

Profile

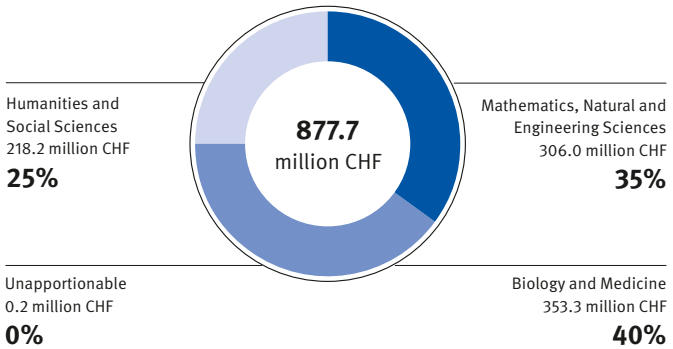
2015–2016

Profile

2015–2016

Funding by research area

Distribution of
the approved amounts



The “Profile” is published with three different covers. Each represents a research area funded by the SNSF and portrays a selected project:



Humanities and Social Sciences

The Swiss voting study “Selects” examines the voice of non-voters, a section of the population that is rarely heard.



Mathematics, Natural and Engineering Sciences

Bioprinting: using 3D printers, researchers aim to produce artificial tissue to better evaluate drugs and reduce animal testing.



Biology and Medicine

The threat of bacteria becoming increasingly resistant to antibiotics is growing. The National Research Programme “Antimicrobial Resistance” aims to produce the basic knowledge needed to devise countermeasures.



Point of view

9



Daniel Höchli: science can instigate change

15



Christian S. Jensen: Big data: public debate is needed

Passion for research

18



Nicola Spaldin: "I hope that young researchers won't heed the usual advice"

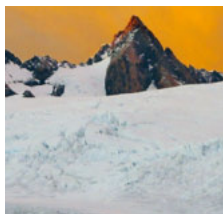
19



Laurent Keller: the ant whisperer



Feeling at home: naturalisation promotes integration



Mapping glaciers

In focus

6

Open science: towards a more transparent and open science

"Open science can only be successfully implemented if researchers see it as an advantage."

Ayşim Yılmaz, Head of Biology and Medicine division

8

Open access: free access to all publications by 2020?



10



International cooperation: the SNSF creates new funding options

12



National Research Council: keeping a watchful eye over basic research

16



Clinician Urs Frey: future trends in medical research

17



Multi-year programme 2017–2020: making plans for a strong Swiss research scene

- 4 Foreword**
- 6 In focus**
Open science – open data – open access
- 9 Point of view**
Daniel Höchli: looking back and ahead
- 10 Current issue**
International activities
National Research Council: keeping a watchful eye
Key issues in brief
- 15 Point of view**
NRP 75 “Big Data” – are the expectations justified?
- 16 Outlook**
Trends in medicine
Multi-year programme to strengthen Swiss research
- 18 Passion for research**
Nicola Spaldin, Körber award winner 2015
- 24 Highlights 2015**
- 26 Activity report**
2015 – Research funding in figures
Financial statement 2015
Bodies
- 34 Abbreviations and glossary**
- 35 Publishing information / Further information**

This publication, entitled “Profile 2015–2016”, replaces the annual report published by the SNSF until last year. The new Profile not only looks back – it also presents faces and personalities, as well as issues and points of view, in an attempt to shed light on the present and foster debate about the future.

From open science to open frontiers



“Future research will have to be more transparent and collaborative.”

Dear researchers and friends of research,

2015 was an intense year for the Swiss National Science Foundation. On the one hand, we completed our transitional measures to replace the highly competitive international grants offered by the European Research Council (ERC), from which researchers in Switzerland were unfortunately excluded for six months. On the other, we started tackling a number of local challenges in order to make Swiss research more efficient in the future.

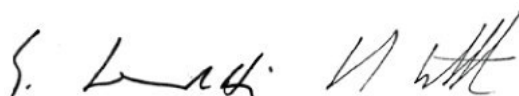
For example, the main funding scheme of the SNSF, project funding, has been revised in order to allow for more flexibility by introducing an extended project duration of four years. We also identified the need for supporting academic careers better. For this reason, we earmarked about one-fifth of the total budgeted funds in the coming years for measures aimed at facilitating careers in science. These measures include innovations in the funding schemes that promote early scientific independence, grants helping assistant professors on tenure track and the introduction of a new scheme providing adequate support for outstanding women researchers. The overall goal of these innovations is to offer researchers simpler schemes, to reduce their administrative workload and to leave more time for research and careers. All the mentioned innovations, and some more, will be introduced and extended in the coming years (for more information, please refer to the multi-year programme 2017–2020 on the SNSF website).

But 2015 was also the year when we started to address the upcoming challenges of opening up the way research is done nowadays, with the goal of making future research more transparent, more collaborative and ultimately more reproducible. To do so, we organised a workshop where we invited

key members from different funding agencies around the world, such as the National Institutes of Health in the US, the Research Council of Norway, the League of European Research Universities and many more, to hear how they envisage to promote the openness of science in the coming years. The main article of the SNSF Profile 2015–2016 addresses precisely this topic in greater detail (see page 6).

From the above challenges and innovations it becomes evident that the current year, 2016, as well as the rest of this decade, will probably also be very intense for us. After all, there are no quick fixes to such major issues. However, for the SNSF it is clear that all of them have to be addressed. In addition, we are convinced that without an association of Switzerland with the European research space, the current excellence of Swiss research and its high international reputation will suffer. And to make our voice heard, in May 2015 we appealed to the Federal Council to take into account the urgent needs of science and research in Switzerland when implementing the mass immigration initiative.

There are thus many major issues in science policy to tackle in the coming years. In the meantime, however, research continues to progress at an unprecedented pace, and new areas, such as the precise and efficient editing of human genomes, personal drones for daily uses, an expanding internet of things, as well as 3D printers and a new breed of artificial intelligence seem to be just around the corner, to name but a few. To help us understand their wider implications for society, it will be crucial to use the insights provided by the humanities and social sciences. We had better get ready for these new frontiers of science, since they will bring further challenges for us as a funding agency, and as a society.



Gabriele Gendotti Martin Vetterli

From left to right:

Gabriele Gendotti, President
of the Foundation Council
of the SNSF

Angelika Kalt, Director
of the Administrative Offices
(from 1 April 2016)

Martin Vetterli, President
of the National Research Council
of the SNSF

Making science more open and transparent

The open science movement wants radical change: science should be made more transparent through cooperation, data sharing and publicly accessible publications.

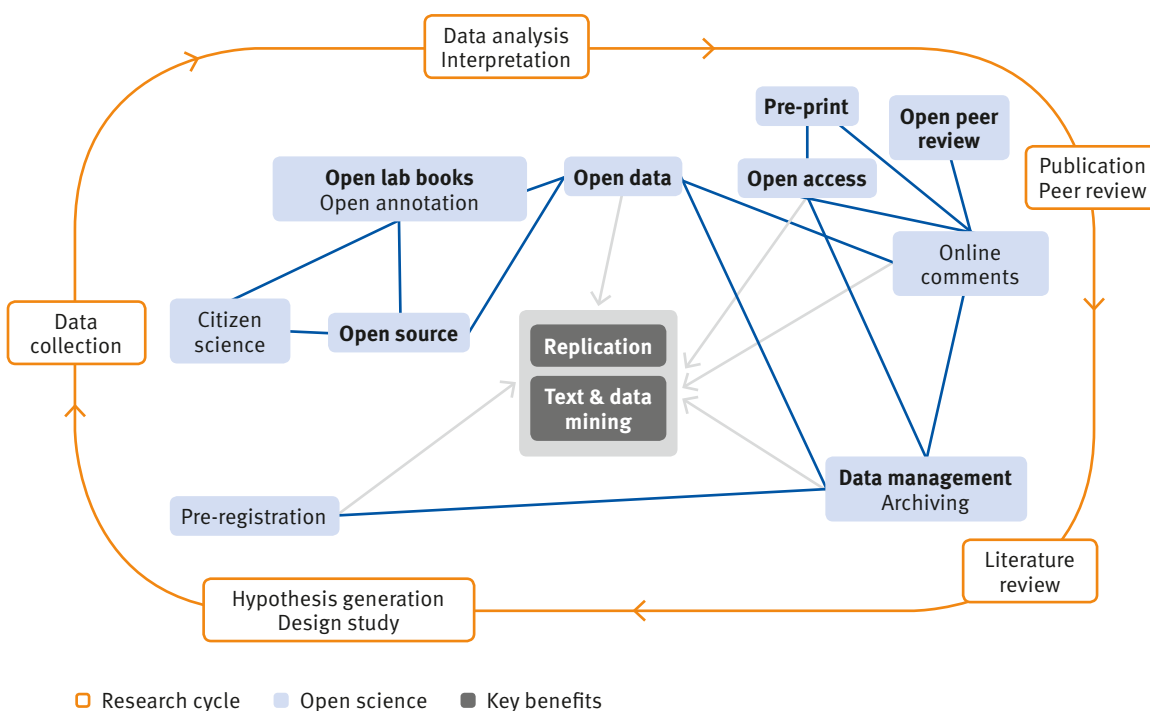
Year after year, more than a million scientific works are published around the world: publishing activity is increasing exponentially and a reversal of this trend is nowhere in sight. But the knowledge thus accumulated is not always reliable and its accessibility is limited. Many active observers in the world of science, among them the Swiss National Science Foundation, have come to the same conclusion: science needs to become more open, in order to increase its transparency and accessibility, as well as its efficiency. Publications ought to be made available free of charge and without delay (open access) and raw data should be shared, reused and examined (open data). This is a fundamental tenet of “open science”, the new paradigm that aims to redefine scientific activity, from data collection to data analysis, interpretation and publication (see graph “Components of open science”).

The basic idea is to promote scientific exchange and transparency: raw data ought to be published online and made accessible to the public; it ought to be interpreted on blogs and shared platforms and peer reviewed not by a few anonymous experts but by a large number of authors. With regard to the assessment and reuse of research results, it is also key that articles are published in open access mode along with the corresponding raw data. In this way, science will become more credible and more efficient, duplications will largely be eliminated, and research findings will be shared by the community much sooner than they are now.

Changing the system

The principles of open science stand in stark contrast to many established academic incentives: in order to forge a career, researchers are supposed to publish as many articles as possible in high-ranking journals that are not free of charge. Exchang-

Components of open science



Open science glossary

- Citizen science** → Research conducted by non-scientists
- Open access** → Scientific articles published without payroll
- Open annotation** → Research data (genomics, editions, etc.) that can be commented on and completed
- Open data** → Unprocessed research results that are made available to other researchers
- Open lab books** → Lab books that are published and discussed online
- Open peer review** → Non-anonymous and public peer review of an article before publication or before a funding decision
- Open source** → Software and hardware that can be freely used and modified
- Pre-registration** → Advance announcement of a research plan (to exclude the possibility of changes at a later stage)
- Replication** → Reproduction or invalidation of old results
- Text & data mining** → Use of algorithms to derive new results from accessible data

ing research data eats up a lot of time and money as it involves the creation and long-term maintenance of new databases. Another contentious issue concerns the publication of raw data: even researchers who are in favour of open access are worried by the prospect of colleagues criticising their data or using it to publish ahead of them. In addition, sharing data collected with the help of industry partners gives rise to questions about intellectual property rights. "In principle, all researchers are in favour of open science," says Ayşim Yılmaz, open science officer and head of the Biology and Medicine division at the SNSF Administrative Offices. "But it can only be successfully implemented if researchers believe that it will benefit them."

Despite these difficulties, open science is making headway, thanks mainly to grassroots support for the idea: many researchers are already collaborating online and making their data available in a wide range of disciplines from particle physics to genetics to digital humanities. Others are exploring new ways of communicating, evaluating and publishing. Those involved in setting research agendas also play an important role in the change process, especially funding agencies such as the SNSF, which defines the parameters for research funding. SNSF grantees already need to offer free public access to publications produced in their research projects (see article on open access, p. 8). In the medium term, the SNSF wants to make freely accessible data and publications the rule rather than the exception. In this context, it will be important to evaluate not only the publications, but also the quality of the data on which they are based.

