



SWEDISH FOUNDATION for  
STRATEGIC RESEARCH

# Annual Report 2019



SSF REPORT NO 36

Message from the CEO

Message from the Chair

Distribution of Grants

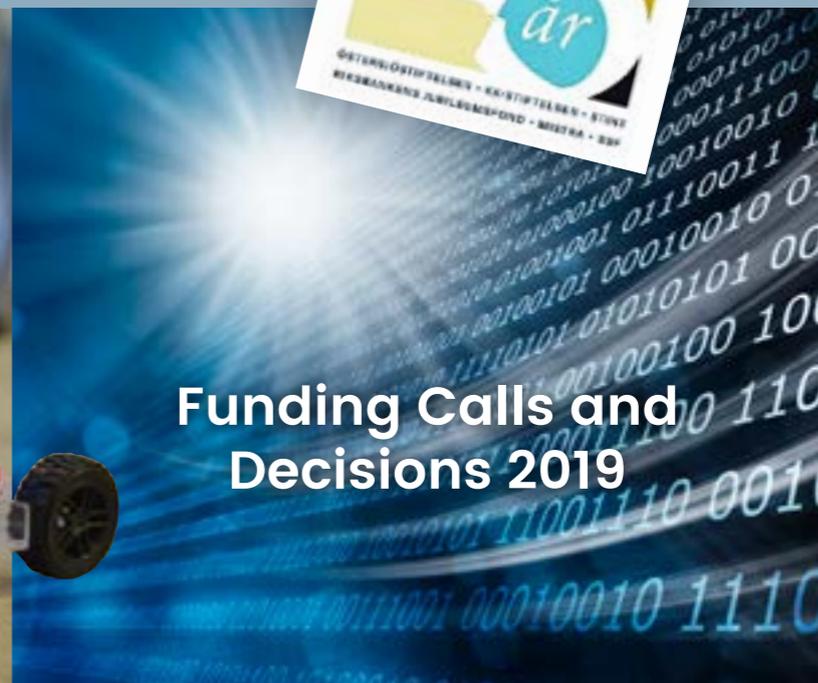
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# Message from the CEO

– We are strengthening Sweden’s competitiveness through application-inspired basic research



Strate,gi,  
Greek stratēgi'a  
'competitive  
advantage'

PHOTO: SSF

**In 2019, SSF – the Swedish Foundation for Strategic Research, spent SEK 670 million in support of research relevant to society in 330 excellent projects both within and outside academia.**

My aim is for the **Foundation to operate strategically on several levels**. SSF does that by prioritising research areas, developing programme formats, creating key technologies, encouraging cooperation/exchange between actors and sectors, and through various targeted measures. We choose the new over more of the same. The watchword is interdisciplinary.

Our **call for research centres within sustainable development** is one example of how the research portfolio has been renewed. This includes antibiotics, pandemics, plant biotechnology, fuel cells and nuclear power. That is how we contribute to the objectives of the UN 2030 Agenda for health, food security and carbon-free energy conversion.

During the past year, SSF has also launched the **Computing and Hardware Infrastructure (CHI)** programme. This integrates hardware with programming. The idea is for data to be handled efficiently both at source and where it is needed. Sweden has lost its previously prominent role within micro-



- ▶▶▶ electronics, which is why it is strategically important to strengthen such hardware-related research, as well as for the EU to achieve digital sovereignty.

**In addition to digitalisation, society is rapidly transforming through breakthroughs in research within bio and materials sciences.** The Foundation continues to be a driving force in these areas

For a small country like Sweden, internationalisation is important. However, I believe that the mobility of researchers is too low in our country. Hence, the Foundation has established **SSF Sweden-Taiwan Collaborative Research Projects**. This consolidates the Foundation's strong links to East Asia, where we already have bilateral cooperation with Japan and South Korea. All these three democracies are prominent within technology and education, and constitute important markets for Swedish business.

A new addition to our efforts is the **SSF Sabbaticals** programme, which enables researchers to enrich themselves abroad in new fields of science or application.

I would also like to highlight the Foundation's **SwedNess Graduate School in neutron scattering**. Having received a positive mid-term evaluation, this will now accept another group of twenty PhD stu-



PHOTO: ISTOCK

dents. This will give Sweden a competitive edge when the EES – European Spallation Source in Lund become operational in a few years' time.

