



SWEDISH FOUNDATION *for*  
STRATEGIC RESEARCH

# Annual Report 2017

SSF REPORT NO. 28 ENG

News & Events  
in 2017

January

February

March

April

May

June

July

August

September

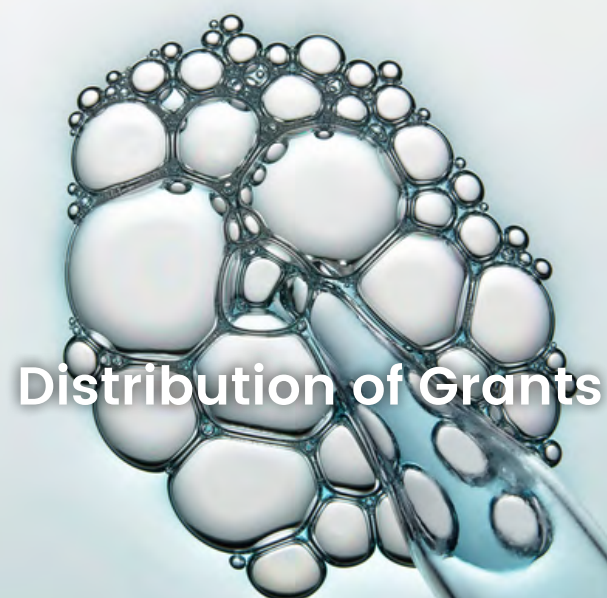
October

November

December

Message from  
the CEO

Message from  
the Chair



Distribution of Grants



Funding Calls  
and Decisions 2017



2017 Research Films

**FRAMSTEG**

presenteras av  
Stiftelsen för Strategisk Forskning

KIT Framsteg  
(In Swedish)

Annual Accounts 2017  
(In Swedish)

Message from the Chair  
of the Asset Management  
Committee

# Contents

**Message from the CEO**

**Message from the Chair**

**News & Events in 2017**

January

February

March

April

May

June

July

August

September

October

November

December

**Funding Calls and**

**Decisions 2017**

**Distribution of Grants**

**2017 Research Films**

**Annual Accounts 2017**

**(In Swedish)**

**Message from the Chair of the**

**Asset Management Committee**

**SSF's Secretariat**

**SSF's Governing Board**

**Swedish Foundation for**

**Strategic Research**





# Message from the CEO – We are strengthening Sweden's competitiveness through research and innovation

“Strategic research involves scientific excellence with impact on society.”



**During its 24th year**, the Foundation has taken new steps towards meeting the demands of a changing world. This involves especially targeted efforts in the life sciences, materials research and information and communication technology (ICT).

**With programmes for Cyber Security**, Big Data, Smart Systems/Automation, Systems Biology and Materials for Energy Applications, we are advancing the frontiers of research. The Foundation also offers funding annually in support of Industrial Doctoral Students and a similar PhD program for Research Institutes, and for strategic mobility. I am also proud of the developments made at SSF's Graduate School. With a solid base of users, Sweden will be able to benefit from the many opportunities created at the European Spallation Source (ESS).

**During 2017, SSF also introduced** a new type of grant for the development of Instruments, Techniques and Methods.

**During 2017**, the Foundation spent SEK 626 million on grants for current research projects and individual researchers, for instance, the Ingvar Carlsson Award and Future Research Leaders. On average, an equal proportion of grants are awarded to men and women.

**The Foundation plays a part** in promoting quality and regeneration in research through fair competition. Scientific publications supported by SSF are top ranked for citations within the research community. We act as a catalyst through strategic efforts and multidisciplinary collaborations. Results of the research should also be distributed and utilised. Therefore, I am equally pleased when our scientists' papers are accepted for publication in Nature as when their patent applications are successful.

**SSF aims to promote** dialogue and cooperation around research strategies. During 2017, we have also launched several programme conferences and updated our research communication. I am grateful for the many contributions made by the evaluation committees, and I look forward to the next opportunity for an exchange of ideas.

**Lars Hultman**



# Message from the Chair

**The Foundation for Strategic Research** was established in 1994 with a view to investing financial resources in strategic research. The objective is to strengthen Sweden's competitiveness.

**As a scientist within the** pharmaceutical industry, I was involved in the drafting of one of the first SSF life science strategies. Within the working group, we spent a lot of time discussing what constitutes strategic research and what does not. In the end, we decided to establish how best to promote the competitiveness of life science applications. We came to the conclusion that SSF would contribute most effectively by adopting an innovative approach within fundamental and cross-disciplinary research areas. I believe that conclusion still stands today.

**In January 2017, I took up** the post of SSF Chair, which I regard as a highly honourable and exciting task. Since 1994, SSF has established itself as a very important player within the Swedish research system. Following calls for proposals, funding is granted to excellent research that has the potential to have great impact on society. Such projects are found within the life sciences, materials science and ICT, with funding ideally split equally between these three research areas. In addition, support is also granted to individual researchers.