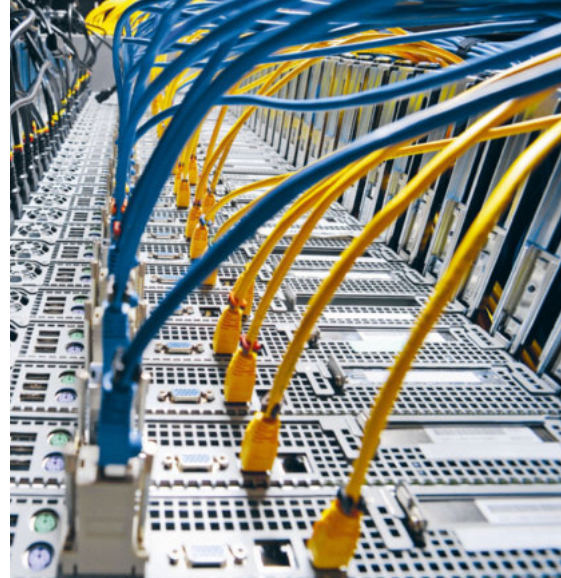
Changing the culture

Open science is a global movement: the League of European Research Universities (LERU) and the European Union have launched programmes to address open science issues and facilitate implementation. Research funders such as the World Health Organisation (after the Ebola crisis in Africa) and the National Institutes of Health have defined a set of open science criteria. Various funding organisations (e.g. in Norway and the Netherlands) already require open access by default in certain programmes.

A harmonised, universal set of rules should not be the aim, however, as every research area has its own culture and its own challenges. Each must decide by itself what constitutes data and how best to regulate confidentiality issues. Solutions should therefore be developed by each research area, without too much red tape and without generating more work for researchers and institutions. The successful implementation of open science depends on whether the scientific community is able to change its way of thinking, before it hands over to a more open generation that will be instrumental in shaping new forms of collaboration.

"There is too much trusting, and not enough verifying."

Benedikt Fecher



Workshop

Implementing open science

The SNSF invited a dozen organisations to present initiatives for promoting open science at a workshop held on 14 September 2015. The Norwegian research funding organisation has already taken measures to include a data management plan in some schemes. The National Institute of Health in the United States is thinking about prescribing data sharing, while the World Health Organisation and the Wellcome Trust are campaigning to make epidemiological data and data collected in clinical studies freely available. Paul Ayris presented the initiatives of the EU and the League of European Research Universities (LERU).

There was a consensus among participants that the culture of science needs to change. However, Benedikt Fecher from the Alexander Humboldt Institute for Internet and Society dampened the mood of expectation by pointing out that researchers had misgivings about open data because they feared others would benefit from data they had collected. He argued that open science can only be achieved if we respect the unique nature of each discipline. It also became clear that not everyone agreed on the best way forward: some scientists, like Daniël Lakens from the University of Technology in Eindhoven, favour a bottom-up approach that would enable researchers to develop open science principles as freely as possible. At the same time, the organisations want to create a framework for clarifying a number of technicalities and legal issues.

"Openness and transparency are core values in science. Share more!"

Daniël Lakens

Open access: free access to all publications by 2020?

Efforts to transform the publication system into an “open access” (OA) system are gaining momentum at European level. Switzerland, too, is moving in this direction, with the SERI commissioning swissuniversities and the SNSF to develop a national OA strategy.

Since 2008, the SNSF has been asking researchers to make their SNSF-funded research results available to the public free of charge. In 2006, it signed the Berlin Declaration that demands free global access to publicly funded research results as well as their usage in accordance with copyright law.

The initiative lies elsewhere

The SNSF is currently pursuing a progressive OA policy comparable with that of other leading funding agencies in Europe and the US (see box). However, at the Berlin Conference on Open Access held in December 2015, it became obvious that Switzerland had lost some of its momentum in the drive for open access to publications. The current frontrunners are the Netherlands, the United Kingdom and Austria. They have recently introduced offset agreements with publishers that take into account the current subscription fees so that more journals can offer open access to research articles. However, there is a danger that such agreements could lead to separate OA practices in some countries.

The Netherlands takes the lead

In its EU presidency year, the Netherlands has launched a fully fledged OA campaign. For instance, the NWO in the Netherlands has become the first research funding agency to offer immediate and full access to publicly funded research results of NWO-approved projects. The Netherlands is aiming for almost 100% open access to scientific publications within the EU research area by 2020. But this will depend on how fast European countries are able to transform the publication system on the basis of synchronised national OA strategies. Given the increasing concentration of power in large publishing houses and their interest in maximising profits, this will

not be an easy task. In any case, universities, libraries and researchers will continue to feel the brunt of rising publication costs. The Max Planck Digital Library has calculated that the 7.6 billion euros injected into the publication system every year via subscription fee payments would be sufficient to complete the changeover to OA.

Where does Switzerland stand?

At a meeting in November 2015, the SERI, swissuniversities and the SNSF identified the need for specific measures aimed at achieving OA. They agreed to pursue the following lines of action:

- Negotiations with publishing houses at national level
- Market transparency (disclosure of finances and payments)
- Enshrining the right to republish in the soon to be revised copyright law
- Monitoring of OA publications and of their financing
- Informing and raising awareness about OA among researchers

The SERI subsequently asked swissuniversities and the SNSF to develop a national OA strategy. In addition, the SNSF commissioned a financial flow analysis together with SUK P-2 (a swissuniversities programme). The analysis will serve as a basis for estimating the overall funding requirement and formulating proposals for changing the Swiss system. The SNSF will continue to follow international developments with regard to OA and make the necessary adjustments – true to the slogan of the League of European Research Universities statement it signed: “Christmas is over. Research funding should go to research, not to publishers!”

The OA policy of the SNSF

The SNSF supports the principle of open electronic access to scientific knowledge along two paths:

Green road to OA

Researchers supported by the SNSF are obliged to grant open access to their articles in a repository at the latest six months after their publication in a journal (except if there are insurmountable legal or technical obstacles).

Gold road to OA

The SNSF supports the gold road to OA by allowing researchers to finance direct publications in pure OA journals from their initial project budgets (up to a maximum of CHF 3,000).

The worldwide share of gold OA articles currently lies at 13–14% and continues to rise by about one percentage point per year. After validation, the share of gold and green OA publications based on SNSF-funded research comes to around 40% (not counting the personal websites of researchers).



In the OAPEN-CH pilot project, launched in 2015, the SNSF and the participating publishing houses are becoming more experienced in publishing OA monographs and collecting data on the use, sale and production costs of printed and digital books. The SNSF supported 27 books that were published in OA mode within the scope of the first call. An interim report on the pilot project is expected to be published in summer 2016.



“Science is able to instigate change”

For ten years, Daniel Höchli was Director of the Administrative Offices of the Swiss National Science Foundation. Despite signs of crisis he remains upbeat about the future of science.

Mr Höchli, you can look back on ten successful years: the SNSF has grown considerably. Which developments are you particularly proud of?

An industry representative in the Foundation Council once told me that the Administrative Offices were managed like a good company. They have become more modern and more efficient during my time as director – that’s something I am proud of. The positive development in funding policies is primarily the achievement of the Presiding Board of the Research Council.

How did you convince politicians to invest in science – which is after all an investment without any guarantee of success?

External factors play an important role: the excellent Swiss universities create a positive environment and most private sector companies understand the importance of basic research. The SNSF has been able to show that it manages public money conscientiously and penalises

fraudulent behaviour. And it has signalled understanding when not all of its needs were met. Research in Switzerland is important, but it is not the only cause deserving support.

The years of plenty in research funding are over. How will this affect young researchers?

We have to reconsider our plans: we will not be able to introduce all the measure that we proposed in the multi-year programme. But young researchers continue to be a priority. We are modifying our funding schemes so that talented young researchers can work independently at an earlier stage in their career.

The science system is in crisis: quantity is often more important than quality. Do you agree with this assessment?

To call it a crisis is exaggerated. But it is obvious that the pressure to publish at a high rate creates the wrong incentives. Researchers in the life sciences, in particular, produce too many results that

others can’t reproduce – that is problematic even if we accept that it is difficult to reproduce results obtained in experiments on living organisms. By signing the DORA declaration, the SNSF has signalled a change of direction. I find it encouraging that scientists themselves are pushing the debate. They are the ones who can instigate change.

If you could magically change something in Swiss research, what would it be?

I would improve the working conditions of young researchers. We need better career advice services, progress evaluations and tenure track professorships. It cannot be right if researchers in their mid-40s are suddenly unwanted or frustrated and in search of a new career.



New director of the SNSF

Angelika Kalt was appointed new director of the SNSF in January. She was elected by the Executive Committee of the Foundation Council as successor to Daniel Höchli, who left the SNSF at the end of March to become director of CURAVIVA Schweiz. Angelika Kalt has a PhD in earth sciences and was professor of petrology and geodynamics at the University of Neuchâtel for eight years. In 2008, she joined the SNSF as Deputy Director. She started in her new role as director on 1 April 2016.



Financing of networks: the innovations in project funding include new options for international collaboration.

International activities

The SNSF has introduced new mechanisms for funding international collaborations in Switzerland as well as the funding scheme PROMYS at European level.

Scientific research builds on the exchange of ideas and practices beyond national borders. Public funding limits research to a national dimension that can be a constraint on the freedom of researchers. Therefore, the SNSF supports international cooperation and the removal of research obstacles in order to facilitate mobility and the exchange of ideas and practices beyond the borders of Switzerland.

Changes in project funding

The changes in project funding have created new mechanisms for funding international collaborations. As of October 2016, researchers can apply for networking costs when submitting a project funding proposal to the SNSF. Fundable costs include travel expenses, costs for conferences and workshops as well as research costs generated by project partners.

Activities in Europe

Switzerland is located at the heart of Europe and, apart from some partnerships in the US, Canada and Australia, the majority of international collaborations are with European partners.

In 2015, the SNSF launched the first call for the Promotion of Young Scientists in Eastern Europe (PROMYS) and, with its partner organisation in Croatia, started to prepare a call for joint research projects in the context of the EU enlargement contribution. In addition, the SNSF embarked on exploratory discussions with Belgium for an agreement to facilitate cross-border research between the two countries. This would be the fifth cross-border agreement of its kind.

For many years, the SNSF has been participating in European bodies and organisations to create the best conditions for researchers. A key member of Science Europe and its working groups (e.g. cross-border collaboration, Horizon 2020), it also took part in a public consultation on the ex-post evaluation of the 7th framework programme (FP7) of the European Commission in 2015.

Aim: full association with Horizon 2020

Bilateral agreements with partner organisations cannot replace direct access to European research programmes. For this reason, Swiss politics must strive to secure full association with the European framework programme Horizon 2020. This programme

complements national research funding as offered by the SNSF and the Commission for Technology and Innovation (CTI). The opportunities to participate in European schemes and establish international collaborations add to the appeal of doing research in Switzerland. When fully associated, Switzerland will be able to participate in shaping European research policies. This will include contributing to the thematic definition of programmes as well as engaging in fundamental discussions, such as the debate about open science (see article on page 6).

Temporary ERC Backup Schemes

No loss of funding thanks to Transfer Grants

In February 2015, the SNSF awarded 21 SNSF Consolidator Grants to outstanding researchers, thereby concluding its Temporary Backup Schemes (TBS), launched as a substitute for the ERC grants from which Swiss-based researchers were temporarily barred. The over 250 TBS applications – of which 48 were approved with a total budget of CHF 92 million – are a clear indication that these short-term transitional measures were a necessary step. In addition, the SNSF introduced Transfer Grants in September 2015; they allow researchers abroad who had won an ERC Starting or Consolidator Grant in 2014 to accept an academic post in Switzerland without any loss of funding.



Bilateral research programmes

Support for 49 bilateral projects

In the context of the bilateral research programmes of the federal government, the SNSF launched several calls for joint research projects in 2015: with South Korea (12 projects approved), Russia (25 projects) and the state of Rio de Janeiro (12 projects). The applications were evaluated whenever possible in collaboration with the partner organisations of the SNSF. Most of the projects will be implemented jointly over a three-year period. Towards the end of 2015, the SNSF launched a joint call together with a Chinese funding body.



Humanities and social sciences

Greater international focus thanks to ERA-NETs

Research in the Humanities and Social Sciences is becoming more international. This is reflected in the SNSF's participation in a number of ERA-NET initiatives which aim to improve research cooperation among EU members and associated states. Since April 2015, the SNSF has been a full member of the ERA-NET NORFACE (New Opportunities for Research Funding Agency Co-operation in Europe), which is dedicated to strengthening international cooperation in the social sciences. The SNSF is also participating in the ERA-NET HERA (Humanities in the European Research Area), which aims to strengthen the humanities at European level. As a result, researchers in Switzerland were able to submit proposals to the 2015 call of the joint research programme "Uses of the Past", which focuses on pressing societal questions of identity, integration, political legitimacy and cultural dynamics. More than 80 pre-proposals with Swiss participation were submitted.