**Lars Hultman**



# Message from the Chair

## – SSF makes Swedish research stronger



“The purpose of the Foundation dictates that our efforts should be strategic.”

PHOTO: SSF

**2019 was another exciting year for SSF – the Swedish Foundation for Strategic Research.** It feels that way every year, but for 2019 it feels especially justified, with strong programmes benefitting research and scientists in Sweden.

Publicly funded research may never have been more important for the development of society. At the same time, the role of SSF in the Swedish research system has never been more important than it is today.

**“Long-term, coordinated and dialogue-based university governance”** is the title of a report presented on 1 February 2019. This is the eagerly awaited final report from the Steering and Resources Study (Strut), set up in 2017. The study was very much looked forward to, but its report has been criticised on several points, leading to much debate. Also SSF has highlighted shortcomings in the investigation, as well as in some of the proposals. It is currently unclear how this study will influence the Swedish research system and the research policy bill, announced for submission later in 2020.

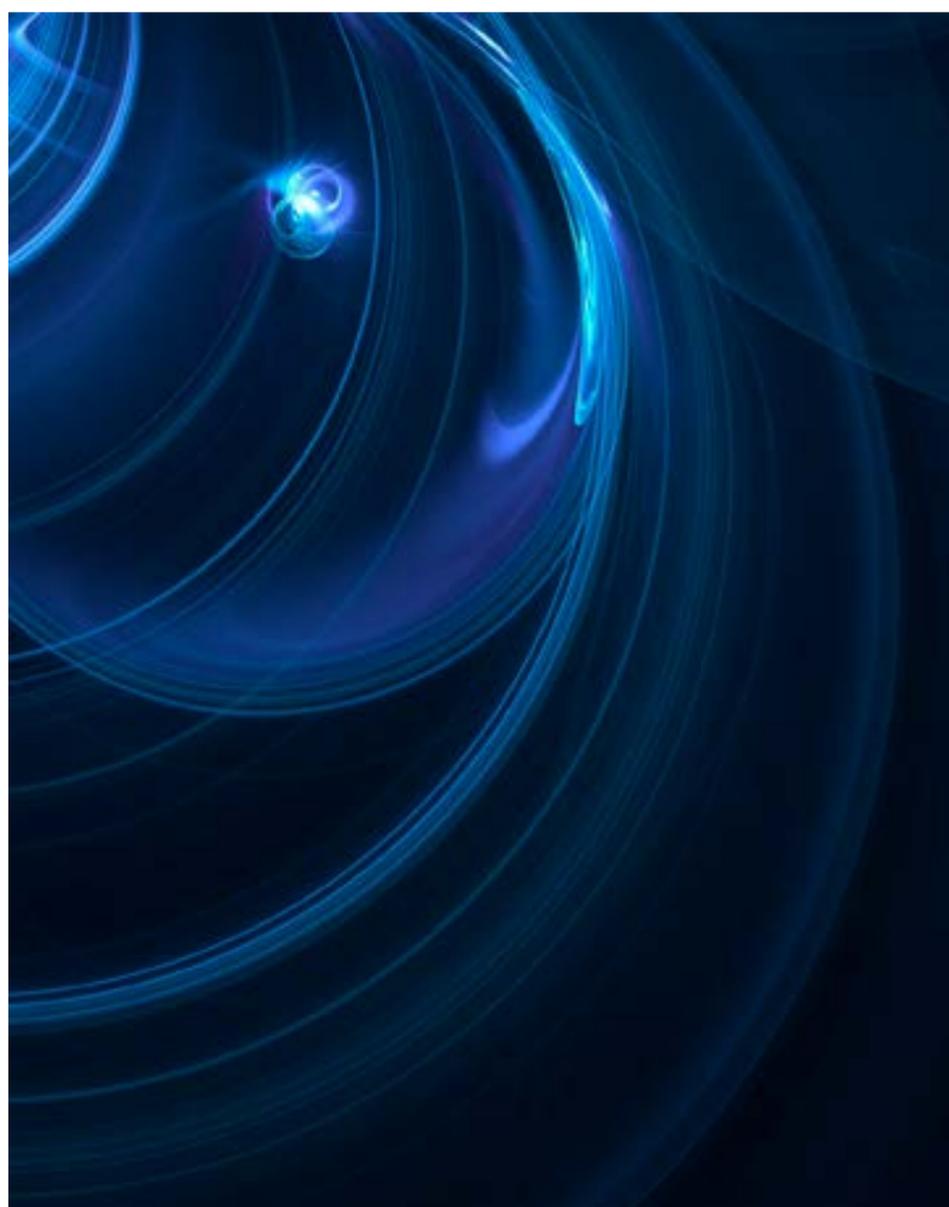
**The Foundation’s purpose** dictates that our efforts should be strategic. We can support both basic research and more applied activities within identified strategic areas. The research areas that we should cover include the natural sciences, technology and medicine. Currently, we have chosen to



