art. 107) and lower than 250,000 euro (to be indexed); moreover, the sum donated cannot amount to more than 10% of the net taxable income (Art. 109), or, in the case of companies, 500,000 euro and not more than 5% of the net taxable income (Art. 200).

For more information, contact the FWO administration.
Management

FWO is a Public Utility Foundation.

The organisation chart below gives an overview of the various structures within FWO.

FWO in its national context - FFWO

The FWO Board of Trustees is responsible for the allocation of the funds mainly provided by the Flemish Community and, to a lesser extent, by the federal government. In the French Community, FWO’s sister organisation is the “Fonds de la Recherche Scientifique – F.R.S.-FNRS”. The Boards of Trustees of both organisations manage the Federal Fund for Scientific Research (FFWO), which manages the non-distributable funds and a number of other well-defined responsibilities, e.g. common areas of the buildings, several prizes, donations and legacies.
President
Every year on 1 October a new FWO president is appointed. As stated in the statutes, the position alternates between the rectors of the four major Flemish universities.

The current president is Prof. Mark Waer (October 2011 – September 2012).

Board
The Board investigates all the matters on which the Board of Trustees is called to deliberate, and presents them to the Board of Trustees. These include the budget, the accounts, the awarding of the different research grants and the formation of the FWO expert panels.

On 1 October 2011 the Board consisted of the following members:

- The rectors of the four major universities
  - Prof. Paul De Knop, VUB
  - Prof. Paul Van Cauwenberge, UGent
  - Prof. Alain Verschoren, UA
  - Prof. Mark Waer, KU Leuven

- The Permanent Secretary of the Royal Flemish Academy of Belgium for Sciences and the Arts
  - Prof. Géry van Outryve d’Ydewalle

- Two members of the Board of Trustees
  - Prof. Erik Van Bockstaele, Administrator-General of the Institute for Agricultural and Fisheries Research
  - N

- An observer
  - Prof. Luc De Schepper, Rector of the University of Hasselt

Since 2006, the Board is also assisted by an informal working group made up of the research heads of all the universities. The working group acts mainly as a think tank and a sounding board.

Board of Trustees
The Board of Trustees decides upon the proposals of the Board concerning recommendations by the expert panels and scientific committees, the activities of FWO, the budget and accounts, etc.

The Board of Trustees is made up of the following members (on 1 October 2011):

11 Ex Officio members
- The rectors of the Flemish universities
  - Prof. Paul De Knop, VUB
  - Prof. Martine De Clercq, HUB - K.U.Brussel
  - Prof. Paul Van Cauwenberge, UGent
  - Prof. Alain Verschoren, UA
  - Prof. Mark Waer, KU Leuven
- A second representative of each institution, usually the Vice-Rector for Research or the Research Coordinator
  - Prof. Peter Marynen, KU Leuven
  - Prof. Luc J. Moens, UGent
  - Prof. Jean-Pierre Timmermans, UA
  - Prof. Lode Wyns, VUB
- The Permanent Secretary of the Royal Flemish Academy of Belgium for Sciences and the Arts
  - Prof. Géry van Outryve d’Ydewalle
- The President of the Belgian Royal Academy of Medicine
  - Prof. Bernard Himpens
Four co-opted members - group I:
- Mr Guido Gryseels
  Director-General, Royal Museum for Central Africa
- Mr Luc Jansegers
  Administrator-General of the Agency for Higher Education, Adult Education and Study Grants
- Prof. Erik Van Bockstaele
  Administrator-General of the Institute for Agricultural and Fisheries Research
- Prof. Karel Velle
  Director-General, State Archives

Five co-opted members - group II:
- Mrs Patricia Ceysens
  President of the Committee for Economic Affairs, Economic, Government Instruments, Innovation, Science Policy, Employment and Social Economy of the Flemish Parliament
- Prof. Jakob Fokkema (starting 1/12/2011)
  Professor at the Delft University of Technology
- Mr Roger Heijns (starting 1/12/2011)
  Senior Partner at PricewaterhouseCoopers
- Prof. Carel Stolker (starting 1/12/2011)
  Professor at the University of Leiden
- Mrs Mia Vanstraelen (starting 1/12/2011)
  Director of Human Resources Service Delivery EMEA - IBM Belgium/Luxembourg

One ex-officio member with an advisory vote:
- The rector of the Royal Military Academy
  - Harry Vindevogel
    Major-General

Five Government delegates:
- Prof. Luc De Schepper
  Rector of the University of Hasselt (alternating with the Rector of the University of Hasselt)
- Mr Georges Stienlet
  Vice-Principal Private Secretary to Minister Muyters and Inspector-General of Finance
- Mrs Marie-Claire Van de Velde
  Director at the Interdisciplinary Institute for Broadband Technology, Ghent
- Mr Noël Vercruysse
  Head of Higher Education Policy at the Ministry for Education and Training
Scientific advice

For the evaluation of applications for fellowships and research projects, FWO calls on the advice of 29 subject-specialist Expert panels and 1 interdisciplinary panel, each made up of 16 experts\(^1\). Most of these experts are affiliated to a non-Flemish university.

