

Profile

2018–2019

**Chemist Dorina Opris with
the rubber that generates
electricity (see reverse side).**

Profile

2018-2019



Passion for research

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Building bridges and unlocking synergies

“Everyone literally insisted on achieving more together.”

Gunter Stephan, economics, University of Bern



“A project of that kind won’t ‘fly’ unless people get on with each other.”

Jardena Puder, endocrinology, Lausanne University Hospital



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Angelika Kalt, Director of the Administrative Offices of the SNSF

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Good work, but improve the dialogue with parliament



“I fight tooth and nail for my party’s votes every time because it’s crucial that we maintain Switzerland’s position as a research location.”

National Councillor Christine Bulliard-Marbach,
chair of the Science, Education and Culture
Committee of the National Council



“I think we’re going to have to increase funding somewhat in the next four-year period.”

National Councillor Felix Müri,
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In addition to the review of the past year, the “Profile 2018–2019” of the SNSF presents faces and opinions, perspectives and forecasts. Our aim is to highlight developments in research funding and foster debate.

No scientist is an island



From left to right:

Angelika Kalt, Director of the
Administrative Offices of the SNSF

Matthias Egger, President of the National
Research Council of the SNSF

Felicitas Pauss, President ad interim
of the Foundation Council of the SNSF

“A life of research and collaboration.”

Grazie mille, e buona fortuna

Gabriele Gendotti stepped down as President of the SNSF Foundation Council in 2018 in order to take up his new role as President of the Suva Council. Since 2003, Gabriele Gendotti has been a member of the SNSF Foundation Council, and its President since 2012. His tenure as President spanned two multi-year programmes and included various personnel changes on the upper echelons of the SNSF hierarchy. He also presided over a partial revision of the Statutes and the Funding Regulations. The SNSF would like to thank Gabriele Gendotti for his commitment through all these years, and for his valuable work in the interests of Swiss science. We wish him all success in his new role.



The first scientific experiment conducted on the moon and the work of the Nobel laureate Jacques Dubochet have something in common: they are both “Swiss-made”, but neither would have seen the light of day without a good dose of internationality.

In July 1969, just after landing on the moon, Buzz Aldrin planted an aluminium sail to collect the particles carried by the solar wind. This unique experiment was not devised by an American but by researchers in Switzerland, namely Johannes Geiss, Peter Eberhardt and Peter Signer. The fact that two of them knew researchers in the United States and had spent time over there proved instrumental in persuading NASA to support the idea. The decision paid dividends, as the experiment helped to broaden our understanding of the solar system – and burnish the credentials of Swiss research.

Take Jacques Dubochet, for instance. He worked for a long time in Switzerland. But he was awarded the 2017 Nobel Prize in chemistry for his work on electronic cryo-microscopy, conducted... at the European biology laboratory in Heidelberg, Germany. This discovery would not have been possible without other people crossing his path. “My life is about research and collaboration,” he often says.

These examples highlight one of the main reasons for Switzerland’s leading position in the science world: its penchant for working across national borders, for growing through contacts with researchers from abroad and for avoiding insularity. This makes Switzerland a very attractive place for researchers from all over the world: they come here

to work in cutting-edge research institutions such as CERN or the PSI, where they also have the opportunity to benefit from SNSF funding.

The SNSF supports Swiss research excellence with a wide range of funding measures designed to promote and facilitate the international integration of the Swiss scientific community (see page 7). Some of these schemes are aimed at young researchers. Thanks to mobility fellowships, they can gain valuable experience, and enhance their scientific profile and self-reliance by working at a research institution abroad, as exemplified by the story of Daniel Kienzler on page 6. And by participating in European programmes, scientists can compete not only with their peers in Switzerland – which they do by taking part in SNSF selection processes – but also with the best minds in Europe. Moreover, the SNSF actively participates in a number of initiatives and organisations aimed at strengthening scientific collaboration and improving conditions for researchers overall.

That said, Swiss research could never deliver the excellent results that it does without the return of Swiss researchers who have honed their skills in some other part of the world. In this area, too, the SNSF offers relevant funding opportunities.

“No man is an island,” wrote the English metaphysical poet John Donne almost four centuries ago. Let’s dare to paraphrase him: “No scientist is an island, entire of itself; every scientist is a piece of the continent, a part of the main.” Only by being open to the world can researchers keep on improving, till they eventually reach for the moon... or a Nobel Prize, perhaps.

Angelika Kalt

Angelika Kalt

Matthias Egger

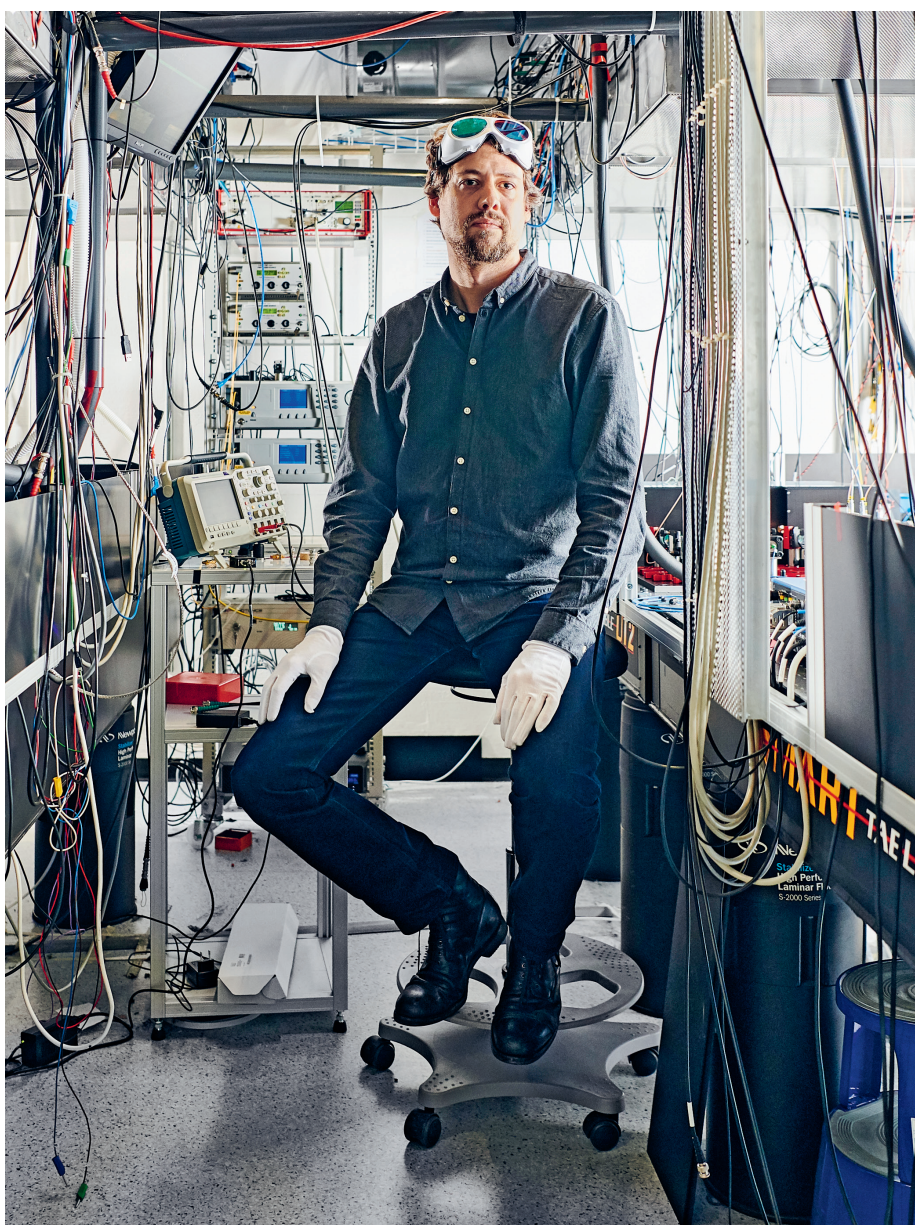
Matthias Egger

F. Paus

Felicitas Paus

Successful cross-border collaboration

Swiss science is in a leading position thanks to its strong outreach in Europe and the world. At year-end 2018, the SNSF was funding 2,000 international projects and fellowships abroad.



The quantum physicist Daniel Kienzler sets up an experiment on hydrogen molecules at ETH Zurich. The idea behind it began to form in his mind during a research stay in the USA.

When Daniel Kienzler returned to Switzerland in August 2017 after his research stay in Boulder, Colorado, he brought a full rucksack with him. "While I was working as a postdoc in the USA, I broadened my scientific horizons by forging important links with researchers," the 35-year-old physicist is happy to report. "And I developed ideas for future projects."

Daniel Kienzler was researching quantum logic operations at the National Institute of Standards and Technology. Operations of this kind are essential in creating quantum computers. One of the aims of his project was to get two quantum bits, or qubits – the units of information with which quantum computers work – to perform operations together without them ever being linked. Doing so will make it possible to build larger quantum computers suitable for practical applications. His visit in Boulder was largely financed by an SNSF fellowship.