▶▶▶ spend most of the funding on multiannual research programmes where proposals are made in competition with others. Typically, the projects supported within each programme are relatively long-term and large. We have chosen to organise the programmes into three strategic areas: (i) information and communication technology, (ii) materials science, and (iii) life sciences and bioengineering.

As well as supporting strategic research areas through our programmes, we also provide individ-

PHOTO: DOUGLAS JAMES/PIXABAY



ual support, for example, in the extensive programme for leadership development within **Future Research Leaders**, and in various efforts designed to support strategic mobility in the research system. In 2019, we made an exciting broad call for research proposals aimed at supporting the sustainability objective of the UN 2030 Agenda.

**A new Graduate School within** neutron science was launched during the year, and I note that graduate schools dominated SSF's efforts when the Foundation was in its infancy, 26 years ago. This shows that SSF has the ability to find both the areas and the formats to achieve the Foundation's objectives, and that these can be accessed when they are needed.

SSF's current research strategy covers the period from 2017 to 2021. Hence, a new strategy will be developed during 2020. There are a number of ideas. Much discussed is the idea to further strengthen SSF's ability to support strategic interdisciplinary research. I believe that is a trend already visible in current programmes and a strategic direction that henceforth could be made even clearer.

**SSF makes Swedish research stronger** and contributes to promote the competitiveness of Swedish business in the long term. These are the roles and the responsibility we are happy to carry and to implement with great enthusiasm.

**Dr. Björn O. Nilsson**



# January 2019

**Together with the Swedish Research Council and Vinnova**, SSF launches a short film featuring ESS – European Spallation Source, which will become the world’s most powerful neutron source. SSF is funding the SwedNess programme for PhD students, with SEK 220 million during the period 2016–2021.

Gergana Hamberg joins SSF as scientific secretary, responsible for materials science and the FFL leadership programme.



PHOTO: ESS

The European Spallation Source research facility in Lund.



# February 2019

PHOTO: CREO



**SSF celebrates 25 years.** To draw attention to this, SSF has established the Anniversary Call for **SSF Sabbaticals**, inviting applicants who wish to spend a year abroad, broadening their research skills.

SSF has produced research films featuring **FFL – Future Research Leaders**. These are introduced over the spring months.

Over long distances, DC cables will transport current more efficiently than AC cables. In order to increase the use of DC cables, the insulation around the cables needs to be improved. This is what Christian Müller (in the photo) and his research group at Chalmers University of Technology are developing.

Jonas Bjarne, scientific secretary responsible for ICT, succeeds Olof Lindgren, who is retiring.



# March 2019

PHOTO: ISTOCK



A new edition of the **report “Crook, sick or relative – who should have your DNA”**, which has been a success story in schools, is published with a supplementary chapter focused on the latest advances in plant genetics.

More films featuring **FFL – Future Research Leaders** are launched; they focus on everything from the importance of snot and slime to new insulating materials for power cables, cell therapies, materials, and much more.



# April 2019

PHOTO: V&A



**For the seventh consecutive year** SSF together with foundations and research councils organises **Forum for Research Communication**.

The one-day Forum is packed with interesting lectures and workshops, primarily targeted at university communicators. The conference is arranged to concur with the International Science Festival in Gothenburg.

Karin av Klintberg, producer of among other things *The History Eaters* (*Historieätarna*), was one of the keynote speakers at the Forum for Research Communication.



# May 2019

PHOTO: ANDERS RISTENSTRAND



## **Time again for the C Awards gala evening.**

C Awards is a visualisation project competition for students organised by Visualization Center C in Norrköping. SSF is the main sponsor.

SSF takes part in the Swedish Royal Science Academy's seminar "How do we assess scientific quality?"