National Research Council: keeping a watchful eye over basic research in Switzerland

The approximately one hundred members of the National Research Council play an important role in maintaining high-quality standards in Swiss basic research. Acting in a part-time capacity, they are committed to guaranteeing research excellence and diversity.

The SNSF is of eminent importance to the Swiss research scene, promoting the diverse range of basic research activities being carried out in Switzerland. The nerve center of the SNSF is the National Research Council (NRC). With a membership of almost one hundred scientists, it meets around ten times per year for long, in-depth meetings in Bern to arrange funding for the best projects and junior researchers, using international reviews as the basis for its decision-making.

The NRC members are grouped into four divisions: three discipline-based divisions (Humanities and Social Sciences; Mathematics, Natural and Engineering Sciences; Biology and Medicine) as well as the Programmes division. There are also three specialised committees spanning all of the divisions (International Cooperation, Careers and Interdisciplinary Research). All of the members are distinguished researchers in their particular field. They are supported in their work by the SNSF Administrative Offices.

Productive appreciation

For many of the members, their work on the National Research Council is very close to their hearts. Talking to the 98 members, most of whom teach at Swiss higher education institutions, it is clear that they are very appreciative of the SNSF. Time and



“The Swiss National Science Foundation is one of the best funding organisations for research in the world.”

Ursula Keller, physicist at ETH Zurich and member of the Research Council in the Mathematics, Natural and Engineering Sciences division

time again, they stress how important it is to them that they are able to give something back to the SNSF, and thus to the Swiss research community, in return for what they have been given during their careers.

Their voluntary commitment to the Research Council is a clear manifestation of this gratitude. It is certainly the case that sitting on the Council brings a great deal of renown and a high level of influence, with the members ensuring high-quality research in their disciplines and helping to shape Swiss research. However, members also have to commit to a great deal of work and to giving up a lot of their time. Thousands of projects need to be assessed every year. Anyone who chooses to sit on the Research Council needs to make sacrifices elsewhere, including giving up some of their leisure time.

Supporting the full range of research

The Research Council members also pursue overarching objectives through their work. Franz Caspar, for example, psychology professor at the University of Bern and Research Council member in the Humanities and Social Sciences division, also supports subjects from the humanities that are deemed to be more exotic, despite carrying out very



“The National Centres of Competence in Research have created the scope for a new approach to research in social sciences by establishing longitudinal studies.”

Fabrizio Butera, social psychologist at the University of Lausanne and member of the Research Council in the Programmes division



“We are not looking to promote the latest research trends, we want to support original research.”

Franz Caspar, psychologist at the University of Bern and Research Council member in the Humanities and Social Sciences division

use-inspired research himself. It is, he says, much easier to highlight the benefits of studies that save infants' lives than those concerned with the religious history of prehistoric cultures. But this work too is valuable to society. He believes it is the Research Council's role to promote research in all of its breadth.

Beatrice Beck-Schimmer, anaesthesiology professor at the University of Zurich and member of the Research Council in the Biology and Medicine division, is keen to see greater support for clinical research, an area that is still very much in the fledgling stage in Switzerland. She also believes in the importance of scientists being given enough time to carry out research, despite the many administrative tasks that are also required of them, and wants to see further improvements in equal opportunities, removing disadvantages for women. As the President of the Specialised Committee Careers, she is committed to ensuring that evaluations are carried out without any gender bias.

Improved mentoring

The SNSF supports many young aspiring researchers. These researchers represent the future of Swiss science. Ursula Keller, professor of physics at ETH Zurich and a member of the Research Council in the Mathematics, Natural and Engineering Sciences division is calling for the higher education institutions to improve their mentoring of

young up-and-coming researchers. If these young scientists are insufficiently prepared for submitting their applications, they will be forced to revise their proposals and re-submit them, needlessly wasting time. Fabrizio Butera, professor in social psychology at the University of Lausanne and member of the Research Council in the Programmes division, is driving forward the implementation and evaluation of the National Centres of Competence in Research (NCCRs). These, he explains, have proved to be an excellent tool for the promotion of Swiss research in all disciplines. He is convinced that the practice of using longitudinal studies for investigating social and individual transformation processes in the social sciences would not exist today, were it not for the “LIVES”, “Democracy”, “Affective Sciences” and other NCCRs. Swiss research benefits greatly from the work of the Research Council and the dedicated commitment and careful work of its members.



“As a member of the Research Council, I have become entirely familiar with the political aspects of research, and now I can help shape these.”

Beatrice Beck-Schimmer, anaesthesiologist at the University of Zurich and member of the Research Council in the Biology and Medicine division

Funding policies

DORA declaration

In June 2014, the SNSF signed the San Francisco Declaration on Research Assessment (DORA). The declaration consists of a set of recommendations with regard to the assessment of scientific output. It calls for scientific performance to be judged not on the basis of the impact factor of journals; instead a wide range of scientific output should be considered and evaluation criteria published. DORA was initiated by the American Society for Cell Biology (ASCB) together with a group of editors and publishers in December 2012. More than 600 organisations have signed the declaration so far.

In order to integrate the DORA recommendations into its evaluation procedure, the SNSF defined a range of measures in February 2016. New guidelines will make it clearer which kinds of output (e.g. patents, prizes and science communication) will be considered in the category **track record** alongside publications. The forms and guidelines for evaluators will be published on the SNSF website.

When assessing **peer-reviewed publications**, experts need to consider their quality and scientific impact, but not the overall total or annual number of publications. The reputation of the journals in which the articles are published can serve as an indicator of quality. Impact can be inferred from article-based metrics, if this is beneficial in a specific research area. Journal-based metrics should not be considered, however.



National Centres of Competence in Research

SSIC: positive report on structural impact

The Swiss Science and Innovation Council (SSIC) analysed the impact of the first series of NCCRs. They were launched in 2001 and came to an end in 2013. In its report, published in December 2015, the SSIC rates the structural impact of the NCCRs very highly, but it also gives recommendations for future adjustments. Some of these innovations have already been implemented in the three following series of NCCRs. For instance, the SNSF asked the NCCRs to bring their goals more closely into line with the research topics and actively promoted scientific exchanges between the NCCRs.

Project funding

Innovations as of October 2016

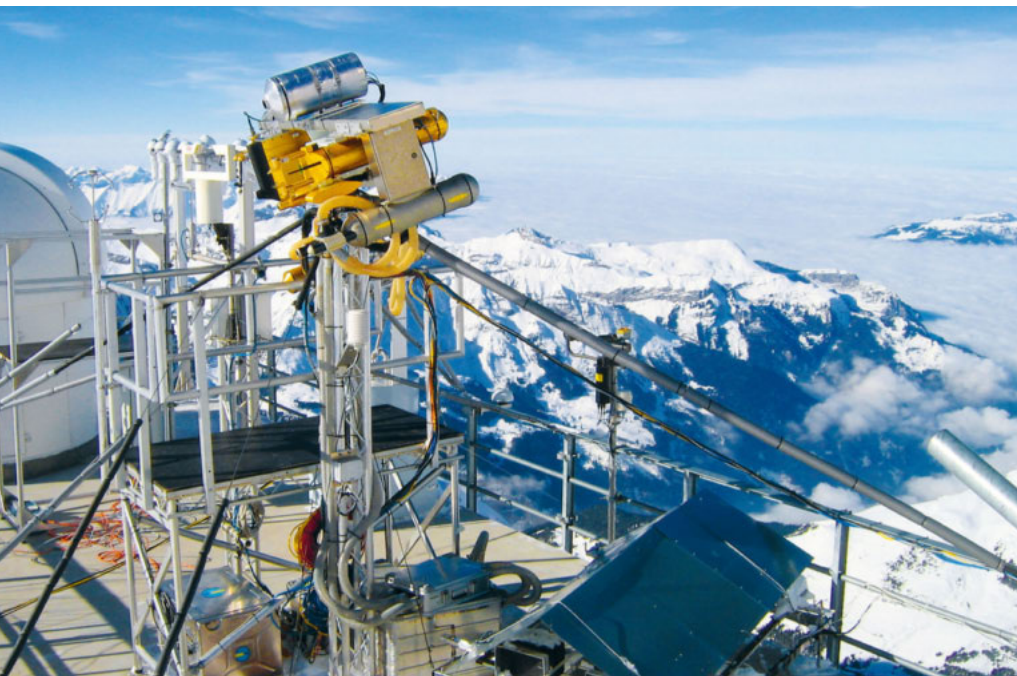
In 2012, the SNSF set out to assess its project funding scheme. Based on internal analyses, external evaluations and a survey among researchers, it is now introducing various changes that will apply as of the submission deadline in October 2016: more diversity in research, clearer scientific responsibilities, more comprehensive funding for longer periods and more flexible use of funds. The changes are also expected to reduce the administrative workload.

→ Further information:
www.snsf.ch › Funding › Projects

Biobanks

Coordination platform for data quality and data access

After successfully establishing the Swiss Clinical Trial Organisation and its nationwide network of Clinical Trial Units, the SNSF embarked on another coordination task: to improve the quality of research data and data access, it created the Swiss Biobanking Platform (SBP). The SBP is a national coordination platform for biobanking activities in all research areas. It offers a wide range of services such as advice on legal and ethical questions when establishing and running biobanks, information on biobanks and data collections worldwide as well as support regarding biobanking methodology and IT solutions. By offering these services, it contributes to harmonising biobanking procedures and making the corresponding data and samples available for future research projects.



Evaluation of infrastructures: focus on scientific aspects

Research strategies

The SNSF should focus on its core competencies

The Swiss Science and Innovation Council (SSIC) has evaluated the SNSF's strategic funding of research infrastructures and disciplines. In its report, it advises the SNSF to focus on scientific aspects when evaluating research infrastructures and to continue the established practice of funding basic research. It also suggests looking into the possibility of introducing a new funding scheme for high-risk/high-reward research. These recommendations have been considered in the SNSF's multi-year programme.



“To exploit big data, we also need a public debate”

Government and industry hope to use big data to improve their services. The SNSF has launched a new research programme to foster both innovation and a broader, societal perspective.

The analysis of large amounts of data holds the promise of new applications in numerous domains but also raises many societal questions. The new National Research Programme “Big Data” (NRP 75) addresses the technical questions raised by big data, such as infrastructures and security, while also covering the societal challenges, particularly social acceptance, regulatory and economic aspects, and the development of new applications.

“Privacy issues need to be debated publicly and openly”, says Christian S. Jensen, president of the Steering Committee. “Insights from the social sciences are crucial.” Now a computer scientist at Aalborg University in Denmark, he previously worked at the universities of Aarhus (DK), Arizona and Maryland as well as in the Google headquarters near San Francisco.

Mr Jensen, why is big data so important?

It’s the confluence of the unprecedented amounts of available data and capabilities of computing and communication infrastructures. This yields new opportunities to create value from data, economically as well as socially. Big data combines fundamental technological questions with a potential for applications in many different areas.

Where do you expect the biggest impact?

Prediction is always hard. One approach is to look at where large masses of data are produced: our digitised social lives, online and real-life shopping, e-government, logistics, insurance, transport and medicine.

What are the challenges?

The volume of data and the speed at which data is generated create challenges. Extracting information from heterogeneous and not always accurate data sources poses a further challenge. We should not impose unwanted technology on users who do not feel comfortable with it. Another challenge is to manage the ownership and sharing of data. Data is an asset, and the more you share it, the more value it can have. But since data has value, how can ownership be protected? How can we have marketplaces for data? Society has to find a balance between sharing and protection.

Is there a risk of backlash, should privacy be compromised?

We need an ongoing public debate, an informed population and media that question the use of this technology. I see a trend towards acceptance of less privacy, especially among younger people. People should be in control of their data, know how it is being used, and be able to delete it.

Data is gold, but do we put too much trust in it?

Quantifying an aspect of our lives tends to make us focus on it. This might empower us to do more, like the fitness watch that counts our steps and motivates us to walk longer distances. But other important aspects of our lives that are not quantified might suffer from a lack of attention. Aspects for which data is hard to collect might be as important as aspects for which data is available. We have to look critically at the consequences of being data-centric.



Big data has great potential for applications in many different areas, says Christian S. Jensen.

Four new NRPs

Three new National Research Programmes (NRPs) were approved by the Federal Council in June 2015.