Essential for top-flight research

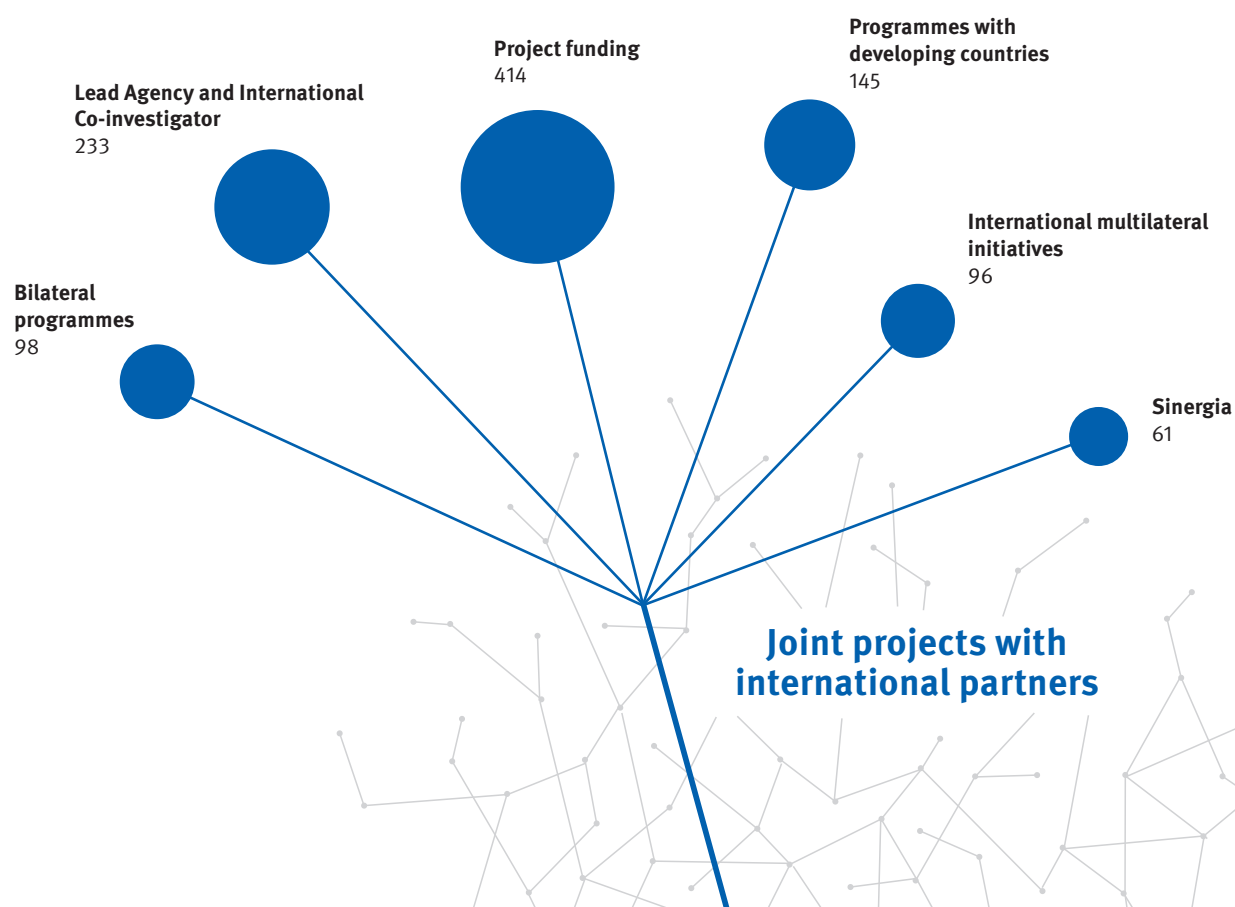
"Internationality is crucial to Swiss research," says Jean-Luc Barras, head of the SNSF's International Co-operation division. "In today's world, top-flight research is only possible if there is ongoing dialogue with partners in other countries."

The SNSF has therefore been promoting international cooperation for a long time. It supports joint projects by researchers in Switzerland and abroad. It takes part in multinational programmes and in European joint programmes. It enables researchers to spend time abroad by awarding fellowships to doctoral students and postdocs like Daniel Kienzler. At the end of 2018, the SNSF was funding 2,000 international projects and fellowships. In a large number of other projects, researchers maintain a dialogue with colleagues abroad. At year-end 2018, over 6,000 different network activities were taking place in SNSF projects (see page 7).

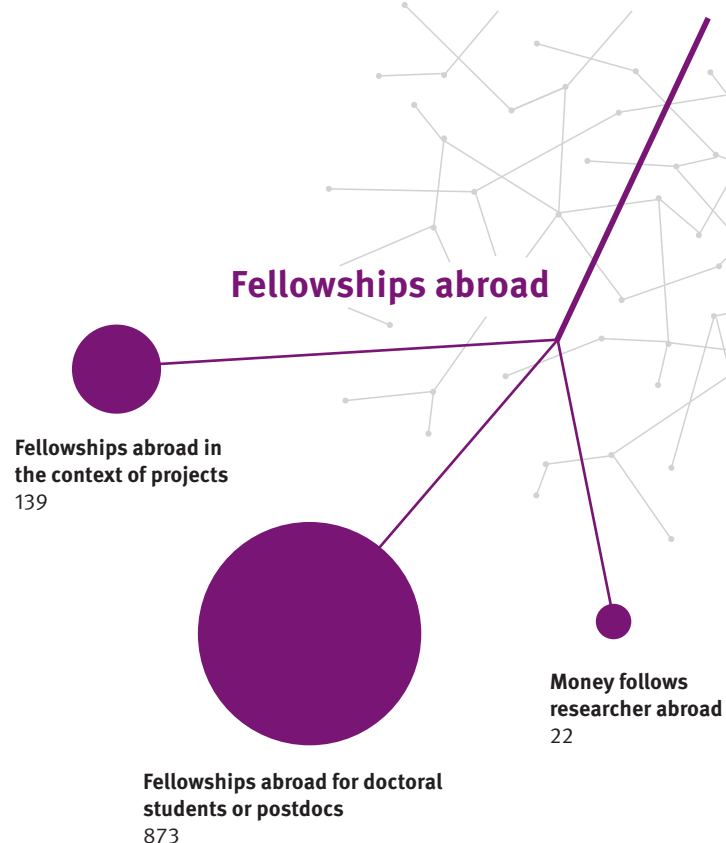


International expertise

The SNSF also promotes internationality through its selection procedure, under which the vast majority of applications for financing are reviewed by experts from other countries. Furthermore, the National Research Council and its evaluation commissions have an international membership. Having this outside perspective gives Swiss research extra momentum and speeds up its development.



How the SNSF promotes international cooperation



Network activities

Number of international network activities* in all SNSF projects
6,464

70% of all 9,260 network activities are international.

*Network activities are, for example, information exchanges, joint publications and the sharing of infrastructures. Such international network activities are carried out within the scope of joint projects with international partners and fellowships abroad, as well as in many other SNSF projects.

Joint projects and fellowships abroad: as at 31.12.2018
Network activities: in SNSF projects that ended in 2018

"Thanks to SNSF funding, thousands of Swiss scientists have networks in Europe and throughout the world," says Jean-Luc Barras. "That enables them to incorporate the latest findings and trends into their projects and deliver high-quality research." The SNSF thus makes a key contribution to maintaining Switzerland's leading position in scientific research – which is one of the goals of the new international education, research and innovation strategy adopted by the Federal Council in 2018.

"Thanks to SNSF funding, thousands of Swiss scientists have networks in Europe and throughout the world."

Jean-Luc Barras, head of the SNSF's International Co-operation division

Strengthening dialogue

The SNSF also revised its international strategy during 2018. Its aim is to facilitate greater idea and knowledge sharing at global level wherever it makes sense to do so, and to further intensify its efforts in support of academic freedom. "This will increase research capacity both at home and abroad," says Jean-Luc Barras.

The strategy also sets out principles. Scientific quality is the primary criterion that the SNSF applies when deciding whether to finance an international project. Partner organisations have to operate a peer review system and comply with high ethical standards. Project results and data will be freely accessible. The SNSF is particularly keen to support cooperation with research groups from several countries.

Key impetus

The fellowship that Daniel Kienzler received was key in bringing fresh impetus to his scientific career. His new project has passed the SNSF's strict selection procedure and been awarded one of the coveted Ambizione grants. Since November 2018, Kienzler – assisted by a doctoral student – has been setting up an experiment to inspect and survey hydrogen molecules using quantum logic methods at ETH Zurich. In the course of his work, he exchanges information with researchers in Switzerland, Germany, France, the United Kingdom and USA. "This project would never have happened if I hadn't gone to Boulder."

28%

of the newly approved projects in the SNSF's Project funding scheme involve research partners abroad (2018)

65%

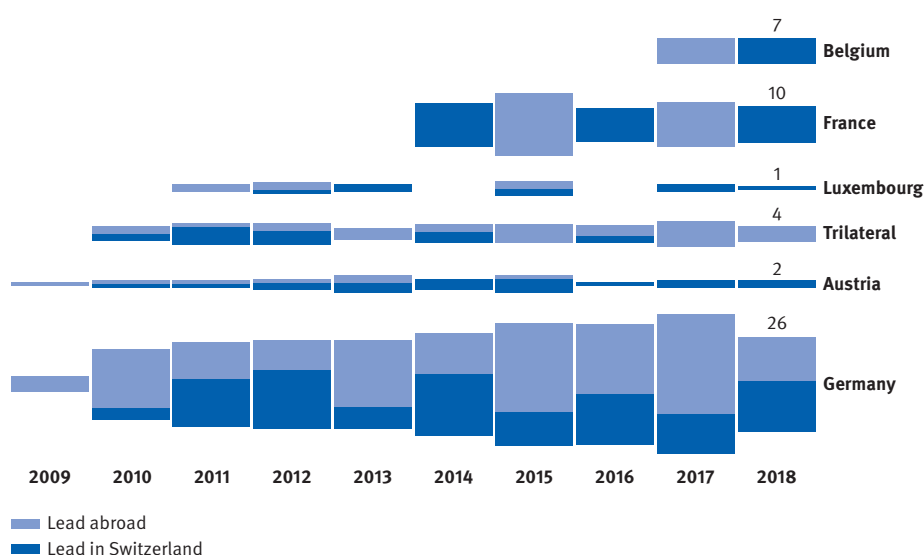
of all network activities in SNSF-funded projects are with the European Union (2011–2018)

From abroad to Switzerland

Researchers in other countries can also apply for SNSF funding if they plan to carry out their project in Switzerland or are employed by a Swiss research institution. In addition, foreign project partners are given the opportunity to spend some time working in Switzerland. Universities and research centres such as PSI or CERN benefit from these researchers. Finally, the SNSF can support fellowship recipients for a period of three to twelve months following their return to Switzerland.