**Typically, grants are being offered** for projects within new, cross-boundary areas where multidisciplinary and novel approaches are being encouraged, as well as equal opportunity.

"Since 1994, the Foundation has established itself as a very important player within the Swedish research system."

**SSF plays an important role** within the Swedish research system. Our most eminent scientists apply for the attractive grants, their results are impressive, and they produce high quality scientific papers. The Foundation hands out relatively significant amounts to each funded project, contributing to the attractiveness and the favourable results.

**I look forward to new, exciting** calls for proposals within our focus areas. SSF is contributing to improving Swedish research, thereby strengthening Sweden's competitiveness.

**Björn O. Nilsson**



PHOTO: CLAES HERRLANDER





# January 2017

SSF is financing a new national Graduate School in neutron scattering at the European Spallation Source (ESS) on the outskirts of Lund. The training is run by six universities under the name Swed-Ness. Here, a new generation of researchers will be trained, strengthening the long-term competence and competitiveness of Sweden.

A conference is arranged for the two SSF programmes Infection Biology and Clinical Biomarkers. Many programmes are reporting progress in finding biomarkers also for complex conditions, early diagnosis, new vaccines and self-diagnosis.



PHOTO: ISTOCK



# February 2017

PHOTO: ADRIAN BECK



Ivan Stenius, Royal Institute of Technology (KTH), is running a project developing maritime robots. SSF provides funding of SEK 100 million.

Four major research projects are granted SEK 400 million for Industrial Research Centres (IRC). The focus is on the next generation of maritime robots, improved insight into how drugs are absorbed in the body, biomarkers for diabetes, and oats. The project is contributing to a competitive industry, a sustainable society and more efficient therapeutic methods for diseases.

Mid-way results for the SSF Medical Bioengineering programme are presented at a conference. Current and future patients will receive better and personalised treatment, which for many of them may lead to a significantly improved quality of life.



# March 2017

PHOTO: ISTOCK



The Foundation is awarding SEK 200 million to seven projects on the management of extremely large amounts of data, so called Big Data, and announces the availability of grants for SEK 300 million to interdisciplinary research within cyber and information security.

We are establishing an award for researchers who are, or have recently been, recipients of SSF grants, and who have contributed greatly to exploitation during the past two years. The prize is awarded in the form of a personal stipend of between SEK 50,000–100,000.





# April 2017

Twelve, young, promising post-docs share SEK 40 million within the framework of the Ingvar Carlsson Award (ICA).

The projects focus on the part played by proteins, cells and molecules in order to improve disease diagnosis and treatments that reduce current side effects, and on new techniques for faster semiconductors and machine learning.

SSF arranges a seminar on Digital Storytelling,

held by Merci Olsson, who has worked for National Geographic for many years.

Call made for proposals for the Strategic Mobility 2017 programme.

Together with Vinnova, we arrange a conference on Materials Technology, including among the speakers the State Secretary Eva Lindström and Donald Sadoway from Massachusetts Institute of Technology (MIT).

PHOTO: SOFIE PEHRSSON

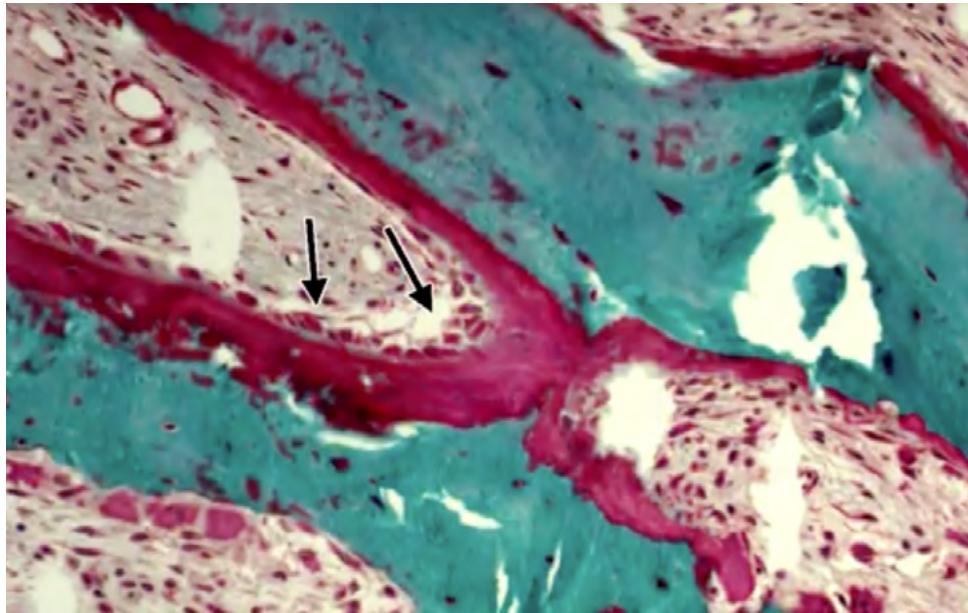


During April, the Board decides which young scientists will be receiving the Ingvar Carlsson Award. Diplomas were handed out at a ceremony in November.