NRP 75 is focused on the technical and societal issues raised by big data, NRP 72 targets global approaches against the rise of antimicrobial resistance and NRP 74 considers ways of improving the Swiss health care system. The SNSF published the calls for proposals in autumn 2015. The projects will be chosen and announced by the end of 2016 and start in spring 2017. A fourth programme comprising research on sustainable economy, NRP 73, was approved in March 2016.

Focused on interdisciplinary and transdisciplinary research, the NRPs generate scientific knowledge aimed at solving Switzerland’s most pressing problems.

Trends in medicine

Urs Frey, president of the Biology and Medicine division at the SNSF, outlines future trends in medical research. He is medical director at the University Children's Hospital Basel and a clinician with experience in paediatric and juvenile illnesses and pathophysiology.



Dr Frey, where is medical research headed and what trends can you see?

As life expectancy increases, the development of regenerative therapeutic strategies, for example for degenerative disorders and cancer, will gain in importance. Research into rare diseases is also on the upswing. Illnesses caused by environmental influences, malnutrition or psychosocial pressures are affecting ever larger population groups and pushing up healthcare costs. In future, medicine will be heavily geared to researching these complex conditions, which include asthma, high blood pressure, diabetes and Alzheimer's, and finding ways of preventing and treating them. As a result of the complex interaction between genetic, environmental and lifestyle factors, such diseases can manifest themselves very differently from one person to the next. They are investigated in large patient groups with the aim of developing a treatment that is tailored to the individual patient (what is known as "personalised medicine").



What general prerequisites are needed for optimal medical research?

Internationally networked basic research and technology development – both particular strengths of Switzerland – are essential for good medical research. Lean and uniform nationwide regulatory requirements and access to the large-scale, high-quality clinical databases and tissue banks that are being set up at various hospitals will make it easier to carry out translational and multicentre trials.

What specific tasks will this involve for research and clinical research in particular?

Interdisciplinary and translational collaboration between biologists and doctors, for example incorporating modern "-omics" technologies, forms the basis for evidence-based medicine. Training young doctors to do research and ensuring that time is available for it are important prerequisites for high-quality clinical research.

How is the SNSF supporting these developments?

The SNSF is supporting clinical research through a series of concerted measures. Clinicians have access to all the career funding schemes provided by the SNSF, and the eligibility requirements are adapted to the clinical curriculum. The Protected Research Time for Clinicians scheme guarantees that young clinicians will be able to spend at least 30% of their time researching their projects, and there are also competence and service centres in the form of the Swiss Clinical Trial Organisation and its six Clinical Trial Units. The Swiss Biobanking Platform is designed to promote data quality and coordination among local biobanks. The longitudinal studies (cohort studies) provide high-quality long-term data for interested researchers. The new Investigator Initiated Clinical Trials programme enables researchers to carry out large-scale clinical trials without having to rely on industry support.



SNSF planning envisages a strong Swiss research scene

A responsive mode of project funding based on competing proposals is and will continue to be the SNSF's core business. However, science itself is changing at a breathtaking pace. In its multi-year programme for the 2017–2020 period, the SNSF responds to the challenges facing Swiss research and presents arguments in favour of prioritising the ERI sector.

The trend towards more data-driven research, internationalisation and the acceleration of research are challenges that the Swiss research community must tackle. In addition, it needs to meet the increasingly higher demand for transparency and dialogue within our society.

The SNSF has set itself four main goals

In its multi-year programme 2017–2020, the SNSF shows how it can contribute to the positive development of Swiss research in the coming years. It has set itself four main goals:

- To continue promoting excellence and internationality in research and evaluation by responding to new requirements, awarding grants based on a competitive process and incentivising collaboration, transparency and good scientific practice.
- Promote early independence for young researchers and show them academic career prospects that are clear and attainable, thereby enhancing the quality and social acceptance of Swiss research.
- Join in efforts to accelerate knowledge transfer throughout the economy and society at large by strengthening funding activities at the interfaces between research

and innovation, particularly by collaborating on the “Bridge” programme with the CTI.

- Launch initiatives aimed at prioritising the development of new research fields and encourage the scientific community to form networks in strategically important areas.

The ERI sector must have financial priority

All in all, the SNSF will need approximately CHF 4.5 billion between 2017 and 2020 in order to be able to implement all the planned measures. If parliament decides to accept the stabilisation programme for the federal budget without any changes, the SNSF will receive CHF 465 million less. This would make it necessary for the SNSF to narrow down its priorities and shelve some of its plans. Work on a leaner multi-year programme has already started. Despite the financial pressures, there is one point that the policymakers should not lose sight of: investments in research, education and innovation are as essential as ever for the prosperity of Switzerland as a centre of learning and industry. This may be even more so in view of the lack of skilled workers, the strong Swiss franc and the threat of exclusion from Horizon 2020, the EU's framework programme for research and innovation. For these reasons, investments in the ERI sector must remain a top priority of financial planning.



Nicola Spaldin, Körber award winner 2015

Nicola Spaldin is professor of materials theory at ETH Zurich. In 2015, she won the Körber European Science Prize worth 750,000 euros. The British chemist and SNSF grantee is known for her pioneering research on multiferroics, a chemical compound consisting of different metals and oxygen. It reacts to both electric and magnetic fields. Multiferroics have the potential to transform information technology: they could replace silicon in microchips, thereby making it possible to manufacture very small and energy-efficient computers and smartphones.

“I hope that young researchers won’t heed the usual advice”

A passion for research and finding answers – even for seemingly impossible problems: Nicola Spaldin describes how she successfully strayed from the accepted academic career path.

I was recently taken aback when I realised that I seem to have reached a point in my career where young people have started asking me for advice. My pragmatic side tells me that I should tell students what I had been told myself: do some good work in an established research field and make sure to publish a lot! That is how you make a name for yourself and gain recognition in your community. Keep the risky stuff till later when you are well established.

But deep down I hope that young researchers won’t heed the usual advice. I hope that they find a gripping question that for them becomes the most important question in the world and to which they passionately try to find an answer, thereby starting their own scientific revolution.

“When I work, I always think about developing new equipment and technologies.”

Nicola Spaldin

This is what happened to me with multiferroics. In the 1990s, people thought that magnetic ferroelectrics – a multiferroic material – were an impossible proposition. Nobody believed that they could become reality. But I wanted to know if this was really the case, threw my career blueprint into the bin and started looking for an answer. Two things were on my side: the theory was sufficiently advanced so that I could study virtual materials using computer models, and I got a grant from the Swiss National Science Foundation.

I had my breakthrough in 2003: together with Ramamoorthy Ramesh, who now teaches in Berkeley, I succeeded in creating the multiferroic material that is most common today: bismuth ferrite. I will never forget that moment: the impossible had become reality. Since that day, I have continued to search for materials with properties that don’t exist as yet or are considered impossible. My team and I develop these materials on the computer before we develop them in the lab with colleagues from the Paul Scherrer Institute to study their properties.

When I work I always think about developing new equipment and technologies. One of my aims is to develop a superconductor that conducts electricity without resistance at room temperature. One day I will succeed.”

Naturalisation promotes integration

Feeling at home in Switzerland

The naturalisation of immigrants is a catalyst for integration. It is particularly beneficial for foreigners who are part of a marginalised immigrant group at the time of naturalisation, such as migrants from Turkey or former Yugoslavia. This is the conclusion reached by a study funded by the Swiss National Science Foundation. The researchers interviewed almost 800 people whose applications were either narrowly accepted or rejected. They asked questions such as: are you involved in politics? Do you read Swiss newspapers? Are you a member in a club or association? Do you feel discriminated against? Do you plan to spend your retirement in Switzerland? "The earlier a person receives citizenship, the greater the positive effect", says Dominik Hangartner, political scientist at the University of Zurich and the London School of Economics. This should be a wake-up call for Switzerland, he adds, where migrants have to wait twelve years for naturalisation, a long time compared to other European countries.

"The earlier a person receives citizenship, the greater the positive effect."

Dominik Hangartner, University of Zurich



Laurent Keller

The ant whisperer

Laurent Keller is a world-renowned expert on ants. For almost 30 years, the passionate evolutionary biologist has been studying the social and cooperative behaviour of ants. He has made important theoretical and experimental contributions towards a better understanding of natural selection and social behaviour in groups of animals. Based on his findings, he has drawn conclusions about human social behaviour when it comes to dealing with stress and ageing, for example. He was also able to show that robots can be used more efficiently if they are programmed to replicate the behaviour of ants. Laurent Keller is happy to communicate his findings in the press and in books to reach out to the general public. He is Director of the Department of Ecology and Evolution at the University of Lausanne and member of the Research Council of the SNSF. Professor Keller has won numerous prizes, including the Marcel Benoist Prize in 2015.

Mapping glaciers

Climate change and mudslides

Is there a link between climate change, glacier movements and the erosion of rock underneath the ice? According to Frédéric Herman of the University of Lausanne, mountains are vulnerable to climate change: the risk of mudslides increases if alpine rivers carry more sediments. Supported by the SNSF, his research group explored the Franz Josef Glacier in New Zealand, which is over ten kilometres long and perfectly located to answer his research question. "Using a new spectroscopic method, I was able to analyse 4,000 samples in two weeks and create an accurate map of the glacier. In the past, this work would have taken years", explains master's student Mattia Brughelli excitedly. The study was realised in cooperation with the French National Museum of Natural History, the Californian Institute of Technology and the Institute of Geological and Nuclear Survey Science in New Zealand.

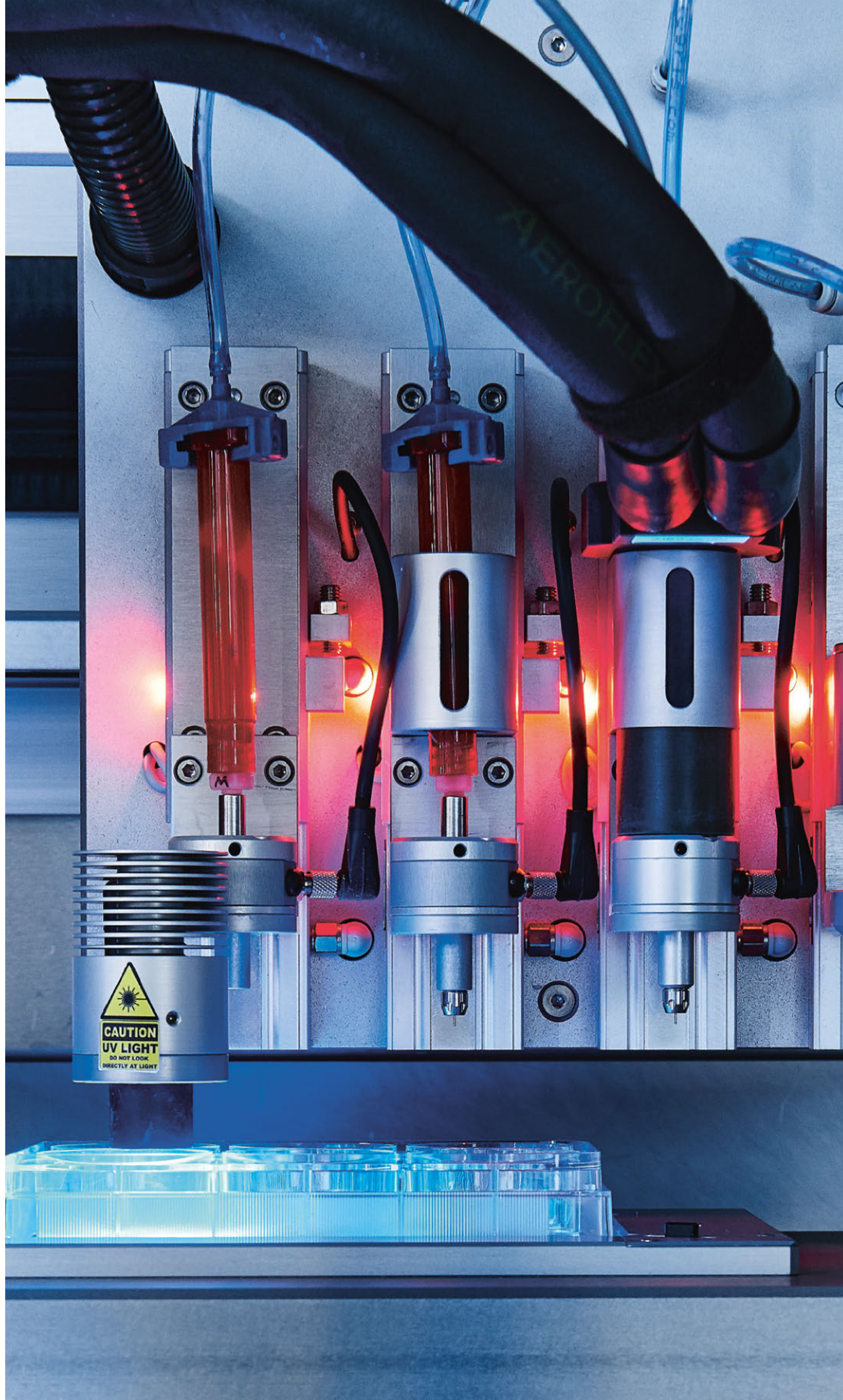




→ Bioprinting: a promising technology

Bioprinting is the production of artificial tissue using 3D printing technology. Ursula Graf-Hausner of the Zurich University of Applied Sciences is developing small printed and functional subunits of the kidney which will make it possible to recognise renal toxicity early in the development process of new drugs. If successful, the optimised analysis would lead to improved drug development processes and a reduction in animal testing.