The new programme SPIRIT

In early 2019, the SNSF launched SPIRIT, the Swiss Programme for International Research by Scientific Investigation Teams. The programme aims to strengthen networks with low- and middle-income countries. Funding is awarded to original, team-oriented projects in all disciplines submitted by teams from two to four countries. Through the project, the SNSF is contributing to the education of young researchers and helping to promote equal opportunities. Each year, it will finance up to 12 projects lasting a maximum of four years and costing 500,000 francs.



Simplified submission of applications, smaller workload for evaluators: in Lead Agency projects, either the SNSF (dark blue) or the funding organisation in the other country takes the lead. As of 2019, a Lead Agency agreement is in place also with Poland and Slovenia.

Swiss research needs Europe

Horizon Europe, the next European research framework programme, is due to start in 2021. SNSF Director Angelika Kalt talks about how important it is for our country.

Swiss research is in an internationally leading position. Why is it so important for Switzerland to participate in Horizon Europe?

Horizon Europe will promote multinational cooperation between different research groups in globally challenging areas such as health or climate change. It will also contribute to developing and linking research infrastructures. Another aspect of Horizon Europe is the focus on innovation, which will open up opportunities especially for SMEs and start-ups. Fellowships will enable researchers to work abroad for some time. And: the programme will offer Swiss-based researchers the chance to continue competing with the best in Europe. This competition plays an important role in maintaining and enhancing scientific quality.

Would Swiss participation in Horizon Europe be at risk if Switzerland and the EU did not sign an institutional framework agreement?

The framework agreement is not directly linked to Horizon Europe. All the same, we would be expecting serious consequences should there be no agreement, similar to those triggered by the acceptance of the mass immigration initiative in 2014.

What happened back then?

The EU did not let Switzerland participate in the research framework programme Horizon 2020, which started in 2014. In the course of 2014, Switzerland was able to obtain partial association. A return to full association followed in 2017. But the partial exclusion had a harmful effect on research in Switzerland.

In what way?

Compared to the previous programme, Swiss participation in Horizon 2020 projects went down from 3.2% to 2.4% in

the period up to March 2018. Grants went down from 4.3% to 3.5%, and fewer Swiss researchers were invited to collaborate in research networks.

But the government took replacement measures?

Yes, it covered the costs of Swiss researchers participating in European projects. But the legal insecurity meant that many European researchers chose not to collaborate with Switzerland. Should Switzerland be excluded again, this is likely to repeat itself.

Couldn't the SNSF expand its funding if this happened?

That's what we did in 2014. But such measures are only a short-term fix. We cannot replace European collaboration and competition with national schemes. Swiss research needs both SNSF funding and European funding: in the absence of national funding, Swiss research would be less competitive. In the absence of European funding, Swiss research would

lack international integration and the necessary quality standards.

Swiss research needs Europe. Does Europe need Swiss research?

In order to compete with North America and Asia, Europe needs all countries to collaborate closely. If the EU excludes Swiss research, it will weaken European research.

SwissCore: link with Brussels

Since 1995, SwissCore has been operating as Switzerland's contact office in Brussels. One of the team's main goals is ensuring that Swiss researchers are able to participate in European framework programmes. SwissCore is funded by the SERI, the SNSF and Innosuisse.



SwissCore team (from left to right): Elisa Pérez Rastoll; Céline Bleiker; Jonathan Lamprecht; Julia Grünenfelder; Martin Müller (director); Rahel Byland; Anja Belaey; Tawanda Daka Eziwhou; Otto Bruun.

New open access policy

It has never been easier

As of 2020, the SNSF will expect all publications (100%) related to SNSF-funded research to be available free of charge in digital format. For this reason, the SNSF has been offering additional funding for open access publications since April 2018. It has for the time being lifted the cap of 3,000 francs for journal articles. In addition to digital books, it now also funds the publication of book chapters. With only a few mouse clicks, researchers can request funding before and after the end of the project.

"It has never been easier to publish research findings in ways that make them freely accessible," says Tobias Philipp, coordinator of the open access policy of the SNSF. "As a result, they will have more visibility and broader impact." On a dedicated website, the SNSF explains its support for open access publications and presents national and international developments.



National Research Programme NRP 68

Sustainable use of soil

Soil is formed over the course of millennia. Once destroyed, it takes a long time to recover. This makes it all the more important to use soil sustainably. At the end of five years of research, the National Research Programme "Soil as a resource" (NRP 68) has published a number of recommendations. "Sustainable use is possible if spatial planning, agriculture and forestry take into account all the functions of soil," says Emmanuel Frossard, president of the Steering Committee of NRP 68. "These include food production, water filtration and carbon storage." Nationwide mapping of soil is necessary to achieve this goal. "Each soil function contributes to people's well-being," emphasises Emmanuel Frossard. "We need to take concrete measures to protect the soil, otherwise we will be paying a high price in the future."

The results of NRP 68 have been published in 6 reports and have led to over 130 publications.



The members of the SNSF Gender Equality Commission (from left to right): Thomas Hinz, University of Constance; Nicky Le Feuvre, University of Lausanne; Anna Wahl, KTH Stockholm; Susan Gasser (president), Friedrich Miescher Institute/University of Basel; Michelle Cottier, University of Geneva; Simona Isler, SNSF; Gary Loke, Advance HE, London.

Women in research

Untapped potential

Gender equality in research? A clear goal of the SNSF. Since 2014, a specialised commission composed of national and international experts has been working towards this goal. Its members were reelected for another four years in 2018. "We have achieved quite a few things," says president Susan Gasser. "Among them, the introduction of the new SNSF funding scheme PRIMA. It supports women researchers whose aim it is to obtain a professorship."

But there is plenty of work left to do. "Around 50% of doctoral students are women, but only 17% of all professorships are held by women. Switzerland does not make the most of the potential of its women researchers. This hampers innovation," says Gasser. The SNSF will intensify its equal opportunity efforts in the future.

International advisory board

A fresh view from the outside

At the end of 2018, the new international advisory board of the SNSF started its work. The board consists of five experienced scientists who have proven themselves as influential thinkers. "The advisory board offers us a fresh view from the outside," says SNSF Director Angelika Kalt. "It is able to highlight strengths, weaknesses or gaps, and it identifies challenges that lie ahead."

At their first meeting, the members of the advisory board stressed the importance of seeing science as a network in which researchers, their institutions, funding organisations and the general public are all interconnected. They recommended that the SNSF continue to promote a completely open science system which ensures free access to data and results.



Members of the SNSF Advisory Board (from left to right): Willi Paul, Consenec; Caroline Bassett, University of Sussex; Agneta Bladh, Swedish Research Council; Frank Miedema, University of Utrecht. Not in the picture: Pearl Dykstra, University of Rotterdam.



BRIDGE – joint programme of SNSF and Innosuisse

Start-up instead of valley of death

BRIDGE offers researchers the opportunity to turn their results into marketable products. The programme was launched in 2017 and already has a number of success stories to its name. "Without BRIDGE my discovery would have ended up in the valley of death," says Olga Dubey. During her doctorate, the biologist discovered a natural substance to fight fungi on fruit and vegetables. "It makes it possible to reduce crop losses without using chemicals." In September 2017, Olga Dubey received a BRIDGE grant. In 2018, she set up her own business and applied for a patent. This year, she intends to present her product to agribusinesses.

"That's exactly what we are hoping to achieve: promising discoveries should not disappear into thin air but contribute to innovation," says Chris Boesch, member of the BRIDGE Steering Committee. Since 2017, over 60 projects featuring such discoveries have been awarded funding. Until 2020, a programme budget of 70 million francs is at the disposal of the SNSF and Innosuisse.

Study on changes in publishing

Open access makes books more visible

Free access to scientific books brings clear advantages. This is shown by a study compiled between 2014 and 2017: working closely with publishers, libraries and researchers, the SNSF analysed the distribution of books, whether they were available for a fee (printed) or free of charge (digital). The final report published in April 2018 draws some very encouraging conclusions: visibility, outreach and use are increasing. And publishers did not sell fewer printed books if a digital version was also available.

These results have been integrated into the SNSF's open access policy (see page 10), which covers the costs of digital books as well as digital book chapters.

Good work, but improve the dialogue with parliament

The SNSF has too weak a presence in the federal capital. That is the unanimous opinion of Christine Bulliard-Marbach and Felix Müri from the National Council's Science, Education and Culture Committee (SECC). However, they disagree on the question of how much money is realistic for research funding.



Animated discussion on research promotion (from left): Christine Bulliard-Marbach, Matthias Egger and Felix Müri.

Christian von Burg: How well is the Swiss National Science Foundation doing its job? What mark would you give Mr Egger?

Felix Müri: I'd give him eight out of ten. The SNSF is an important institution, and the way it distributes money seems to work well. But we in parliament don't hear enough from you, Mr Egger! Invite us over, or let us know when you have a problem. But don't wait until our Committee is discussing the crucial issue of how much money the federal government should invest in research and innovation over the next four years. Get in touch a bit sooner, then you'll get ten out of ten next year (laughs)!

Matthias Egger: I'd be very happy to invite you over, Mr Müri. Come to an evaluation meeting, where we discuss which research projects we're planning to fund and which we're not. That's challenging work. We have to identify the best projects without letting other factors distract us.

Christine Bulliard-Marbach: I'd be happy to drop in too because I see things the

SNSF meets SECC-N

The discussion was between:

National Councillor Christine Bulliard-Marbach (CVP, Fribourg), Chair of the Science, Education and Culture Committee of the National Council, (SECC-N)

National Councillor Felix Müri (SVP, Lucerne), member of the SECC-N

Matthias Egger, President of the National Research Council of the SNSF

The discussion was led by Christian von Burg, science correspondent at SRF radio



“The woman gets the money if she’s good and if her research is outstanding.”

National Councillor
Christine Bulliard-Marbach

same way as Mr Müri. The SNSF is doing a good job, Mr Egger, but you could improve the dialogue with parliament.

Is the SNSF distributing its funding fairly? For example, even though the number of women receiving funding has grown continually, it is still considerably lower than the number of men receiving funding. Is that a problem?

Bulliard-Marbach: The way I see it, gender is an important issue for the SNSF. In the same way as it works hard to support young researchers, it also tries to promote women. You have special funding tools for them, of course.