The 29 Expert panels are categorised into five scientific areas:
- Biological Sciences
- Humanities
- Social Sciences
- Medical Sciences
- Science and Technology

These panels meet twice a year and deliver scientific opinions which are then submitted to the Board and the Board of Trustees.

In addition, FWO has an “International Collaboration Committee” consisting of 14 Flemish members, or former members, of expert panels from various scientific disciplines. This committee advises FWO on applications for attending congresses, foreign visits, bilateral collaboration agreements, scientific research networks, European projects (networks, EUROCORES, etc.) and requests to organise conferences in Belgium. This committee meets monthly. All proposals for international collaboration that go beyond individual mobility (research stays, congress participation, scientific assignments, etc.) and for which there is no continuous submission process are evaluated by the “panel for international collaboration (CIS)”. There are also a number of advisory groups with well-defined mandates which advise on a specific line of research (Jury Clinical Fellowships, “Levenslijn” Committee, Odysseus jury, Big Science Jury, etc.) or within a specific collaboration. These groups meet once or twice a year as required.

The local Ethical committees of the universities are enlisted to deliver ethical opinions concerning experiments on humans and animals, or the use of genetic manipulation. The FWO Medical Ethics Committee can act as the reflection committee.

As part of the remit to provide a service to government, the Jury Educational Research for Policy and Practice was set up to give scientific advice to the department of Education of the Flemish Community on the distribution of the grants in question.

\(^{1}\) Exceptions are the expert panels Cult4: Theology, Philosophy and Science of Religion and Med8: Health Sciences. These panels are composed of 18 members, 8 of whom belong to an institute within the Flemish Community or are part of the Dutch-language register of a federal institute.
**Biological Sciences**

**Bio1**: Molecular and Cellular Biology  
**Bio2**: Functional Biology  
**Bio3**: Biodiversity and Ecology  
**Bio4**: Applied Biological Sciences

**Humanities**

**Cult1**: Languages  
**Cult2**: Art and Literature  
**Cult3**: History, History of Arts and Archaeology  
**Cult4**: Theology, Philosophy and Science of Religion

**Social Sciences**

**G&M1**: Sciences of Law and Criminology  
**G&M2**: Economics, Business Economics and Management  
**G&M3**: Psychology, Pedagogy, Didactics and Social Work  
**G&M4**: Social, Political and Communication Sciences

**Medical Sciences**

**Med1**: Pharmaceutical Sciences and Protein Chemistry  
**Med2**: Genetics, Functional Genome Research, Bio-Informatics Science, Developmental Biology  
**Med3**: Microbiology and Immunology  
**Med4**: Cancer Research  
**Med5**: Cellular Biology, Physiology, Physiopathology and Medical Clinical Research of Organ Systems I  
**Med6**: Cellular Biology, Physiology, Physiopathology and Medical Clinical Research of Organ Systems II  
**Med7**: Cellular Biology, Physiology, Physiopathology and Medical Clinical Research of Organ Systems III  
**Med8**: Health Sciences

**Science and Technology**

**W&T1**: Mathematical Sciences  
**W&T2**: Physics  
**W&T3**: Condensed Matter and Physical Chemistry  
**W&T4**: Chemistry  
**W&T5**: Informatics and Knowledge Technology  
**W&T6**: Chemical Engineering, Materials Science  
**W&T7**: Energy, Electrical Engineering, Electronics and Mechanics  
**W&T8**: Sciences of the Earth and Space  
**W&T9**: Science and Technology of Constructions and the Built Environment

**Interdisciplinary Expert panel**
Administration

SECRETARY GENERAL
dr. ir. Elisabeth Monard

ADMINISTRATION
Danny Huysmans

REPORTS & CONTROL
Anne-Aymon Gunst

DOCUMENT MANAGEMENT
Danique Moors

SUPPORT FOR RESEARCHERS
dr. Hans Willems

OPERATIONAL PLANNING
Christiane Linthout

DEPARTMENT PERSONNEL AND ACCOUNTING
Stephan Duray, Alain De Dobbeleer

DEPARTMENT ICT
Geert De Pauw

DEPARTMENT LOGISTICS
Werner Coorevits

DEPARTMENT APPLICATIONS AND CURRENT RESEARCH
Tanja Rubbrecht

DEPARTMENT PLANNING OF RESEARCH POLICY
dr. Stijn Verleyen, dr. Olivier Boehme, dr. Isabelle Verbayes, Kim Barbé, Wim Schreurs
"For your safety and comfort, we ask you to remain seated with your seat belt fastened until the captain turns off the fasten seat belt sign. This will indicate that we have parked at the gate and that it is safe for you to move about."
Colophon

Research Foundation-Flanders (FWO)
Egmontstraat 5
1000 Brussels, Belgium
Tel.: (+32) (0)2 512 91 10
Fax: (+32) (0)2 512 58 90
E-mail: post@fwo.be
Website: http://www.fwo.be

Editor-in-chief
dr.ir. Elisabeth Monard
Secretary General, FWO

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Interview texts
Jan Van Pelt

Creation and design
CIBE Communication
custom communication for the public sector

Published in May 2011