→ <http://p3.snf.ch/project-161566>





→ When antibiotics stop working

An increasing number of bacteria are becoming resistant to antibiotics. The National Research Programme “Antimicrobial Resistance” (NRP 72) aims to reduce antimicrobial resistance in order to avoid complications in treating infectious diseases by adopting an interdisciplinary one-health approach.

The Federal Council commissioned the Swiss National Science Foundation to carry out the programme in 2015. The NRP has an overall budget of CHF 20 million and a running time of five years. → www.nfp72.ch



Highlights 2015

A selection of events that shaped the year at the SNSF.



15 January

Energy research

In view of the energy policy challenges facing Switzerland, the SNSF has launched two **National Research Programmes (NRPs)** exploring both the scientific and technical as well as the socio-economic aspects of an energy turnaround. Coordinated energy research is a cornerstone of Energy Strategy 2050: it supports the substantial reduction of energy consumption, promotes new technologies, explores the social context and boosts research and industry in Switzerland.

20 January

Eastern Europe

Shortly after the fall of the Berlin Wall, the SNSF and the SDC began supporting scientists in Eastern Europe by funding **research partnerships**. Twenty-five years later, Switzerland and its partner countries are still reaping the benefits. At a workshop on 20 January 2015 at the Kursaal in Bern, participants take stock and picture what lies ahead.



19 March

Smart materials

Targeted drug delivery and new electronic components: for five years, the **National Research Programme “Smart Materials” (NRP 62)** explored the potential of a new generation of materials that react to their environment. The NRP held its final conference in March. For the first time, the SNSF officially collaborated with the Commission for Technology and Innovation (CTI) to support researchers wishing to develop their lab results into applications.

11–13 May

20 years in Brussels

SwissCore is the Swiss information and liaison office for European research, innovation and education in Brussels. Since 1995, it has provided high-quality information, liaised between Europe and Switzerland in the fields of research, innovation and education and promoted the Swiss knowledge institutions at European level. On 12 May 2015, SwissCore holds its **Annual Event 2015**. The 20th anniversary starts with a symposium on the Swiss contribution to a “Europe of knowledge” and is followed by a reception with a dinner to which about 120 representatives of European and national institutions are invited.

28 May

New urban quality

The **National Research Programme “New Urban Quality” (NRP 65)** presents its results at a press conference. If urban sprawl is to be stopped, the use of developed areas needs to be intensified. The results of NRP 65 open the path to urbanise suburban areas.

January/
March

May

23 September

MHV prize

Every year, the SNSF awards around 35 Marie Heim-Vögtlin grants. They support excellent young women researchers who resume their academic careers after a break due to family commitments. The **two winners** of the MHV prize 2015 have made a highly successful comeback. Over a period of two years, **Anna Nele Meckler** continued her postdoctoral studies in paleo-oceanography at the Institute of Geology at ETH Zurich. **Armelle Corpet** conducted experimental cancer research at the Gynaecology department of University Hospital Zurich.



“Thanks to the grant, I am back at the forefront: I was able to publish several articles about completed work in renowned journals and expanded my expertise in a high-end technology.”

Anna Nele Meckler

September

1 October

Over 500 million francs

For the first time, researchers request more than CHF 500 million in a **project funding** call: for 1 October 2015, they submit a total of 1,152 project proposals to the SNSF requesting overall funding of CHF 524 million. The above figures show that the demand for project grants is for the second time in succession substantially higher than in the previous year. This upward trend in application numbers and requested funds is expected to continue.

21 October

Focus on academic careers

At their **Séance de Réflexion**, the members of the National Research Council revisit a topic that they discussed three years ago at the anniversary event of the SNSF: Young researchers: what do they need most? On the second day, the members of the Council focus on academic careers and young researchers. Various academic systems at European and American higher education institutions are presented and discussed in view of the career prospects they afford young researchers. At a round table moderated by Caspar Hirschi, obstacles for young researchers and support measures are discussed.



October



24 November

National Latsis Prize

The National Latsis Prize 2015 is awarded to biologist **Richard Benton**, professor at the Center for Integrative Genomics at the University of Lausanne, for his work on the fruit fly's sense of smell. The biologist is investigating the chemical signals that control the behaviour of insects. The prize is awarded annually by the Swiss National Science Foundation on behalf of the Geneva-based Latsis Foundation. Worth CHF 100,000, the prize honours outstanding researchers under the age of 40 working in Switzerland.



→ Video

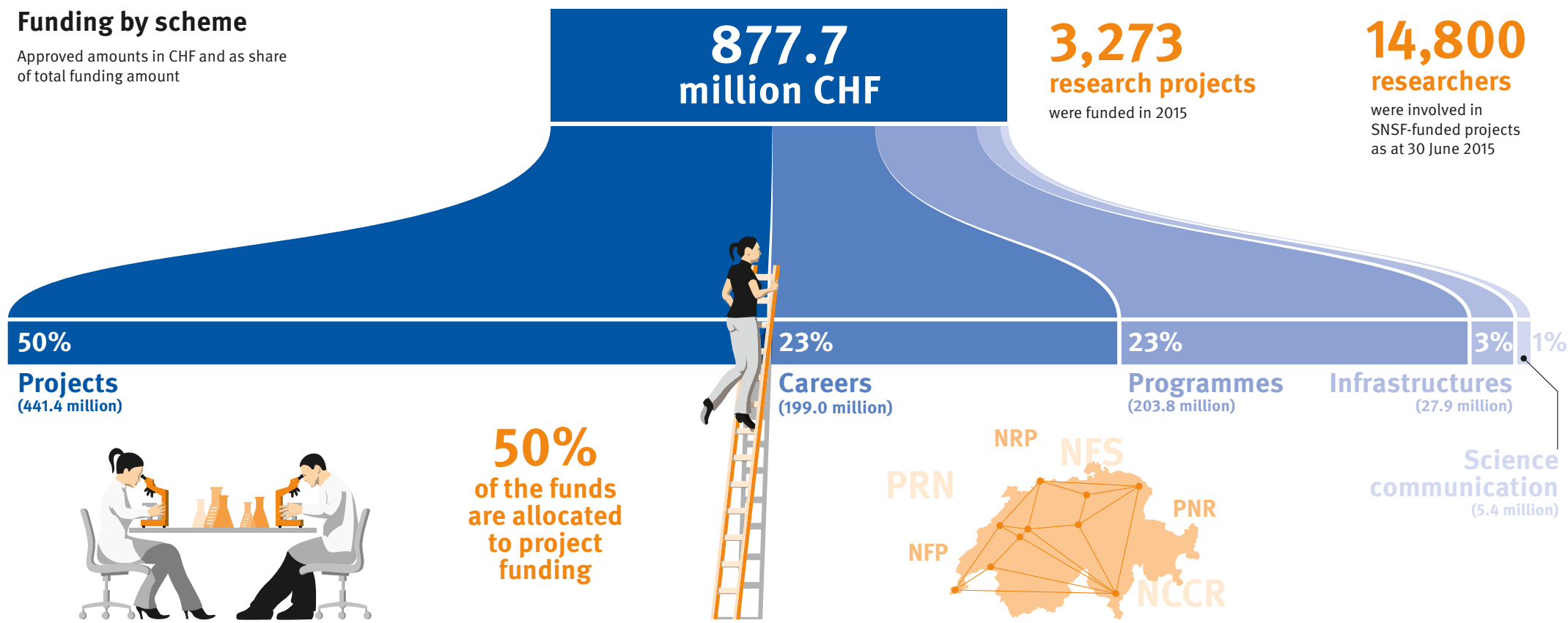
November

2015 – research funding in figures

In 2015, the Swiss National Science Foundation awarded grants worth a total of CHF 877.7 million, 3.4 percent more than in the previous year.