Egger: Yes, and despite that, gender equality is still a problem in science. There are more women doctoral students at our universities than men, at least in the life sciences, biomedicine and social sciences. But if we keep following the scientific career tracks, the number of women decreases. Finally, when we get to professor level, women only account for around 20 per cent of the total, or even just 10 per

cent in the STEM subjects. That isn’t good, and it diminishes the innovativeness of Swiss research. We’re therefore rethinking the selection criteria, such as the mobility criteria. It isn’t easy for women with young children just to quickly move abroad. But equality is an issue for the politicians too. *Bulliard-Marbach:* It is a problem, and one that parliament has been grappling with for a long time – for instance in connection with incentive funding for new child day-care places.

Müri (mischievously): We’ve been incentivising those for a long time now.

Bulliard-Marbach: Yes, but the day-care places are important if we want to make any progress with equality.

Müri: We’re talking about the SNSF here. And the SNSF has a clear mandate to promote research, not gender equality policy.

Egger: Yes, it does! It’s even explicitly mentioned in the Federal Act on the Promotion of Research and Innovation. We do have a mandate to promote women in research, but we’re finding that the tools available to us aren’t getting us very far.

Müri: So does that mean that if I have two projects, but the money I have for research promotion is running out – does that mean the woman gets the money?

Egger: No, certainly not.

Müri: That’s what I wanted to hear!

Bulliard-Marbach: The woman gets the money if she’s good and if her research is outstanding. Only then does she get it.

Müri: Agreed.

Mr Egger, the SNSF has been committed to open access – free access to research results in other words – for some time now. Your aim is to make all results from publicly funded research available to everyone free of charge. At present, that’s only true of 50 per cent of the projects funded by the SNSF. Why are things going so slowly?

Egger: Compared with other countries, 50 per cent is a very good result. That said, it’s definitely not acceptable for research findings generated with public money to stay hidden behind big publishing companies’ paywalls. We intend to put a complete stop to it from 2020, that’s a goal we’ve set ourselves.

Bulliard-Marbach: The SECC also thinks open access is an important issue.

Egger: But Switzerland doesn’t have the right of secondary publication like other countries do. Having these rights would put researchers in a much stronger position when dealing with publishers. They would have the right to publish their results in

“We do have a legal mandate to promote women in research.”

Matthias Egger



“If I have two projects, but the money I have for research promotion is running out, does the woman get the money?”

National Councillor Felix Müri



paying journals, but they would also be able to make them openly accessible. We would be grateful if the Committee could discuss the issue and make the necessary submission.

Bulliard-Marbach: I'll be happy to take it up (makes a note). There you are, I've noted it.

Egger: Yes, but I came to you once before and said exactly the same thing. But then the Committee didn't address the topic.

Müri: Then you should follow it up, that's how politics works. It'll then be up to us to see what it costs.

Talking of costs, the SNSF's expenditure has doubled in the past twelve years to a billion francs annually. You'll be asking for even more money for the four-year period starting in 2021, Mr Egger. Why is that?

Egger: It's essential that we at least maintain our current level of financing or, better still increase it, because the competition isn't sleeping. China is investing enormous sums in research, while the EU is aiming to double its research budget. If we want to continue taking part in EU research programmes, Switzerland will not be able to avoid increasing the amount of money it contributes.

“If we want Switzerland to remain a centre of scientific research, we have to be involved in EU research promotion.”

National Councillor
Christine Bulliard-Marbach

Müri: Mr Egger is quite right. It's a good thing as long as both sides benefit, as they do from the Horizon 2020 research programme. I'm not against the EU's research funding, but I am against shilly-shallying when it comes to parliament handing out money. If we've agreed that you're going to get so much for the next four years, then we should stick to that. Nevertheless, I think we're going to have to increase funding somewhat in the next four-year period.

But the SVP's official line is that just pumping more money into research does nothing to promote it.

Müri: I take a different line there. We have various points of view within the party, and that's healthy. I have problems with the Finance Committee interfering too much in what we do in the SECC.

Ms Bulliard-Marbach, the CVP is often split on these issues too.

Bulliard-Marbach: That's true. And I fight tooth and nail for my party's votes every time because it's crucial that we maintain Switzerland's position as a research location. It is clear to me that if Switzerland wants to compete internationally, it has no option than to put the money into the EU's funding pot, on top of the money the SNSF receives.

Müri: Yes, and then we'll get to a point where the Federal Council says: "Stop, now we have to pay so much more into the EU promotion fund that it's not worth it anymore." And that raises a fundamental question: Do we decide how much we spend on research promotion, or the EU? I'm in no doubt that it should be us.

Bulliard-Marbach: Look, Mr Müri: If we want Switzerland to remain a centre of



“Israel spends substantially more on research than Switzerland. So we still have plenty of headroom.”

Matthias Egger

scientific research, we don’t get to consider whether or not we want to be involved in EU research promotion, we *have* to be involved.

Egger: The really important point is that if Switzerland has full association to the next Horizon Europe research programme, it would be very short-term thinking to simply deduct the extra money it pays into the European fund from national research funding. It’s been shown that countries with good national-level research promotion are also successful at European level, and that enables them to recoup a lot of the money they put into the shared fund.

But there has to come a point where the federal government needs to say: “There’s no more money for research.” Where is that point?

Egger: Let’s look at Silicon Valley. There they invest three times as much money in research as we do here. Alternatively, there’s Israel, which spends substantially more than Switzerland at national level. So we still have plenty of headroom.

Müri: But the government isn’t going to allocate much more money to research promotion overnight. That’s simply not realistic. All policy areas are campaigning for more money.

“The government isn’t going to allocate much more money to research promotion overnight. That isn’t realistic.”

National Councillor Felix Müri

Bulliard-Marbach: Yes, I think we’ve come back to what we said at the beginning. You need to drop in on the Committee more regularly and make the context clearer. That will put the SNSF and research promotion in a stronger position.

Mr Egger, are you going to have to learn to lobby more effectively in Bern?

Egger: I wouldn’t call it lobbying. Our aim is to inform, present and debate, and we’ll be very happy to do that.

SEC Committees

The Science, Education and Culture Committees of the National Council and Council of States are responsible for research funding in the federal parliament. The SECC of the National Council comprises 25 members, the Council of States’ Committee 13. The Committees prepare parliamentary business and make submissions to the Councils. In addition, they track political and social developments in their area of responsibility.



The discussion was led by science correspondent Christian von Burg (left).

Building bridges and unlocking synergies

Interdisciplinary research is becoming ever more important. However, technical and interpersonal communication can be a challenge in such projects. But when communication functions properly, groundbreaking findings can result.

Interdisciplinarity has been a ubiquitous buzzword in science for many years now. Politicians and academics alike are unanimous that research disciplines need to work together more closely, not least because the pressing issues of our age – from digitalisation and antibiotic resistance to migration – are extremely complex and affect a wide range of academic fields.

Sinergia programme promotes integration

For all the discussion about new processes and structures, it is ultimately the researchers working on real-life projects who create added value from interdisciplinarity. This is precisely the approach adopted by the SNSF's Sinergia funding programme. It finances collaboration between two to four research groups from various disciplines and institutions if there is a likelihood of it generating groundbreaking results. "It's very much a tangible way of driving forward the integration of different scientific fields," explains Dirk van der Marel of the SNSF's Research Council, who is Vice President of the Specialised Committee on Interdisciplinary Research. "It uses two of the strengths of Swiss research – a firmly embedded bottom-up culture and the willingness to collaborate."

Thinking the big picture

In practice, however, projects of this kind are a major challenge for researchers. According to Gunter Stephan, an economist at the University of Bern, just explaining and understanding each participating group's approaches and terminology at the outset of the project is a challenge in itself. He worked on a Sinergia project with hydrologists, meteorologists and political scientists

Relationship of stress and physical activity with psychological and physiological health in young children

p3.snf.ch/project-147673



Jardena Puder,
endocrinology,
Lausanne University
Hospital



Oskar Jenni,
developmental
paediatrics,
University Children's
Hospital Zurich



Susi Kriemler,
paediatric sports
medicine,
University of Zurich



Simone Munsch,
clinical psychology,
University of
Fribourg

from various universities, investigating how Switzerland can prepare for future extreme weather incidents. In the course of their investigations, the researchers considered the uncertainty of forecasts, the wide range of potential adaptation strategies and the political feasibility of measures. "When economists talk about efficiency, they mean something different than environmental scientists," says Gunter Stephan, "so the first thing we had to do was develop a shared vocabulary."

Just as important during the project design phase was establishing what the researchers could achieve together, and what they could not. During this process, Gunter Stephan was surprised by his fellow project managers' genuine willingness to find and use synergies. "Everyone literally insisted on achieving more together than every discipline could on its own."

Mathew Magimai-Doss, a computer scientist at the Idiap Research Institute in Martigny, had the same experience. Working with researchers from the University of Applied Sciences in Special Needs Education in Zurich and the University of Surrey in the UK, he is developing a system that automatically recognises and understands Swiss German sign language. It will also provide a template for other sign languages. "We systematically worked towards an integrated project right from the initial planning phase," says Mathew Magimai-Doss. "That's essential to prevent the entire project subsequently disintegrating into separate workstreams that each institution carries out largely in isolation."

With tolerance and respect

It does not go without saying that scientists will be willing to venture into the unfamiliar waters of an interdisciplinary project. "Autonomy is generally very much encouraged in research," says Jardena Puder, an endocrinologist at Lausanne University Hospital. "However, it's not always conducive to collaboration." This is why she felt that good communication with potential project participants in an atmosphere of tolerance and respect was crucial. And she wanted to be

"A project of that kind won't 'fly' unless people get on with each other."

Jardena Puder

Scalable multimodal sign language technology for sign language learning and assessment

p3.snf.ch/project-160811



Mathew Magimai-Doss, computer science, Idiap Research Institute, Martigny



Richard Bowden, vision, speech & signal processing, University of Surrey



Tobias Haug, sign language linguistics, University of Applied Sciences of Special Needs Education, Zurich

“When there are important decisions, you have to meet in person.”