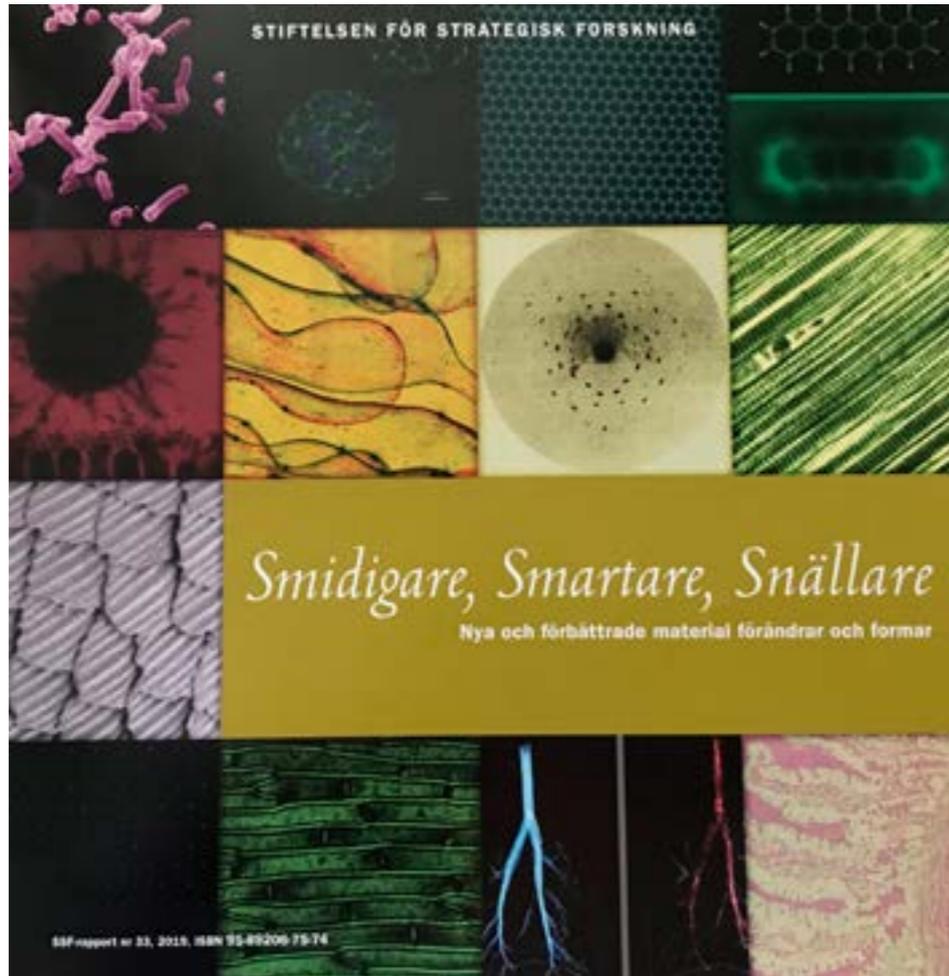
The SSF Materials Science programme is being evaluated mid-term.

From left: Patric Ljung, Agnes Heppich, Lovisa Hassler, and Jonas Bjarne.



# June 2019

PHOTO: SSF



**“Smoother, smarter, kinder – New and improved materials provide shape and change”**, is the title of SSF’s new report. During the autumn, thousands of copies were ordered by many school teachers via “Utbudet” (supplying printed copies) and “Gratis i skolan” (free digital copies for schools).

The 2019 edition of “Research of the Future” is published just in time for the Almedalen Week and features on the front the KTH researcher Carlota Canalias and SSF CEO Lars Hultman. It is distributed with the financial newspaper Dagens Industri, in Almedalen, to all universities, and as pdf in social media and on the web.

Vivianne Liliansdotter, Registrar and Secretary to the CEO joins SSF. She succeeds Monica Andersson, who is retiring.



# July 2019

**“They got 40 billion – what did we get?”** What do we actually get for the research funding?” This is the theme of a packed seminar arranged by SSF and PRV (the Swedish Intellectual Property Office) in Almedalen. The seminar puts the spotlight on the universities’ position on utilisation. What is the social benefit of research? How to measure it? What incentives are there for scientists to utilise the research? Researchers, innovation strategists and members of the Swedish parliament took part in the debate. Broadcast live, the seminar **can be viewed on SSF’s YouTube channel.**

SSF’s Governing Board starts a new term. Six of its members are new and four remain from the previous three year term.