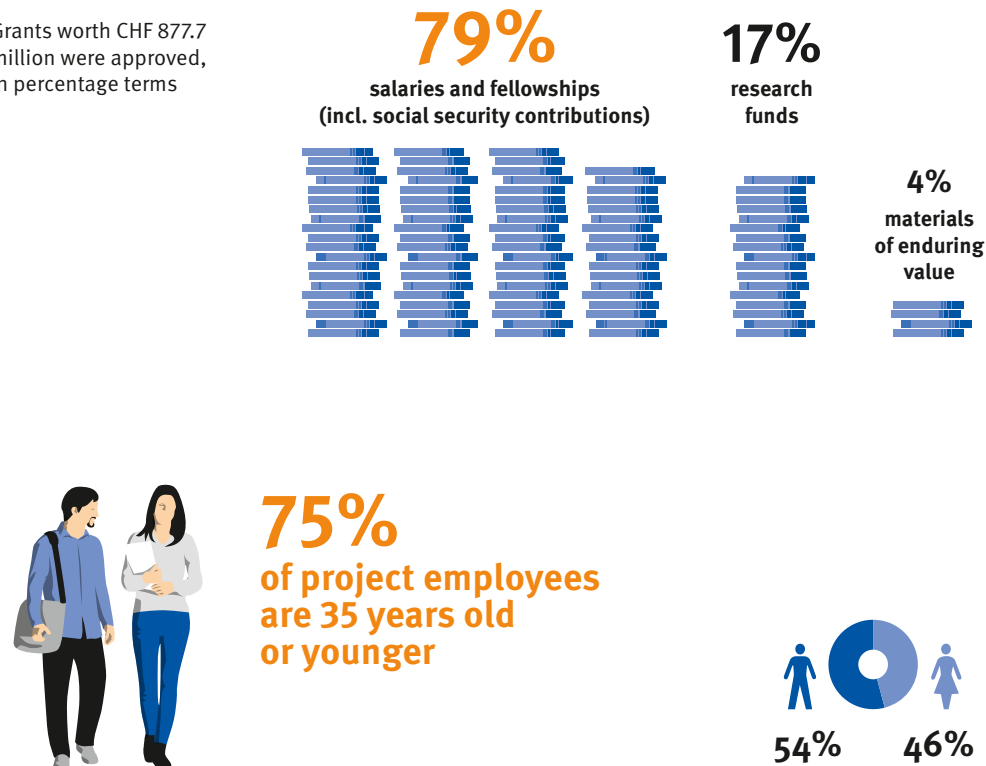
Funding by scheme

Approved amounts in CHF and as share of total funding amount



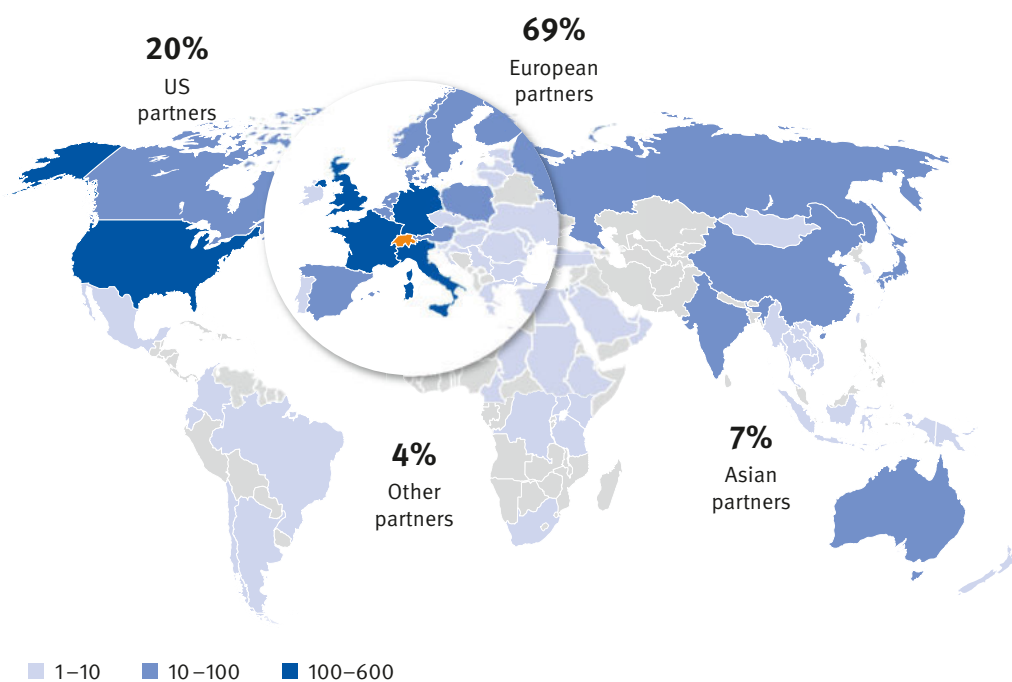
Use of funds

Grants worth CHF 877.7 million were approved, in percentage terms



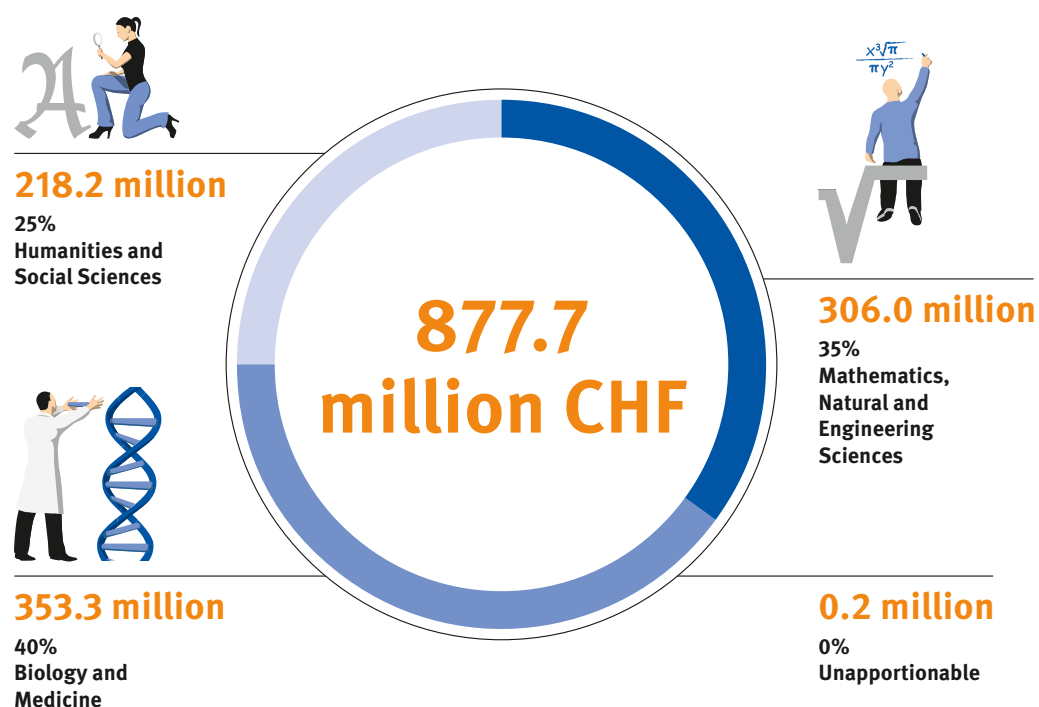
International collaborations

2,371 collaborations planned in project funding, 2015



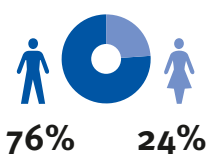
Funding by research area

Approved grants in CHF million and as share of total funding amount



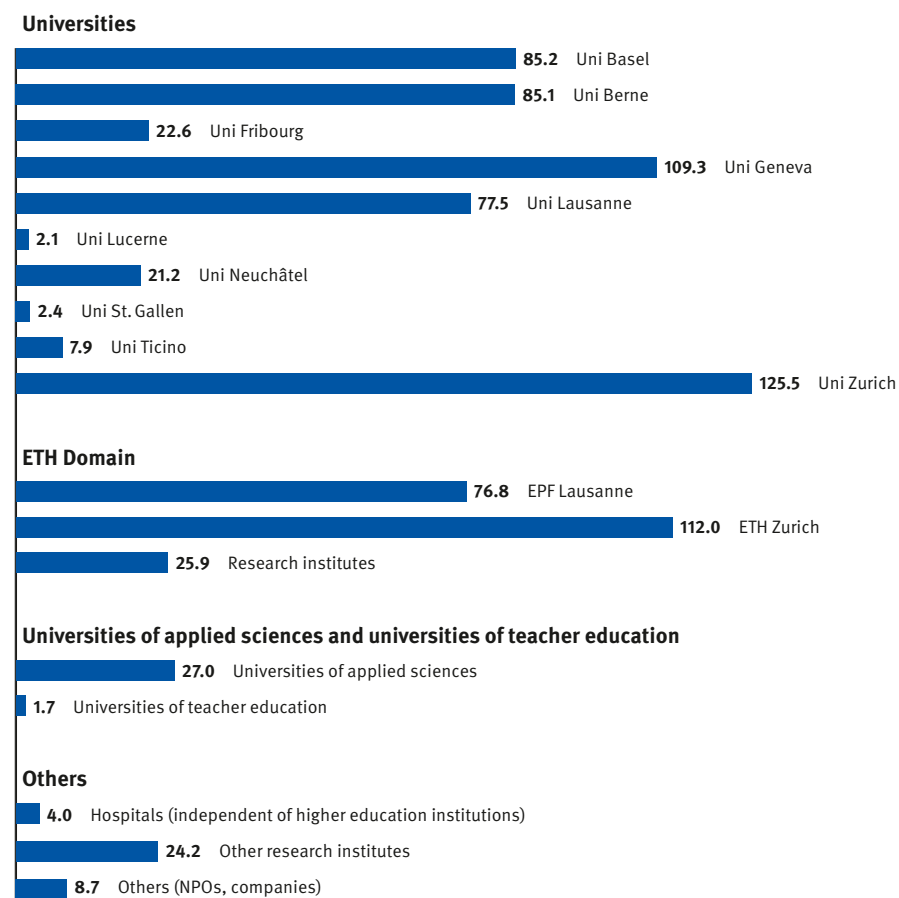
Percentage of approved funding by gender

Women submit far fewer applications than men



Funding awarded to researchers by institution

Approved amounts in CHF million (without fellowships abroad)



In addition, CHF 95.1 million were transferred to higher education institutions as overhead to cover indirect costs.

Some of the total amounts may contain rounding differences. The figures of the research funding statistics are not comparable with the figures of the financial statement (p. 28-30).

Financial statement 2015

A restatement was compiled as at 1 January 2015, based on the new accounting principles introduced in 2015 in accordance with Swiss GAAP FER. The new accounting standards made it necessary to reassess various balance sheet items. No comparisons were drawn with the previous year.

According to the Swiss GAAP FER framework concept of time limitation, the financial statement needs to be compiled based on the matching of expenses and income at the end of the period. This means that the research funding expenditure needs to be recorded and calculated correctly for the period in question.

The figures published in the financial statement are not comparable with the research funding figures (pages 26–27). The latter concern approved grants, which can only be entered in the books on the date the project is due to start.

Income statement

in CHF 1,000	2015
Federal contributions	956,730
Further contributions	22,709
Donations/bequests	3,090
Research funding expenditure	-871,242
Expenditure to cover indirect research costs (overhead)	-107,033
Scientific evaluation and governance	-9,286
Public relations	-1,965
Administration expenses & depreciation	-33,019
Other operating income	398
Other operating expenses	-309
Operating result	-39,927
Financial income	1,856
Financial expenditure	-516
Financial result	1,340
Investments in restricted funds	-334,089
Withdrawals from restricted funds	317,254
Income from restricted funds	-16,835
Ordinary income	-55,422
Non-operating income	18
Annual result	-55,404

All of the figures in this report have been individually rounded

Balance sheet

Assets

in CHF 1,000	31.12.2015	1.1.2015
Current assets		
Cash and cash equivalents	651,005	678,185
Accounts receivable	46,672	57,548
Other short-term receivables	53	283
Prepaid expenses	998	119
Total current assets	698,728	736,135
Fixed assets		
Tangible assets	13,346	13,565
Financial assets	96,572	92,233
Intangible assets	967	625
Total fixed assets	110,885	106,423
Total assets	809,613	842,558

Liabilities

in CHF 1,000	31.12.2015	1.1.2015
Short-term liabilities		
Liabilities from approved grants	246,963	240,380
Accounts payable	909	936
Other short-term liabilities	473	97
Deferred income	2,172	3,479
Restricted funds	39,623	43,519
Total short-term liabilities	290,140	288,411
Long-term liabilities		
Long-term provisions	11,000	11,000
Restricted funds	321,752	301,021
Total long-term liabilities	332,752	312,021
Total liabilities	622,892	600,432
Equity		
Foundation capital	1,330	1,330
General funds	387	387
General reserves	185,004	240,409
Total equity	186,721	242,126
Total liabilities	809,613	842,558

Additional information on the financial statement

Restricted funds

in CHF 1,000	as at 1.1.2015	Incoming resources	Outgoing resources	Transfer	as at 31.12.2015
SCOPES fund	7,628	5,295	6,821	–	6,102
r4d fund	68,202	3,418	11,776	–	59,844
NRP fund	33,247	28,477	25,406	–	36,318
NCCR fund	11,764	66,091	77,490	–	365
Fund for special programmes biology & medicine	18,202	20,285	13,696	–	24,791
Fund for Horizon 2020 back-up measures	94,000	412	29,582	–1,800	63,030
Fund for ERC transfer grants	–	20,100	–	1,800	21,900
Energy research fund	2,088	32,000	6,780	–	27,308
Other funds	18,895	152,512	144,544	–	26,863
Funds from restricted donations/bequests/agreements	90,515	5,497	1,160	–	94,852
Total restricted funds	344,541	334,087	317,255	–	361,373

Grants approved for future accounting years as at 31 December 2015

in CHF 1,000	2016	2017	2018	2019	2020	Total
Total	599,226	334,090	65,097	13,033	1,470	1,012,916

According to the current service level agreement, the federal contributions for 2016 amount to CHF 913.6 million (excl. coverage of research institutions' indirect research costs). It is not yet known how high the federal contributions will be as of 2017.