Mathew Magimai-Doss

able to count on her fellow researchers remaining committed to their shared goal not only during project submission, but throughout the entire research phase.

Working with psychologists, movement scientists and paediatricians at four university hospitals, Jarden Puder investigated the effects of stress and lack of exercise on children's health – specifically their cognitive functions, psychological well-being, weight and motor skills. “A project of that kind won't ‘fly’ unless the people working on it get on with each other,” she says.

Face to face

Both Gunter Stephan and Mathew Magimai-Doss second that statement unreservedly. However, personal interaction requires effort, especially if the researchers work at locations that are far apart and have never met, as is the case with the project that Mathew Magimai-Doss is working on. “E-mail, phone and Skype are obviously our primary methods of communication,” he says, “but when there are important decisions to be made, you have to meet in person and discuss them face-to-face.” In Gunter Stephan's view, good personal relations are essential not least as a basis for dealing constructively with criticism or even offering it in the first place. He says this is essential in science.

However, Sinergia projects do not just involve the heads of the research groups at each institution, they also involve doctoral students, undergraduates and other specialist staff members. “Maintaining good interdisciplinary collaboration across all these levels demands a lot of time and determination,” says Jarden Puder. She says that practical or conceptual challenges often arise unexpectedly, and then it becomes clear how firmly embedded everyone is in their particular discipline.

Answers to complex questions

“It is clear to us that interdisciplinarity can be a challenging undertaking in real life,” says Dirk van der Marel, “and we're deliberately encouraging it in the Sinergia projects for precisely that reason.” Both the researchers themselves and their findings confirm that it's worth it. Interdisciplinary projects come up with answers to the complex issues of the world we live in.

94.3

million CHF in approved funding

42

new projects

SNSF's Sinergia funding programme 2018

Climate change extremes and adaptation strategies considering uncertainty and federalism

p3.snf.ch/project-154404



Gunter Stephan, economics, University of Bern



Karin Ingold, political science, University of Bern



Frank Krysiak, environmental economics, University of Basel



Philippe Thalmann, environmental economics, EPFL



Rolf Weingartner, hydrology, University of Bern

“Everyone literally insisted on achieving more together.”

Gunter Stephan



At the professional education centre in the capital of Laos, Vientiane, young women receive basic training in industrial sewing (left). In the country's largest clothes factory, seamstresses earn 250 francs a month for an eight-hour day (bottom left). Principle investigator of the research project in Laos is Professor Bounseng Khammounty (on the right) from the National University, pictured here with a scientific collaborator, Houamboune Keonakhone (bottom right).

→ How effective is professional education?

“Developing countries are hoping that professional education will become a driver of economic growth. Switzerland, too, is financing such initiatives. We are identifying the factors on which their success depends. The study is being conducted in six Asian and African countries in interdisciplinary collaboration with locally based researchers. In particular, we want to know what is most effective in reducing poverty: providing training for low-skilled jobs or for higher professional qualifications?”

Markus Maurer, education scientist, University of Teacher Education in Zurich

→ p3.snf.ch/project-169470 (SNSF/DEZA)





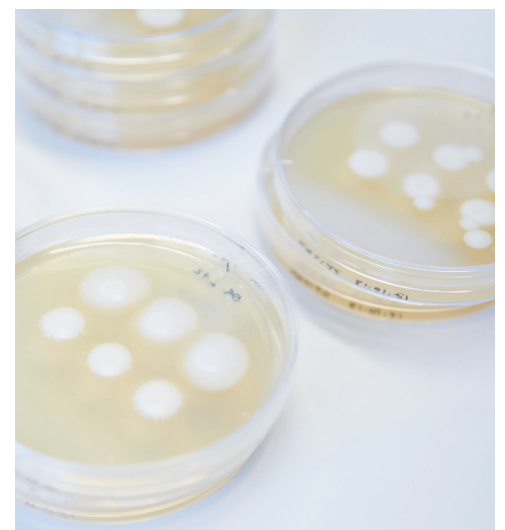


→ The fight against yeast fungus

“*Candida albicans* is a common cause of fungal infections. It poses a major health risk, particularly for people with a weak immune system. Together with researchers in Lausanne and Paris, we are analysing natural genetic variants of the fungus. To what extent do the differences between them determine whether a person gets infected? The results will help to prevent and fight illnesses.”

Salomé LeibundGut-Landmann, immunologist,
University of Zurich

→ p3.snf.ch/project-173863



The virulent properties of *Candida albicans* can be observed in Petri dishes, for instance the growth of cell threads (above). Immune resistance against the fungus is tested in mice. Kontxi Martinez de San Vicente (on the left) and Christina Lemberg check on their state of health (left). The pathogenicity of yeast fungus is reflected in its connection to epithelial cells, which Anne-Céline Kohler is studying with the aid of microfluidics (top left).



Highlights 2018

April

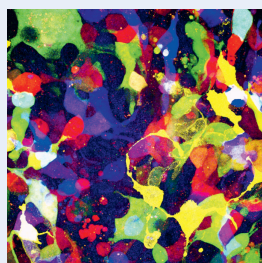
Looking north

The SNSF makes it easier for researchers in Switzerland to collaborate with partners in **Sweden or Norway** by signing an **agreement** with the respective funding agencies. If the principle investigator of a cross-border project is based in Switzerland, the SNSF also covers the research costs in Sweden or Norway – up to an amount corresponding to 50% of the overall budget. In return, the Swedish and Norwegian agencies finance project costs in Switzerland. Similar agreements are in place with Germany, UK and Austria.

May

Art in the lab

For the second time, the SNSF awards **prizes for the best scientific images**. From 350 entries, the international jury selects four winners and awards eight distinctions. A selection of the entries is exhibited at the Biel/Bienne Festival of Photography in May. “These images go beyond the lab; they are narrative, artistic and sometimes humorous,” says festival director Sarah Girard enthusiastically. “The diversity is amazing, and the subjects raise unexpected questions.” In the autumn, the exhibition is on display at the Zurich Film Festival and the Foire du Valais in Martigny.



May

Fruitful discussions

The grant offices of higher education institutions are key partners of the SNSF. At the **Grant Offices Day 2018**, it informs them about new features and offers opportunities to discuss their needs. Several grant offices present feedback on the different schemes and innovations. The annual meeting provides the SNSF with important information regarding the development of its funding portfolio.



May

Use-inspired

Universities of applied sciences (UASs) and **universities of teacher education (UTEs)** pursue mainly use-inspired research to find innovative solutions to practical problems in technology, industry and society. Which funding schemes are particularly suited to such projects? A new **SNSF webpage** provides an overview and links to more detailed information. By the end of the year, the dedicated page had been called up 3,700 times. It is part of a series of measures to drive up the number of successful project applications from the UASs and UTEs.

September

Scientific independence

100 researchers, including 70 postdocs, attend the **Advanced Researchers' Day** in Bern to benefit from presentations and advice provided by SNSF experts. Advanced researchers can apply for career funding – through Ambizione, Eccellenza and PRIMA – or for regular project funding. Those awarded a grant conduct their own multi-year project, pursuing their own ideas. Their work makes a key contribution to scientific progress. At the same time, the researchers enhance their scientific profile and gain the independence they need to succeed in their academic careers.



September

Robots for lay people

Luca Maria Gambardella from the Italian-speaking part of Switzerland receives the new **Optimus Agora Prize**. The SNSF and swissnex San Francisco award it to researchers who successfully communicate about their work to a lay audience. In Gambardella's project, pupils, teachers and parents learn how to programme a robot. "We want to find out how best to teach people computational thinking," says Gambardella, professor of artificial intelligence at the University of Applied Sciences and Arts of Southern Switzerland (SUPSI). With its Agora funding scheme, the SNSF fosters dialogue between science and society, investing 4.2 million francs in 2018.



"We want to find out how best to teach people computational thinking."



November

Facilitating peace

ETH researcher **Lars-Erik Cederman** is awarded the **Swiss Science Prize Marcel Benoist 2018**. In his research, he shows how important it is to grant regional independence to ethnic minorities and include them in political processes in order to achieve lasting peace. "Cederman's work exemplifies the important contribution that the humanities and social sciences make to solving societal problems," says Federal Councillor Johann N. Schneider Ammann. Mandated by the Marcel Benoist Foundation, the SNSF selected the prize winner in a multi-stage process.

November

Epigenetics at work

Mast cells are white blood cells that are involved in immune reactions. Certain enzymes trigger epigenetic modifications in these cells, i.e. they change the way the DNA is expressed without it being altered. Biologist **Sara Montagner** demonstrates that mast cells secrete excessive amounts of mediators and proliferate if these enzymes are missing. This shows: epigenetics influence the physiology of mast cells. For her work, Sara Montagner receives the **Marie Heim-Vögtlin Prize 2018**. She completed the work during her postdoc at the Institute of Biomedical Research in Bellinzona with funding from the SNSF.



November

Innate immunity decoded

How do cells protect themselves against viruses and bacteria? As a postdoc at the University of Bonn, medical researcher **Andrea Ablasser** discovered an important transmitter substance which enables the body to fight intruders. Since 2014, professor Ablasser has worked at EPF Lausanne, investigating what happens when the immune system sounds a false alarm and triggers an autoimmune reaction. She has identified a substance which hampers over-activity. A start-up is evaluating the therapeutic potential of this substance. In recognition of her pioneering work on our innate immunity, the SNSF awards her the **National Latsis Prize 2018** on behalf of the Latsis Foundation.



November/December

Advice on site

At the end of the year, the SNSF goes on its **tour of Switzerland**. It visits nine higher education institutions in Bern, Fribourg, Lucerne, Neuchâtel and St. Gallen, providing information to young researchers. "One-on-one conversations help them to select the most suitable funding scheme and write a promising project proposal," says Christophe Giovannini, head of communication at the SNSF. In total, around 360 researchers attend the events in November and December 2018. The SNSF visits each of the higher education institutions every two years.