Lotta Thörn takes up her position as Financial Manager. She succeeds Gunnel Rådström, who is retiring.



PHOTO: SSF



# August 2019

PHOTO: SSF



From left; Lars Hultman, Liang-Gee Chen, Minister of Research Taiwan, Dan Larhammar, Swedish Royal Academy of Science (KVA), and Hsinya Huang, responsible for Taiwan's international research collaboration.

**SSF allocates SEK 200 million** to a new research programme called **SSF Agenda 2030 Research Centers on Future Advanced Technology for Sustainability**, abbreviated ARC. Areas of specific interest are plant biology, nuclear power, antibiotics, pandemics, and hydrogen and fuel cells.

The Foundation decides on six grants within the **MED-X** programme, where medicine meets IT, electronics and materials science.

An agreement regarding **research exchange between Taiwan and SSF** is signed by Lars Hultman together with Taiwan's Minister of Research and Technology.



# September 2019

PHOTO: SSF



**In order to encourage and stimulate** the utilisation of research results, SSF has instituted a Utilisation Award. The 2019 winner is Maria Strømme, who is awarded SEK 100,000 for the development

of paper batteries. The runners-up, each awarded SEK 75,000, are Håkan Engqvist for bio concrete and Carlota Canalias for high-power lasers.

SSF is organising a seminar on utilisation together with scientists in receipt of framework grants within the **SSF Materials Technology** programme. This also focused on utilisation in addition to the participants presenting their research results. Watch the film [here](#).

A discussion followed about how far into the commercialisation process it is reasonable to expect researchers to venture. Many had already, three years after the start of their projects, applied for a patent or initiated assessments of the commercialisation potential.



# October 2019

**Together with its sister foundations** Mistra (The Swedish Foundation for Strategic Environmental Research), The Knowledge Foundation (KK), The Foundation for Baltic and East European Studies, Riksbankens Jubileumsfond (RJ) and Stint (The Swedish Foundation for International Cooperation in Research and Higher Education), SSF celebrates 25 years with a seminar at the Royal College of Music in central Stockholm. Among other things, Klas Eklund recounted how the Employee

Funds were transformed into research foundations.

SSF allocates SEK 200 million to the call for **SSF-CHI: Computational Power and Hardware for ICT infrastructures**. The call is part of the Foundation's coordinated initiative for strategic research in ICT – Information and Communication Technology.

ICA 7 makes a study trip to Brussels, Amsterdam and Delft. A day-by-day account of the trip is available in **Vlogs**.

COLLAGE: SSF



# November 2019

PHOTO: SSF



**SSF has two programmes for mobility between sectors** – Strategic Mobility and Industry PhD students. The programmes are followed up in the report “Analysis of Intersectoral Mobility”, compiled by the analysis company Technopolis. The report is presented at an all-day seminar “Move On”. Conclusions and the researcher’s own experiences were interspersed with discussions and mingling.

It was also time for the Systems Biology Programme Conference, where eight projects had shared SEK 300 million.



# December 2019

**Lars Hultman participates in a seminar** at the Royal Swedish Academy of Engineering Sciences (IVA) – with Akira Yoshino, the 2019 Nobel Laureate in Chemistry. SSF is the co-organiser of the seminar.

The Governing Board decides to extend SwedNess by SEK 120 million. This is a graduate school for neutron scattering, designed to strengthen Swedish competence and research opportunities at ESS – European Spallation Source, which is being built outside Lund.

Akira Yoshino is the fourth person from the left.