Federal contributions 2015

in CHF 1,000	2015
Basic contribution	733,462
National Centres of Competence in Research	66,000
National Research Programmes	28,000
SystemsX	12,775
Nano-Tera	4,000
Funding mandate from the Confederation	17,900
Overhead	94,000
SwissCore	593
Total	956,730

Research funding expenditure 2015

in CHF 1,000	2015
Projects	423,809
Careers	176,785
Programmes	207,285
National Centres of Competence in Research	24,715
National Research Programmes	74,990
Other programmes	87,522
International Co-operation	20,058
Infrastructures	39,459
Science communication	5,692
Programmes of third parties	42,311
Repayments	–14,329
Grants approved but unused	–9,769
Total	871,243

Administration expenses & depreciation 2015

in CHF 1,000	2015
Personnel expenses	27,337
Depreciation of tangible assets	611
Depreciation of intangible assets	821
Others	4,249
Total	33,018

Transactions with related parties

Related parties 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 2,070,000
- Approval of research grants for members of the Research Council:
CHF 25,442,000

Approval of the financial statement

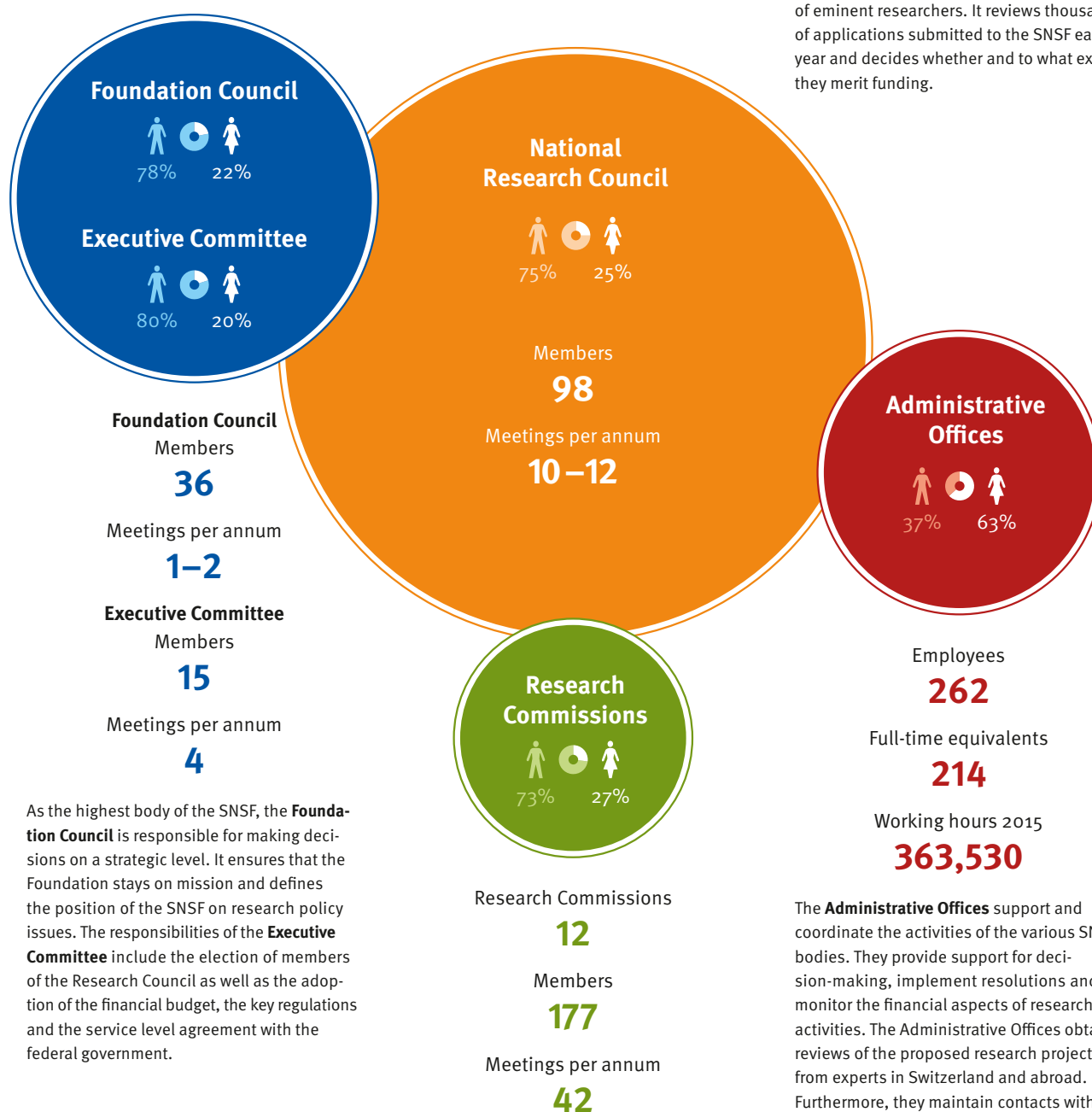
The Foundation Council approved the annual statement at its meeting on 29 April 2016.

Full version → www.snsf.ch/annualstatements

Bodies of the Swiss National Science Foundation

The bodies of the SNSF work at different levels towards a common goal: scientific evaluation and financing of the projects submitted by researchers.

The **National Research Council** is composed of eminent researchers. It reviews thousands of applications submitted to the SNSF each year and decides whether and to what extent they merit funding.



As the highest body of the SNSF, the **Foundation Council** is responsible for making decisions on a strategic level. It ensures that the Foundation stays on mission and defines the position of the SNSF on research policy issues. The responsibilities of the **Executive Committee** include the election of members of the Research Council as well as the adoption of the financial budget, the key regulations and the service level agreement with the federal government.

The university-based **Research Commissions of the SNSF** act as a link between the university and the SNSF. They are primarily responsible for awarding mobility fellowships.

The **Administrative Offices** support and coordinate the activities of the various SNSF bodies. They provide support for decision-making, implement resolutions and monitor the financial aspects of research activities. The Administrative Offices obtain reviews of the proposed research projects from experts in Switzerland and abroad. Furthermore, they maintain contacts with bodies responsible for national and international research policies.

Foundation Council

President

Gabriele Gendotti, former member of cantonal government

Vice President

Prof Felicitas Pauss

Representatives of scientific organisations

Cantonal Universities → **Basel:** Prof Edwin Ch. Constable, Deputy Prof Erich Nigg. **Berne:** Prof Christian Leumann, Deputy Prof Walter Perrig. **Fribourg:** Prof Fritz Müller, Deputy Prof Jean-Pierre Montani. **Geneva:** Prof Howard Riezman, Deputy Prof Ueli Schibler. **Lausanne:** Prof Jacques Besson, Deputy Prof Alexandrine Schniewind. **Lucerne:** Prof Martin Baumann, Deputy Prof Bernhard Rütsche (until 31.8.2015), Deputy Prof Klaus Mathis (from 1.9.2015). **Neuchâtel:** Prof Kilian Stoffel, Deputy Prof Alain Valette. **St. Gallen:** Prof Kuno Schedler, Deputy Prof Torsten Tomczak. **Ticino:** Prof Bertil Cottier, Deputy Prof Massimo Filippini. **Zurich:** Prof Thomas Hengartner, Deputy Prof Roger M. Nitsch.

Swiss Federal Institutes of Technology → **Lausanne:** Prof Stephan Morgenthaler, Deputy vacant. **Zurich:** Prof Lucas Bretschger, Deputy Prof Nicholas Spencer (until 31.8.2015), Prof Uwe Sauer (from 1.9.2015).

swissuniversities – Chamber of universities → Prof Martine Rahier, Deputy Dr Raymond Werlen (until 31.8.2015), Deputy Dr Anne Crausaz Esseiva (from 1.9.2015).

swissuniversities – Chamber of universities of applied sciences → Dr Jakob Limacher, Deputy Prof Luca Crivelli; Prof Markus Hodel, Deputy Prof Lukas Rohr; Prof Thomas D. Meier, Deputy Prof Michel Fontaine; Prof Luciana Vaccaro, Deputy Prof Ursula Blosser.

swissuniversities – Chamber of universities of teacher education → Prof Erwin Beck, Deputy Prof Luca Botturi.

ETH Board → Dr Fritz Schiesser, Deputy Privatdozent Dr Kurt Baltensperger.

Swiss Lawyers Association → Prof Regula Kägi-Diener, Deputy Prof Christian Schwarzenegger.

Swiss Society of Economics and Statistics (SSES) → Prof Klaus Neusser, Deputy Prof Volker Grossmann.

Actionuni → Georg Winterberger (until 31.3.2015), Dr Nenad Stojanovic (from 1.4.2015), Deputy Irmtraud Huber (from 1.4.2015).

Swiss Academies of Arts and Sciences → **SAHS:** Prof Simona Pekarek Doehler, Deputy Dr Markus Zürcher. **SAMS:** Prof Peter Meier-Abt, Deputy Prof Verena Briner. **SCNAT:** Prof Felicitas Pauss, Deputy Prof Thierry Courvoisier. **SATW:** Prof Ulrich W. Suter, Deputy Dr Monica Duca Widmer.

Government appointed members

Judith Bucher (VPOD), Deputy Véronique Polito (SGB); Isabelle Chassot (Director of the Federal Office of Culture), no deputy; Gabriele Gendotti (former member of cantonal government [Ticino]), no deputy; Dr Barbara Haering (former National Councillor), Deputy vacant; Dr René Imhof (F. Hoffmann-La Roche Ltd.), no deputy; Dr Wolfgang A. Renner (Synthena Ltd.), no deputy; Prof Luzius Mader (FO), Deputy Dr Werner Bussmann (FO); vacant (Pro Helvetia), Deputy Marianne Burki (Pro Helvetia); Dr Gregor Haefliger (SERI), Deputy vacant; dipl. Phys. Ulrich Jakob Looser (economiesuisse), Deputy Dr Rudolf Minsch (economiesuisse); dipl. Ing. Walter Steinlin (CTI), Deputy Dr Klara Sekanina (CTI) (until 31.3.2015), vacant (from 1.4.2015).

Executive Committee

Gabriele Gendotti (former member of cantonal government, President), Prof Felicitas Pauss (Vice President), Prof Jacques Besson, Prof Lucas Bretschger, Prof Bertil Cottier, Dr Gregor Haefliger, Prof Thomas Hengartner, Prof Christian Leumann, dipl. Phys. Ulrich Jakob Looser, Prof Fritz Müller, Prof Martine Rahier, Dr Wolfgang A. Renner, Prof Howard Riezman, dipl. Ing. Walter Steinlin, Prof Luciana Vaccaro (from 27.3.2015).

Internal Audit

ERM Solutions AG, Wil St. Gallen.

Compliance Committee

Walter Steinlin (President), Prof Klaus Müller, Prof Howard Riezman, Prof Monika Roth, Dr Dorothea Sturn.

National Research Council

President

Prof Martin Vetterli

Presiding Board → Prof Martin Vetterli. **President Division I:** Prof Paul Schubert. **President Division II:** Prof Harald Brune. **President Division III:** Prof Urs Frey. **President Division IV:** Prof Peter Chen (until 31.1.2015), Prof Katharina M. Fromm (from 1.6.2015). **President Specialised Committee Careers:** Prof Katia Saporiti (Deputy to the President of the NRC). **President Specialised Committee International Cooperation:** Prof Urs Baltensperger. **President Specialised Committee Interdisciplinary Research:** Prof Laurent Tissot (until 30.9.2015), Prof Rita Franceschini (from 1.10.2015).

Division I: Humanities and Social Sciences → Prof Paul Schubert (President); Prof Friedrich Wilkening (Vice President); Prof Claudio Bolzman, Prof Monica Budowski, Prof Corina Caduff, Prof Franz Caspar, Prof Christiana Fountoulakis (from 1.10.2015), Prof Rita Franceschini, Prof Andreas Furrer (until 30.9.2015), Prof Dario Gamboni, Prof Annelies Häcki Buhofer, Prof Alessandro Lomi, Prof Katharina Maag Merki, Prof Jon Mathieu, Prof Ioannis Papadopoulos, Prof Katia Saporiti, Prof Sabine Schneider, Prof Silvia Schroer, Prof Peter Schulz, Prof Paul Söderlind, Prof Ola Söderström, Prof Laurent Tissot, Prof Georg von Krogh, Prof Eric Widmer.

Division II: Mathematics, Natural and Engineering Sciences → Prof Harald Brune (President); Prof Samuel Leutwyler (Vice President); Prof Rémi Abgrall (from 1.10.2015), Prof Urs Baltensperger, Prof David Andrew Barry, Prof Lukas Baumgartner (until 31.3.2015), Prof Eva Bayer-Flückiger, Prof Christian Bernhard, Prof Michal Borkovec, Dr Urs Dürig, Prof Antonio Ereditato, Prof Thomas Gehrmann, Prof Christoph Heinrich (from 1.4.2015), Prof Juliane Hollender, Prof Kai Johnsson, Prof Ursula Keller, Prof Arjen K. Lenstra, Prof Simon Lilly, Prof Marcel Mayor, Prof Bradley Nelson, Prof Oscar Nierstrasz, Prof Fritz Schlunegger, Prof Lothar Thiele, Prof Antonio Togni, Prof Sara van de Geer (until 30.9.2015), Dr Marco Wieland.

Division III: Biology and Medicine → Prof Urs Frey (President); Prof Dominique Soldati-Favre (Vice President); Prof Hugues Abriel, Prof Markus Affolter, Prof Beatrice Beck Schimmer, Prof Chris Boesch, Prof Sebastian Bonhoeffer, Prof Thierry Calandra (until 30.9.2015), Prof Dominique De Quervain (from 1.10.2015), Prof Michael Detmar, Prof Marc Yves Donath, Prof Matthias Egger, Prof Markus Fischer, Prof Cem Gabay (from 1.10.2015), Prof Stephan Grzesiek, Prof Huldrych Fritz Günthard, Prof Michael N. Hall, Prof Markus Hermann Heim, Prof Christoph Hock (until 31.3.2015), Prof Petra Hüppi, Prof Beat Keller, Prof Laurent Keller, Prof Christian Lüscher, Prof Andreas Lüthi, Prof Anita Rauch, Prof Walter Reith, Prof Markus Stoffel, Prof George Thalmann, Prof Bernard Thorens, Prof Didier Trono, Prof Hanns Ulrich Zeilhofer, Prof Rolf Zeller.