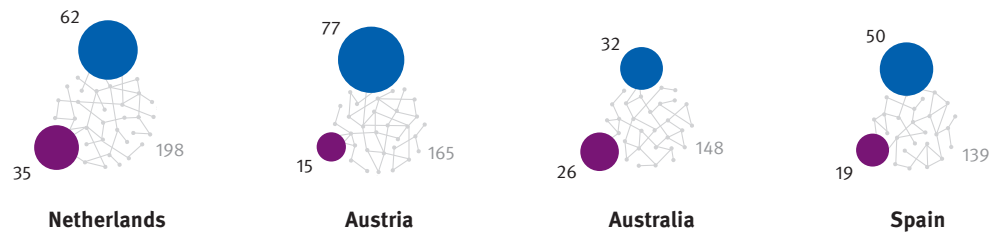
Ongoing SNSF projects

International cooperation

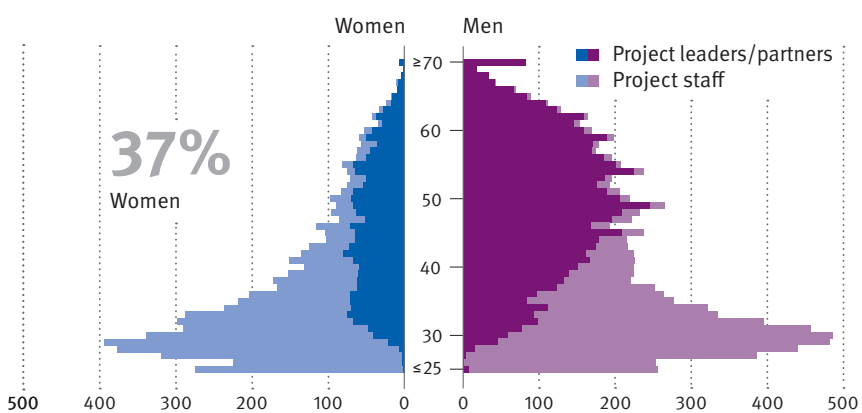


Ongoing SNSF projects

6,500



Researchers in projects by age and gender



Researchers involved

16,300

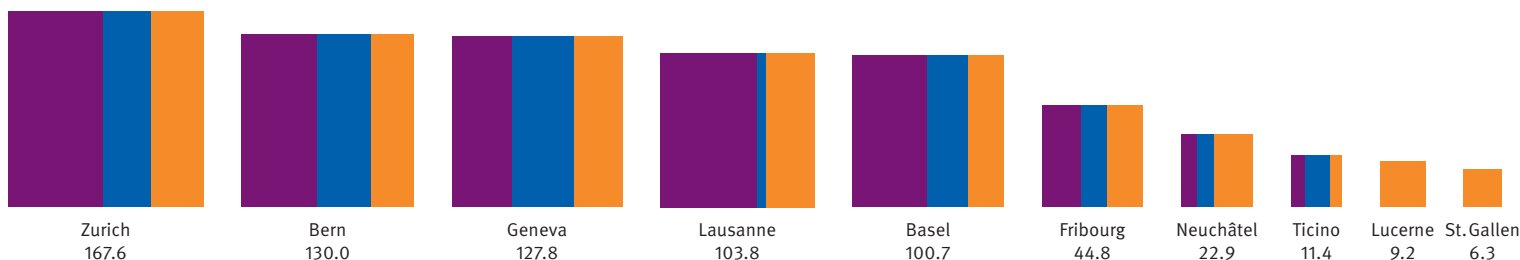
As at: 31.12.2018
Network activities: in projects that ended in 2018

Funding approved in 2018

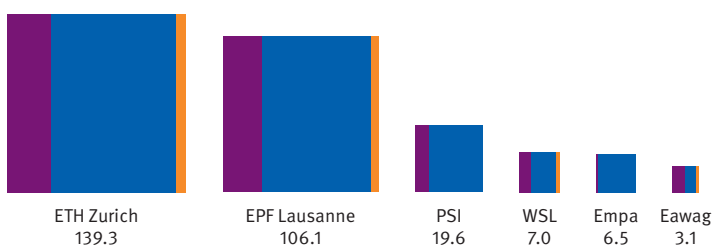
By institution and discipline

in CHF million

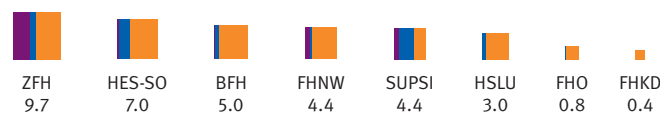
Universities (incl. university hospitals)



ETH Domain



Universities of applied sciences



Universities of teacher education



Others



37%

Biology and medicine

37%

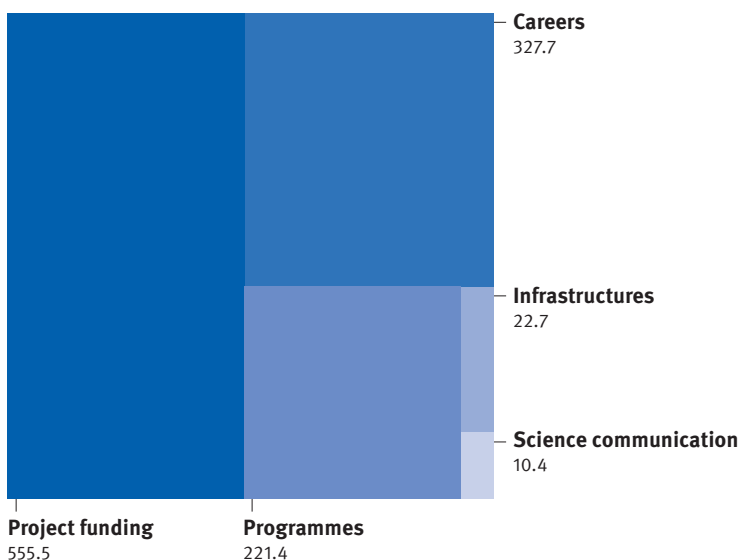
Mathematics, natural and engineering sciences

26%

Humanities and social sciences

By funding category

in CHF million



Approved funds

in CHF million

1,138

Approved applications

2,958

Submitted applications: 6,073

Detailed figures for 2018: www.snsf.ch/statistics

Financial statement 2018

The financial statement 2018 shows that federal contributions are up by 2.4 per cent compared to the previous year, while other contributions have dropped significantly. The strong decrease is due to the one-off entry of the BRIDGE programme, which was co-funded with Innosuisse in 2017.

Even though the SNSF has approved more financial resources for research projects, research funding expenditure has risen only slightly. The reason is that most researchers request funding for several years and will use a large part of the funding only in the future. Therefore, the approved research funding for the years

ahead is considerably higher than in the previous year. The annual result was better than budgeted because the immediately payable share of research funding was lower than anticipated. The loss of around CHF 17 million will be offset by reserves.

Income statement

in CHF 1,000	2018	2017	Change in %
Federal contributions	964,998	942,017	2.4
Further contributions	986	36,925	-97.3
Donations/bequests	110	-	-
Research funding expenditure	-873,031	-857,476	1.8
Expenditure to cover indirect research costs (overhead)	-107,556	-99,113	8.5
Scientific evaluation and governance	-10,670	-10,329	3.3
Public relations	-2,122	-1,930	9.9
Administration expenses and depreciation	-38,317	-37,759	1.5
Other operating income	376	437	-14.0
Other operating expenses	-371	-352	5.4
Operating result	-65,597	-27,580	-
Financial income	1,501	9,089	-83.5
Financial expenditure	-6,881	-237	2,803.4
Financial result	-5,380	8,852	-
Investments in restricted funds	-240,355	-284,082	-15.4
Withdrawals from restricted funds	293,920	285,866	2.8
Income from restricted funds	53,565	1,784	-
Ordinary income	-17,412	-16,944	-
Non-operating income	40	21	90.5
Extraordinary income	-	-10	-
Annual result	-17,372	-16,933	-

All figures stated in this report have been individually rounded.

Balance sheet

Assets

in CHF 1,000	31.12.2018	Share in %	31.12.2017	Share in %
Current assets				
Cash and cash equivalents	633,587	80	653,940	78
Accounts receivable	39,096	5	60,531	7
Other short-term receivables	50	0	74	0
Prepaid expenses	1,416	0	1,792	0
Total current assets	674,149	86	716,337	86
Fixed assets				
Tangible assets	12,220	2	12,454	1
Financial assets	100,838	13	106,187	13
Intangible assets	605	0	910	0
Total fixed assets	113,663	14	119,551	14
Total assets	787,812	100	835,888	100

Liabilities

in CHF 1,000	31.12.2018	Share in %	31.12.2017	Share in %
Short-term liabilities				
Liabilities from approved grants	299,934	38	272,688	33
Accounts payable	1,155	0	1,047	0
Other short-term liabilities	248	0	125	0
Deferred income	2,717	0	2,707	0
Short-term provisions	1,500	0	6,000	1
Restricted funds	31,335	4	79,243	9
Total short-term liabilities	336,889	43	361,810	43
Long-term liabilities				
Restricted funds	263,273	33	269,056	32
Total long-term liabilities	263,273	33	269,056	32
Total liabilities	600,162	76	630,866	75
Equity				
Foundation capital	1,330	0	1,330	0
General funds	288	0	344	0
General reserves	186,032	24	203,348	24
Total equity	187,650	24	205,022	25
Total liabilities	787,812	100	835,888	100

Additional information on the financial statement

Restricted funds

in CHF 1,000	as at 1.1.2018	Incoming resources	Outgoing resources	Transfer	as at 31.12.2018
Scopes fund	634	287	-92	-	829
r4d fund	39,974	3,371	-15,595	-	27,750
NRP fund	41,839	18,352	-29,499	-	30,692
NCCR fund	4,214	70,320	-58,157	-	16,377
Fund for special programmes in biology and medicine	24,759	11,143	-19,939	-	15,963
Fund for BRIDGE programme	34,851	8,168	-9,681	-	33,338
Fund for Horizon 2020 backup measures	30,018	-	-15,295	-	14,723
Fund for ERC transfer grants	11,405	-	-1,367	-4,568	5,470
Energy research fund	21,080	191	-8,301	-	12,970
Other funds	33,722	126,272	-123,719	-330	35,945
Funds from earmarked donations/bequests/agreements	105,802	2,251	-7,503	-	100,550
Total restricted funds	348,298	240,355	-289,148	-4,898	294,607

Grants approved for future accounting years as at 31 December 2018

in CHF 1,000	2019	2020	2021	2022	2023	2024	Total
Total	687,952	468,118	243,780	55,967	15,392	184	1,471,393

According to the federal budget for 2019, contributions to the SNSF will amount to (without overhead) CHF 951.64 million. Federal contributions (without overhead) of CHF 1,010.9 million are envisaged under the applicable service level agreement for 2020.