PHOTO: IVA



# Funding Calls and Decisions 2019

## New calls for proposals

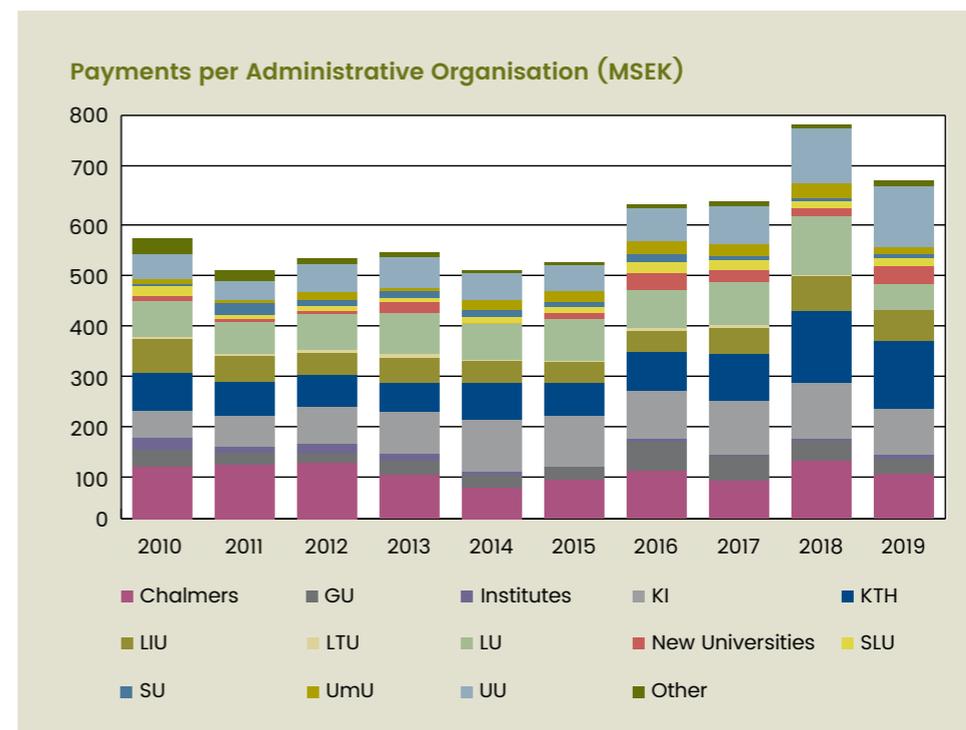
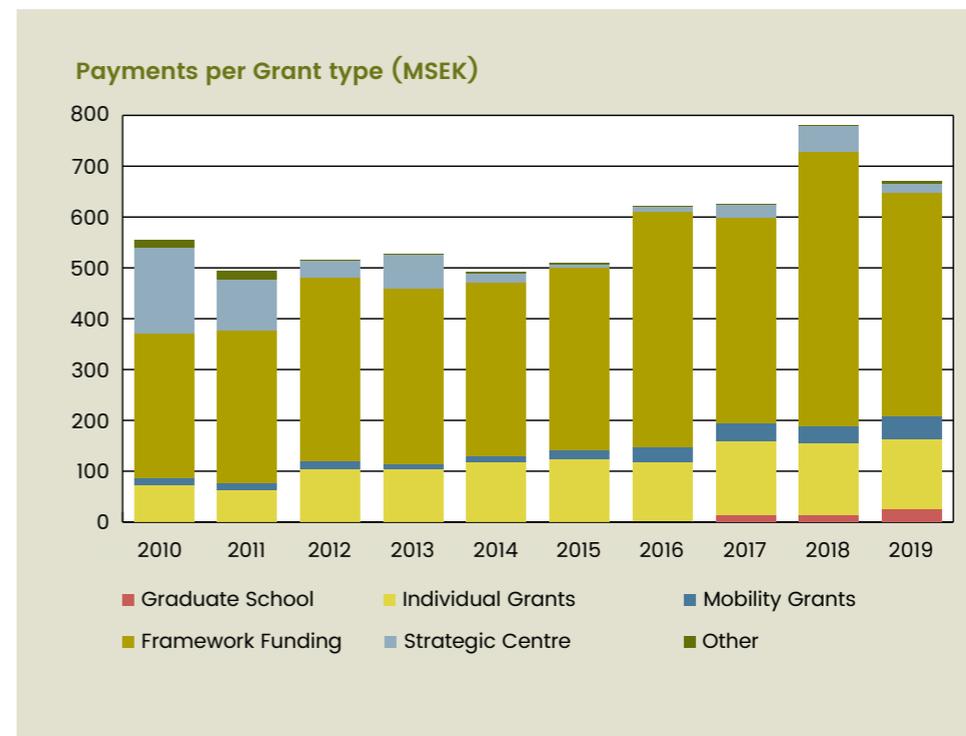
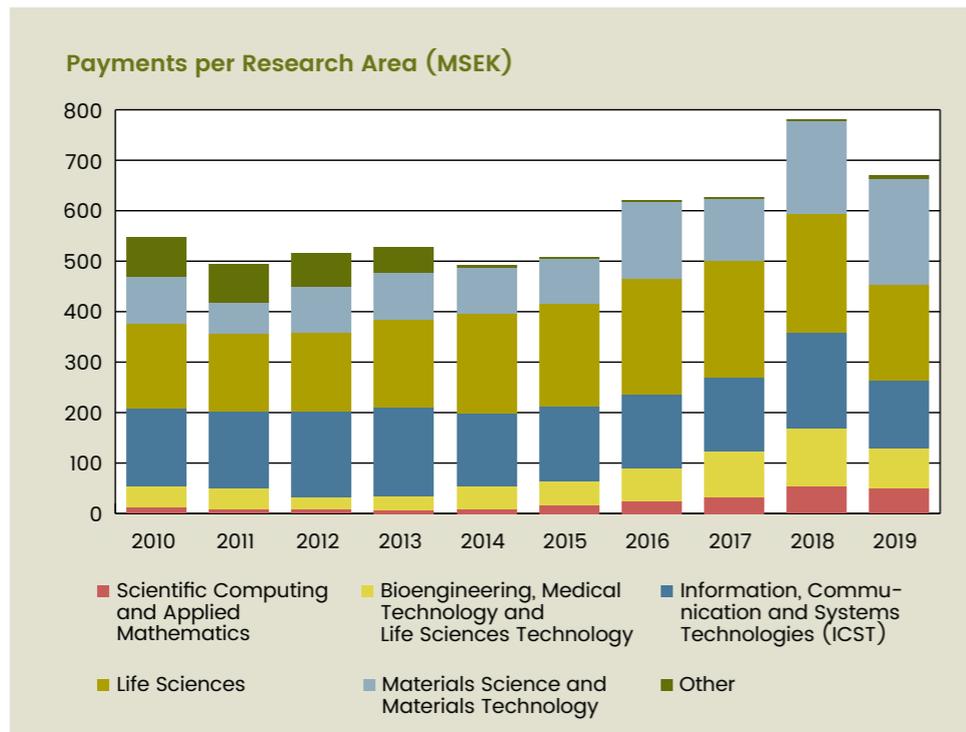
<b>February</b>	Industry PhD students 2019 (ID19)
	SSF Sabbaticals (SAB19)
<b>April</b>	Strategic Mobility 2019 (SM19)
<b>June</b>	Research collaboration with Taiwan (STP19)
	SSF Agenda 2030 Research Centers 2019 (ARC19)
<b>October</b>	Computing power and hardware for ICT infrastructures (CHI19)