Division IV: Programmes → Prof Peter Chen (President until 31.1.2015), Prof Katharina M. Fromm (President from 1.6.2015); Prof Frédéric Varone (Vice President); Prof Regina Elisabeth Aebi-Müller, Prof Kay W. Axhausen, Prof Nina Buchmann, Prof Susanna Burghartz, Prof Fabrizio Butera, Prof Christoph Dehio, Prof Friedrich Eisenbrand, Prof Fontcuberta i Morral (from 1.10.2015), Prof Dominique Foray, Prof Alexander Grob, Prof Stefanie Hellweg, Prof Michael O. Hottiger, Prof Isabelle Mansuy, Prof Katharina Michaelowa, Prof Philipp Rudolf von Rohr, Prof Frank Scheffold, Prof Jürg Ulrich Steiger, Prof Dirk van der Marel.

Specialised Committee Careers → Prof Katia Saporiti (President); Prof Michal Borkovec (Vice President); Prof Eva Bayer-Flückiger, Prof Beatrice Beck Schimmer, Prof Nina Buchmann, Prof Susanna Burghartz, Prof Markus Fischer, Prof Petra Hüppi, Prof Fritz Schlunegger, Prof Peter J. Schulz.

Specialised Committee International Cooperation → Prof Urs Baltensperger (President); Dr Marco Wieland (Vice President); Prof Kay W. Axhausen, Prof Monica Budowski, Prof Markus Heim, Prof Jon Mathieu, Prof Katharina Michaelowa, Prof Dominique Soldati-Favre, Prof Jürg Ulrich Steiger.

Specialised Committee Interdisciplinary Research → Prof Laurent Tissot (President until 30.9.2015), Prof Rita Franceschini (President from 1.10.2015); Prof Alessandro Lomi (Vice President); Prof Lucio Baccaro, Prof David Andrew Barry, Prof Matthias Egger (from 1.10.2015), Prof Antonio Ereditato, Prof Alexander Grob (from 1.4.2015), Prof Jana Koehler, Prof Andreas Lüthi, Prof Sylvain Malfroy, Prof Simone Munsch, Prof Walter Reith, Prof Philipp Rudolf von Rohr (until 31.3.2015), Prof Ian Sanders, Prof Francesco Stellacci, Prof George Thalmann (until 30.9.2015), Prof Dirk van der Marel, Prof Christoph Zollikofer.

Commission on Gender Equality in Research Funding → Prof Dr Susan M. Gasser (President); Prof Dr Thomas Hinz, Prof Dr Nicky Le Feuvre, Gary Loke, Patricia Schulz, Prof Dr Anna Wahl, Maya Widmer.

Commission on Research Integrity → Prof Dr iur. Dr h.c. Kurt Seelmann (President); Prof Andreas Furrer (Vice President until 22.6.2015), Prof Dr iur. Matthias Mahlmann (Vice President from 23.6.2015); Prof Beatrice Beck Schimmer, Dr Martin Christen, Dr Patricia Jungo (from 1.9.2015), Dr Liz Kohl, Prof Katharina M. Fromm, Marie Guyaz del Aguila, Prof Michael Hall, Dr Marjory Hunt, Prof Arjen K. Lenstra, Dr Véronique Planchamp, Dr Juliette Pont (until 31.8.2015), Prof Ian Sanders, Elisabeth Schenker, Prof Dominique Soldati-Favre, Beatrice Tobler-Miescher, Dr Martin von Arx (from 1.4.2015).

Further information → www.snsf.ch/nrc

Research Commissions

Presidents of the Research Commissions at Swiss institutions of higher education → **Basel:** Prof Primo Schär. **Berne:** Prof René Bloch. **Fribourg:** Prof Martin Wallmeier. **Geneva:** Prof Rita Trigo Trindade (until 31.7.2015), Prof Pierre Barrouillet (from 1.8.2015). **Lausanne:** Prof Martin Preisig (from 1.1.2015). **Lucerne:** Prof Martin Baumann. **Neuchâtel:** Prof Pascal Felber. **St. Gallen:** Prof Michael Lechner. **Ticino:** Prof Rico Maggi. **Zurich:** Prof Daniel Wyler (until 31.1.2015), Prof Christoph Hock (from 1.2.2015). **EPF Lausanne:** Prof Benoît Deveaud-Plédran. **ETH Zurich:** Prof Nicholas Spencer (until 31.8.2015), Prof Uwe Sauer (from 1.9.2015).

Administrative Offices

Executive Management → Director: Dr Daniel Höchli. Deputy Director: Dr Angelika Kalt. Vice Director: Rosemarie Pécaut.

Heads of Staff Services → **Executive Staff/Legal Department:** Inge Blatter. **Communication:** Jürg Dinner (until 30.11.2015), Christophe Giovannini (from 9.11.2015). **Gender Equality in Research Funding:** Maya Widmer

Heads of Research Funding divisions → **Division I, Humanities and Social Sciences:** Dr Ingrid Kissling-Näf. **Division II, Mathematics, Natural and Engineering Sciences:** Dr Tristan Maillard. **Division III, Biology and Medicine:** Dr Ayşim Yılmaz. **Division IV, Programmes:** Dr Dimitri Sudan. **Division Careers:** Dr Marcel Kullin. **Division Interdivisional Co-ordination and Cooperative Research (CoRe):** Dr Angelika Kalt. **Division International Co-operation/SwissCore:** Dr Jean-Luc Barras.

Heads of Central Services → Director: Rosemarie Pécaut. **Human Resources:** Karim Errassas (from 12.10.2015). **Strategic Planning and Controlling:** Dr Katrin Milzow. **Finance:** Markus König. **IT Infrastructure Services:** René Liechti. **IT Business Services:** Mario Andenmatten. **Logistics:** Jesper Ott.

Status as at 31.12.2015

Abbreviations and glossary

Actionuni

Organisation representing young researchers as well as non-professorial teaching staff associations of the universities and the ETHs nationally and internationally

CTI

Commission for Technology and Innovation of the federal government of Switzerland

EAER

Federal Department of Economic Affairs, Education and Research

economiesuisse

Association of Swiss companies: largest umbrella organisation representing Swiss businesses

ERA-NET

Scheme introduced by the 6th European Framework Programme for coordinating research activities

ERC

European Research Council

ERI sector

Institutions, companies and offices in the education, research and innovation domain

ETHZ / EPFL

Swiss Federal Institutes of Technology (Zurich and Lausanne)

FOJ

Federal Office of Justice, Switzerland

Horizon 2020

EU framework programme for research and innovation 2014–2020

MHV

Marie Heim-Vögtlin grants (SNSF funding for women)

NCCR

National Centre of Competence in Research, Switzerland

NRP

National Research Programme, Switzerland

Overhead

Contribution to indirect costs of SNSF-funded projects

r4d programme

Swiss Programme for Research on Global Issues for Development

SAHS

Swiss Academy of Humanities and Social Sciences

SAMS

Swiss Academy of Medical Sciences

SATW

Swiss Academy of Engineering Sciences

Science Europe

Umbrella organisation of national research organisations in European countries

SCNAT

Swiss Academy of Sciences

SDC

Swiss Agency for Development and Cooperation

SERI

State Secretariat for Education, Research and Innovation

SGB

Swiss Federation of Trade Unions

SwissCore

Contact Office for European Research, Innovation and Education: SNSF office in Brussels, co-financed by SERI

swissuniversities

“swissuniversities”, the rectors’ conference of Swiss higher education institutions, was founded after the entry into force of the Higher Education Funding and Coordination Act (HFKG) on 1 January 2015. It comprises the Rectors’ Conference of the Swiss Universities (CRUS), the Rectors’ Conference of the Swiss Universities of Applied Sciences (KFH), the Swiss Conference of Rectors of Universities of Teacher Education (COHEP). swissuniversities works to strengthen and enhance collaboration among Swiss institutions of higher education and promotes a common voice on educational issues in Switzerland.

TBS

Temporary Backup Schemes: SNSF Starting Grants and SNSF Consolidator Grants to compensate for ERC funding in 2014

Tenure track assistant professorship

Assistant professorship with an option to make the position permanent in the case of outstanding performance (tenure-track procedure)

VPOD

Association of Swiss Civil Servants

Publishing information

Published by

Swiss National Science Foundation
Wildhainweg 3, P.O. Box
CH-3001 Berne | Switzerland
+41 (0)31 308 22 22
com@snsf.ch | www.snsf.ch

Editing and production

Communication division, Christophe Giovannini (Head), Project management: Helen Zwahlen-Jaisli/ Alan Knaus

Concept and content: Stefan Bachmann, Jean-Luc Barras, Mirko Bischofberger, Daniela Büschlen, Nathalie Cottet, Gabriele Gendotti, Urs Hafner, Daniel Höchli, Ingrid Kissling-Näf, Angelika Kalt, Alan Knaus, Markus König, Marcel Kullin, Andrea Landolt, Alexandra Lovey, Tristan Maillard, Andi Michel, Christian Mottas, Katrin Milzow, Veronika Riesen, Daniel Saraga, Daniel Sebastiani, Sandra Schori, Martin Vetterli, Martin von Arx, Maya Widmer, Aysim Yılmaz, Helen Zwahlen-Jaisli

Production: Veronika Riesen

Translation

Corinne Ammann, Omar Solanki

© Concept/design/realisation

Linkgroup AG, Zurich
www.linkgroup.ch

Printing/distribution

Printlink AG, Zurich
www.printlink.ch

Paper

Cover: Z-Offset Rough 200 g/m²
FSC Mix SQS-COC-100142
Contents: Z-Offset Rough 160 g/m²
FSC Mix SQS-COC-100142

Number of copies printed: 1,200 in German |
800 in French | 1,300 in English

ISSN 1424-0289

© 2016 – Swiss National Science Foundation,
Berne

Image credits

Zeljko Gataric, Zurich
www.gataric-fotografie.ch
(front pages/picture series p. 4, p. 20–23,
p. 36–37)
www.sciencephoto.com (front pages/picture
series)

Other images:

SNSF/Severin Nowacki; Koldby.com;
Körber-Stiftung/Friedrun Reinhold; SNSF/Severin
Nowacki; Fotolia/R. Roulet; SNSF/Benjamin
Lehmann, UniL; Fotolia/atScene; Fotolia/Digital-
press; SNSF/Veronika Riesen; Fotolia/Eisenhans;
SNSF/Daniel Rihs (content, from left to right)

Fotolia/sonjanovak (p. 7); SNSF/Severin
Nowacki (p. 9 left); SNSF/Marco Finsterwald
(p. 9 right); SNSF (p. 10); SNSF/Jan Beutler,
NCCR MICS (p. 11 left); Fotolia/Digitalpress
(p. 11 right above and below); courtesy of Ursula
Keller, Fabrizio Butera, Franz Caspar, courtesy
of Lea Schütz-Cohen (Beatrice Beck-Schimmer)
(p. 12–13); SNSF (p. 14 above); HFSJG (p. 14 centre);
SNSF/Daniel Rihs (p. 14 below); Koldby.com
(p. 15); UKBB Business (p. 16 above); Fotolia/
Eisenhans (p. 16 centre); SNSF/Daniel Rihs
(p. 17); Körber-Stiftung/Friedrun Reinhold (p. 18);
Fotolia/Anterovium (p. 19 above); SNSF/Benjamin
Lehmann, UniL (p. 19 below); SNSF/Severin
Nowacki, SNSF/Andreas Greber, SNSF/Mauro
Mellone, SNSF/Valérie Chételat (p. 24–25 from
left to right)

Further information

General information

→ www.snsf.ch



Research magazine Horizons

→ www.snsf.ch/horizons

Research database P³

(approved grants since 1975)

→ www.snsf.ch/p3/en

Details concerning the performance of a risk assessment

In fiscal year 2015, the 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. The assessment of the SNSF found no significant risk for the foreseeable future that would necessitate an adjustment in the book values of the Foundation's assets and liabilities.





→ What's the opinion of non-voters?

The long-term voting study “Selects” gathers the views and motives of voters and politically interested citizens; in addition, it examines the voice of non-voters, a section of the population that is rarely heard. “Selects” is run by the Swiss Centre of Expertise in the Social Sciences (FORS) in Lausanne. FORS documents and analyses social change and the living conditions of the Swiss population.

The Swiss National Science Foundation has supported FORS since 2008, re-evaluating the centre positively in 2015. → www.forscenter.ch