Federal contributions

in CHF 1,000	2018	2017
Basic contribution	742,042	718,695
National Centres of Competence in Research	70,000	70,000
National Research Programmes	18,000	25,000
Additional tasks/ Federal funding mandate	21,700	22,000
SDC contributions	-	4,000
Overhead	104,400	98,000
SwissCore	533	622
Various federal contributions	8,323	3,700
Total	964,998	942,017

Research funding expenditure

in CHF 1,000	2018	2017
Projects	445,696	429,673
Careers	192,761	196,474
Programmes		
National Centres of Competence in Research	55,657	61,413
National Research Programmes	28,658	28,123
Other programmes	92,431	82,276
International cooperation	16,552	18,459
Total programmes	193,298	190,271
Infrastructures	44,108	43,440
Science communication	11,001	6,601
Supplementary tasks	10,404	13,033
Repayments	-18,367	-15,709
Grants approved but unused	-5,870	-6,307
Total	873,031	857,476

Administration expenses and depreciation

in CHF 1,000	2018	2017
Personnel expenses	31,191	31,013
IT expenses	3,186	1,981
Immovable property expenses	821	1,004
Depreciation of tangible assets	458	514
Depreciation of intangible assets	740	983
Other administration expenses/ external mandates/SwissCore	1,921	2,265
Total	38,317	37,760

Transactions with related parties

Related persons and organisations comprise whosoever may, either directly or indirectly, significantly influence the financial or operational decisions of the Swiss National Science Foundation. The following transactions with related parties have taken place:

- Approval of research grants for members of the Foundation Council: CHF 3.90 million (2017: CHF 2.11 million)
- Approval of research grants for members of the Research Council: CHF 31.95 million (2017: CHF 29.51 million)

Performance of risk assessment

In fiscal year 2018, the Swiss National Science Foundation (SNSF) carried out a comprehensive risk assessment authorised by the Executive Committee of the Foundation Council.

According to the completed risk assessment and in light of measures put in place for monitoring and mitigating risks, no risks were identified in the past fiscal year that could lead to a lasting or substantial impairment of the financial situation of the Swiss National Science Foundation. In the SNSF's assessment, there is moreover no significant risk for the foreseeable future that would necessitate an adjustment in the book values of the Foundation's assets and liabilities.

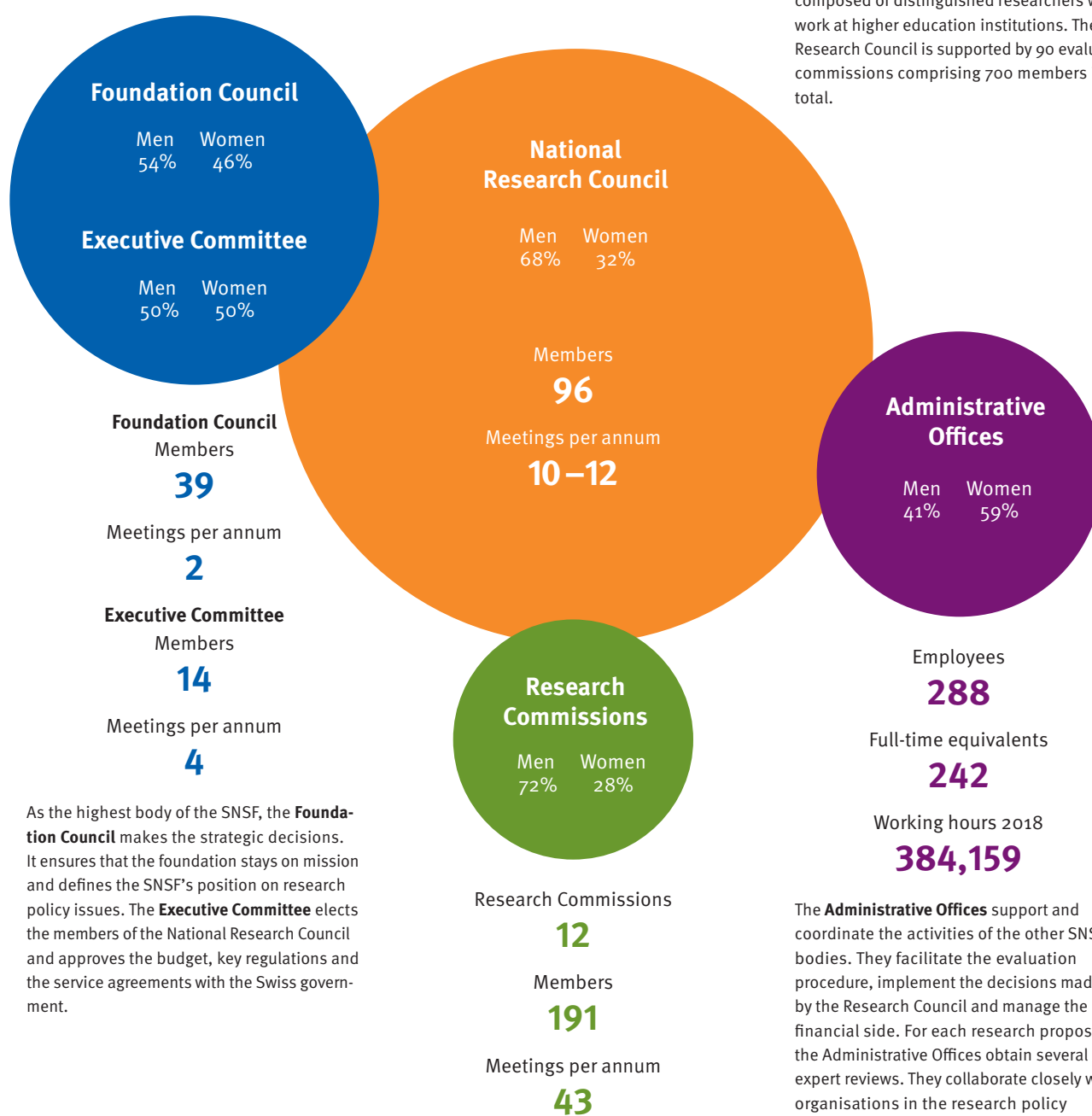
Approval of financial statements

At the recommendation of the Swiss Federal Audit Office, the external auditor that examined the statements, the Foundation Council approved the financial statements 2018 at its meeting of 29 March 2019.

Bodies of the SNSF

The Swiss National Science Foundation (SNSF) funds research in Switzerland on behalf of the Swiss government. The bodies of the SNSF are responsible for the scientific evaluation and funding of project proposals submitted by researchers.

The **National Research Council** evaluates several thousand applications each year and makes the relevant funding decisions. It is composed of distinguished researchers who work at higher education institutions. The Research Council is supported by 90 evaluation commissions comprising 700 members in total.



As the highest body of the SNSF, the **Foundation Council** makes the strategic decisions. It ensures that the foundation stays on mission and defines the SNSF's position on research policy issues. The **Executive Committee** elects the members of the National Research Council and approves the budget, key regulations and the service agreements with the Swiss government.

The **SNSF Research Commissions** at the higher education institutions are the link between these institutions and the SNSF. They award the mobility fellowships to doctoral students and postdocs.

The **Administrative Offices** support and coordinate the activities of the other SNSF bodies. They facilitate the evaluation procedure, implement the decisions made by the Research Council and manage the financial side. For each research proposal, the Administrative Offices obtain several expert reviews. They collaborate closely with organisations in the research policy and funding sector in Switzerland and abroad.

The Administrative Offices in 2018

9,536
external reviews

164
evaluation meetings

In 2018, the Administrative Offices conducted from start to finish the evaluation process for 6,073 applications. It approached 28,835 external experts for a review and processed 9,536 reviews.

The National Research Council and its evaluation commissions discussed the applications at 164 meetings. 460 researchers were invited to present their project and answer questions. The Administrative Offices organised the meetings and interviews, took the minutes, and implemented the resulting decisions.

Researchers are obliged to submit scientific and financial reports on the funded projects. In the year under review, the SNSF received 8,906 reports, along with 9,415 staff turnover notices, change requests and other messages.

The Administrative Offices conducted the first ever evaluation process for the new funding schemes Eccellenza, PRIMA and Postdoc.Mobility. Eccellenza grants were awarded to 51 researchers who are pursuing an academic career or are already on their way to obtaining a permanent professorship. 22 women researchers who have the potential for a professorship were funded thanks to PRIMA. And 160 scientists were awarded a Postdoc.Mobility fellowship by the SNSF, which gives them the opportunity to conduct a research stay abroad after the doctorate.

In close collaboration with the National Research Council, the Administrative Offices last year devised the SNSF's strategy until 2025 and produced

the multi-year programme 2021–2024. In spring 2019, the SNSF submitted the multi-year programme to the Swiss government.

More than 100,000 searches were entered in the public research database P³ in 2018. The database contains detailed information about all funded projects since 1975.

In the course of the year, the SNSF strengthened its communication activities on social media, especially Twitter. Around 250 tweets reached over 8,500 users. The Administrative Offices published 97 news articles and 47 calls for proposals and dispatched 19 newsletters to over 22,000 recipients.

8,906
reports by researchers

9,415
administrative messages
from researchers.