## Funding Decisions

<b>August</b>	Research Institute PhD students 2018 (FID18)
	Med-X (RMX18)
<b>October</b>	SSF Sabbaticals (SAB19)
	Industry PhD students 2019 (ID19)
<b>December</b>	Strategic Mobility 2019 (SM19)
	SwedNess Continuation Grant (GSn15)

# Distribution of Grants

The graphs show grants by SSF during the past ten years according to type of grant, research area and university.



## 2019 Research Films

**A number of films featuring research supported by SSF are produced in 2019. The final two FFL (Future Research Leaders) films, featuring Sofia Skrtic and Anna Martinelli, are made in the spring, followed by the release and broadcast of all 20 FFL films. A film documenting the history of SSF and its sister foundations is released in conjunction with the 25th anniversary celebrations in October, and three Vlog films are posted featuring the ICA-7 study trip to Brussels and Amsterdam.**



**The Fuel Cell – the future solution for transport featuring new materials!** Watch the film with Anna Martinelli and her research group at Chalmers.



**Newly discovered protein promises cure for osteoporosis!** Watch the film featuring Sofia Skrtic and her research group at the Sahlgrenska Academy and Gothenburg University.



**Biodiversity is as important as climate change!** Watch the film with Alexandre Antonelli and researchers at Gothenburg University.

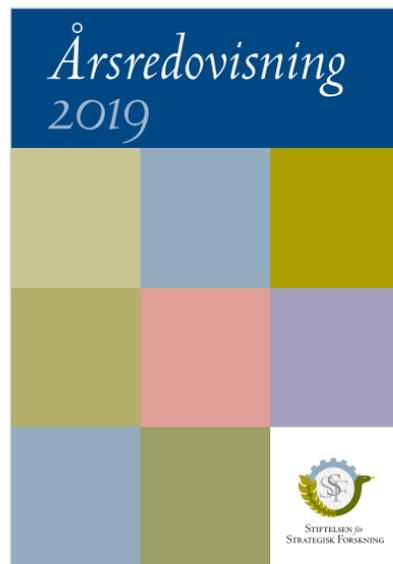


**Providing better cell therapy treatment with hydrogels!** Watch the film featuring Daniel Aili and his research group at Linköping University.

[View more films featuring SSF research projects here!](#)



# Annual Accounts 2019



**The Foundation's capital** is made up of funds transferred to the Foundation in 1994 following a decision made by the Swedish government. By careful management of these funds for 25 years, the Foundation had funds totalling SEK 11.5 billion on 31 December 2019, after the distribution of research grants worth around SEK 14.9 billion during the period 1994–2019.

Read the full Annual Accounting Report (in Swedish) [here](#).



# Message from the Chair of the Asset Management Committee – 2019 a fantastically strong year

**At the start of 2020, the Swedish Foundation for Strategic Research** had access to capital worth SEK 11.5 billion. In 2019, a return of 17.1 percent was achieved. The past five years have seen an average return of 6.1 percent in real terms. This is well in excess of SSF's target for average annual operational returns of 2.5–3.0 percent.

Since the start in 1994, SSF has had an average annual return of 7.9 percent.

In 1994, the original capital was SEK 6 billion. Since then, the Foundation has distributed more than SEK 15 billion.

An Asset Management Committee (KfK), delegated by the Board and made up of five external members, manages the fund together with the Foundation's Financial Manager and Portfolio Manager.

**2019 was a year** of high returns and continued low interest rates. The world's stock markets rose by 33

percent. SSF's portfolio developed positively during eleven of the twelve months of the year. The greatest contributions to the very positive result were from investments in real estate and shares, rising by 46 and 35 percent respectively. Apart from a couple of exceptions, investments made in interest bearing assets and venture capital performed acceptably, although not brilliantly. Hedge funds were, yet again, a disappointment. We ought to have sold more – sooner.

**Overall, 2019** was a fantastically strong year in most asset markets. Favourable trade conditions and low interest rates are the drivers behind the value increases. The experiments of central banks are likely to continue. Interest rates should remain low. Economic activity has weakened and will continue to weaken. The negative effects of Covid19 are not yet possible to foresee.

**Per Afrell**



# SSF's Secretariat



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During 2019, Olof Lindgren, Monica Andersson,  
Gunnel Rådström and Henryk Wos retired.



# SSF's Governing Board

Up to and including 30 June 2019

PHOTO: SSF



From left: Anders Ynnerman, Harriet Wallberg, Christer Fuglesang, Jörgen Hansson, Helene Andersson Svahn, Hans Rydstad, Monica Bellgran, Björn O. Nilsson, Ulf Wahlberg, and Cecilia Holm Wallenberg.

As from 1 July 2019 to 30 June 2022



First row from left: Björn O. Nilsson, Chair, (IVA); Björn Ottersten, (KTH); Cecilia Holm Wallenberg, (Lund University); Charlotte Brogren, (Alimak Group AB).

Second row from left: Gösta Lemne, (Ericsson); Hans Rydstad, (Carnegie); Jörgen Hansson, (University of Skövde); Katarina Gårdfeldt, (Swedish Polar Research Secretariat).

Third row from left: Kerstin Johannesson, (Gothenburg University); Magnus Berggren, (Linköping University).



# The Foundation for Strategic Research

- Supports research and research training in engineering, medicine and natural sciences in order to strengthen Sweden's future competitiveness.
- Promotes the establishment of a greater number of Swedish research centres of highest international class.
- Builds bridges between basic research and the utilisation of research results.
- Funds several hundred research projects at universities – typically in collaboration with industry and research institutes.
- Distributes career grants to prominent research leaders, with emphasis on younger talents.
- Focuses on targeted areas such as Information and Communication Technology, Materials Development and Life Sciences and their associated technologies.
- Promotes interdisciplinary collaboration, the utilisation of research results and the infrastructure of research, and mobility between academia and industry, nationally as well as internationally.
- Annually distributes grants worth SEK 700 million.