Foundation Council

President

Gabriele Gendotti (until 31.3.2018), Prof Felicitas Paus (from 1.4.2018, ad interim)

Representatives of scientific organisations

Cantonal Universities → **Basel:** Prof Edwin Ch. Constable. **Bern:** Prof Daniel Candinas. **Fribourg:** Prof Thomas Hunkeler. **Geneva:** Prof Jean-Luc Veuthey (until 31.12.2018). **Lausanne:** Prof Franciska Krings. **Lucerne:** Prof Alexander Trechsel. **Neuchâtel:** Prof Simona Pekarek Doehler. **St. Gallen:** Prof Kuno Schedler. **Ticino:** Prof Bertil Cottier. **Zurich:** Prof Stefanie Walter. **Swiss Federal Institutes of Technology** → **Lausanne:** Prof Sabine Süssstrunk. **Zurich:** Prof Sabine Werner.

Universities of applied sciences/universities of teacher education

Prof Erwin Beck (PH SG), Prof Maria Caiata (SUPSI), Prof Barbara Fontanellaz (FHS-SG), Prof Markus Hodel (HSLU), Prof Thomas D. Meier (ZHdK), Prof Falko Schlottig (FHNW), Dr Luciana Vaccaro (HES-SO), Prof Guillaume Vanhulst (HEP-VD).

Academies

→ **Swiss Academies of Arts and Sciences:** Prof Maurice Campagna.

SAHS: Prof Claudine Burton-Jeangros. **SAMS:** Prof emer. Daniel Scheidegger.

SATW: Dr dipl. Ing. Monica Duca Widmer. **SCNAT:** Prof Felicitas Paus, Prof Marcel Tanner.

Government-appointed members

Judith Bucher (VPOD), Dr Gregor Haefliger (SERI), Prof Dr h.c. Barbara Haering, Dr René Imhof (F. Hoffmann-La Roche Ltd), Dr dipl. Phys. Ulrich Jakob Looser (economiesuisse), Anne-Catherine Lyon (Swiss Conference of Cantonal Ministers of Education [EDK], former member of cantonal government VD).

Co-opted members

Prof Ron Appel (SIB), Prof Denis Duboule (University of Geneva and EPFL Lausanne), Prof Janet Hering (Director of Swiss Federal Institute of Aquatic Science and Technology [Eawag]), Katharina Prautsch (Actionuni; from 1.9.2018), Dr Fritz Schiesser (President ETH Board), Pascale Vonmont (Gebert-Rüf Stiftung), Prof Werner Wicki (PH Luzern, swissuniversities).

Executive Committee

Gabriele Gendotti (until 31.3.2018), Prof Felicitas Paus (from 1.4.2018, ad interim); Prof Erwin Beck, Prof Daniel Candinas, Prof Edwin Constable, Prof Denis Duboule, Dr Gregor Haefliger, Prof Franciska Krings, Dr dipl. Phys. Ulrich Jakob Looser, Prof Kuno Schedler, Prof Sabine Süssstrunk, Dr Luciana Vaccaro, Prof Jean-Luc Veuthey (until 31.12.2018), Prof Stefanie Walter (from 1.9.2018), Prof Sabine Werner.

Internal Audit

T+R SA, Gümligen BE.

Compliance Committee

Prof Franciska Krings (President), Prof emer. Klaus Müller, Prof Howard Riezman, Prof Monika Roth, Dr Dorothea Sturn.

National Research Council

President

Prof Matthias Egger

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Status as at 31.12.2018

Abbreviations and glossary

Actionuni

Organisation representing non-professorial teaching staff at Swiss institutions of higher education

BFH

Bern University of Applied Sciences

BRIDGE

Joint funding programme of SNSF and Innosuisse to promote the innovation potential of research in Switzerland

Eawag

Swiss Federal Institute of Aquatic Science and Technology

economiesuisse

Association of Swiss companies: largest umbrella organisation representing Swiss businesses

EDK

Swiss Conference of Cantonal Ministers of Education

Empa

Swiss Federal Laboratories for Materials Science and Technology

ETHZ/EPFL

Swiss Federal Institutes of Technology (Zurich and Lausanne)

FKHD

Kalaisdos University of Applied Sciences

FHNW

University of Applied Sciences Northwestern Switzerland

FHO

University of Applied Sciences Eastern Switzerland

FHS-SG

University of Applied Sciences, St. Gallen

FMI

Friedrich Miescher Institute for Biomedical Research, Basel

HEP-VD

University of Teacher Education Canton of Vaud, Lausanne

HES-SO

University of Applied Sciences and Art Western Switzerland

HSLU

Lucerne University of Applied Sciences and Art

Innosuisse

Swiss Innovation Agency

KTH

Royal Institute of Technology, Stockholm

NCCR

National Centre of Competence in Research, Switzerland

NRP

National Research Programme, Switzerland

PH

University of teacher education

SAHS

Swiss Academy of Humanities and Social Sciences

SAMS

Swiss Academy of Medical Sciences

SATW

Swiss Academy of Engineering Sciences

SCNAT

Swiss Academy of Sciences

SIB

Swiss Institute of Bioinformatics, Lausanne

SERI

State Secretariat for Education, Research and Innovation

SNSF

Swiss National Science Foundation

SUPSI

University of Applied Sciences and Art of Southern Switzerland

SwissCore

Contact office in Brussels of SERI, SNSF and Innosuisse

swissnex

Swiss network for education, research and innovation

swissuniversities

Umbrella organisation of Swiss institutions of higher education

VPOD

Association of Swiss Civil Servants

WSL

Swiss Federal Institute for Forest, Snow and Landscape Research

ZFH

Zürcher Fachhochschule

ZHdK

Zurich University of the Arts

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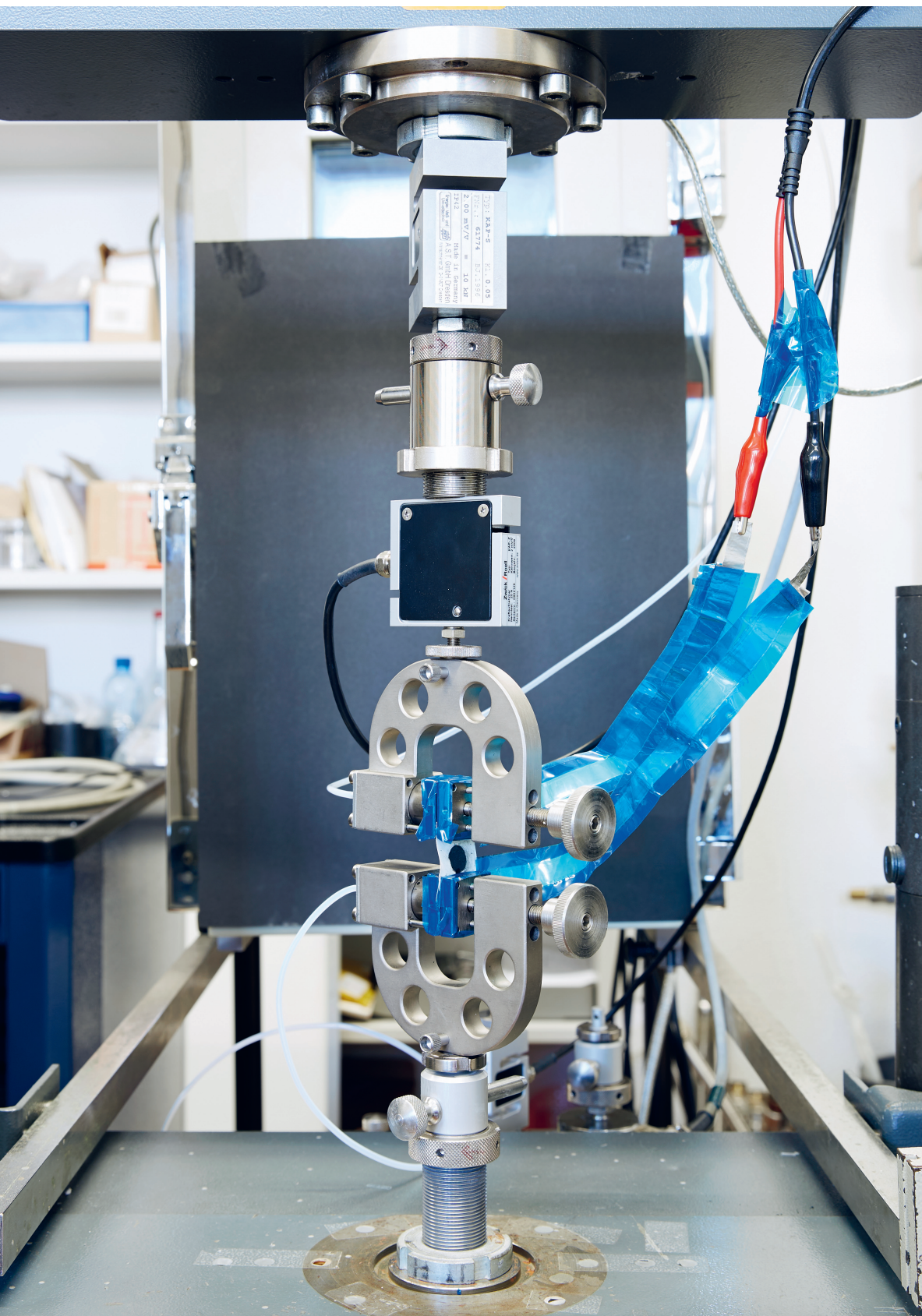
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Samples of elastomers (top left). They consist of thin films of a composite material made up of electromagnetic nanoparticles and elastic silicon. On both sides, the films have a layer of silver nanowire as an electrode. They are made in a cleanroom, which Sina Abdolhosseinzadeh enters wearing protective clothing (top right). In the testing lab, Empa is looking for the ideal mixture of the composite material (left). The machine stretches and contracts the rubber. This deformation creates voltage.

→ Electricity from rubber

“We develop elastic plastics, so-called elastomers, which produce electricity when they are stretched or pressed. As an implant, the rubber could for instance run a battery-less pacemaker. At the same time, we are working on elastomers that respond to both electrical and magnetic fields. They could be used as coolers, sensors, energy harvesters or muscles. We are doing this research together with the University of Buenos Aires.”

Dorina Opris, chemist,
Empa Dübendorf

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