# May 2017



Hanna Isaksson at Lund University has developed an improved method for diagnosing osteoporosis. She presents her research in a film produced by SSF.

**During May, we start the launch of six KFL films.** KFL is a career development programme for young researchers, enabling them to introduce their research projects in films, available on Youtube. Featured projects focus on improvements to the understanding of osteoporosis, data networking architecture, quantum computers, blue lasers, brain cell research and a mathematical approach to understanding ageing.

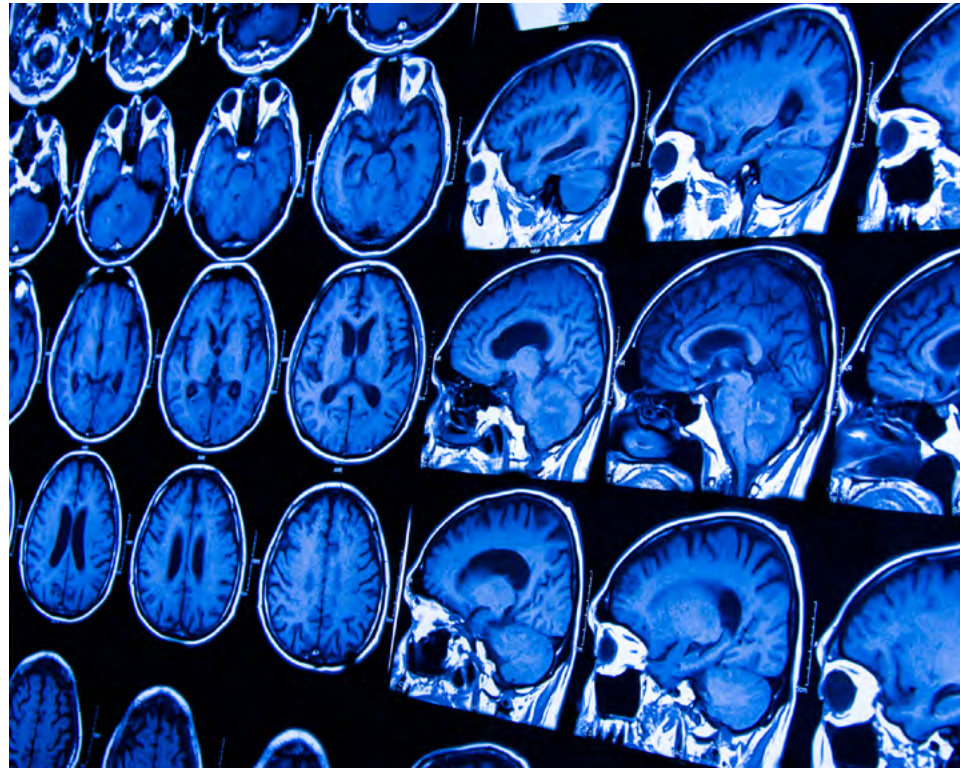
The sixth generation of Future Research Leaders receive their diplomas at a ceremony moderated by Maria Günther, science reporter at the daily newspaper DN. SSF's Chair Björn O. Nilsson handed out the diplomas.



# June 2017

**Damvad Analytics evaluates** funding within **Industrial Research Centres (IRC)**. This SSF venture enables industry to draw up and choose their most

PHOTO: ISTOCK



strategic long-term research requirements jointly with leading academic establishments. One conclusion is that the funding really did promote broad cooperation, new ideas and prioritisations.

Nine projects within the interdisciplinary area Systems Biology are awarded a total of SEK 300 million. Many of the projects focus on the development of new treatment methods for neurodegenerative diseases, cancer and multiple sclerosis. However, also represented is research into the mechanisms controlling stress in plants.

SSF is financing research looking at how best to preserve the Vasa ship, and a film is produced presenting this research.





# July 2017

**Framtidens Forskning (Future Research) 2017** is published jointly by Next Media and SSF, and is distributed with the business newspaper Dagens Industri and at Almedalen.

It introduces the reader to many of the exciting research projects funded by SSF, but it also covers the research and cooperation of many other players, such as Vinnova, Scania, the KK Foundation and Rise. Academic research at various universities is also represented.



PHOTO: GONZALO IRIGOYEN

Minister of Enterprise and Innovation Mikael Damberg and SSF's CEO Lars Hultman.



# August 2017

**SSF initiates cooperation with KIT** for the distribution of science news from the natural sciences, technology and medicine in social media. Using the vignette KIT Framsteg (Success), it has hundreds of thousands of followers, mostly young adults, and the majority of them women.

During the summer, Google invested SEK 120 million in the nanotechnology spin-off Glo AB, sprung from Lund University and Lars Samuelson's research group. His research is part-funded by SSF.

KIT FRAMSTEG introduced by the Foundation for Strategic Research (only in Swedish).



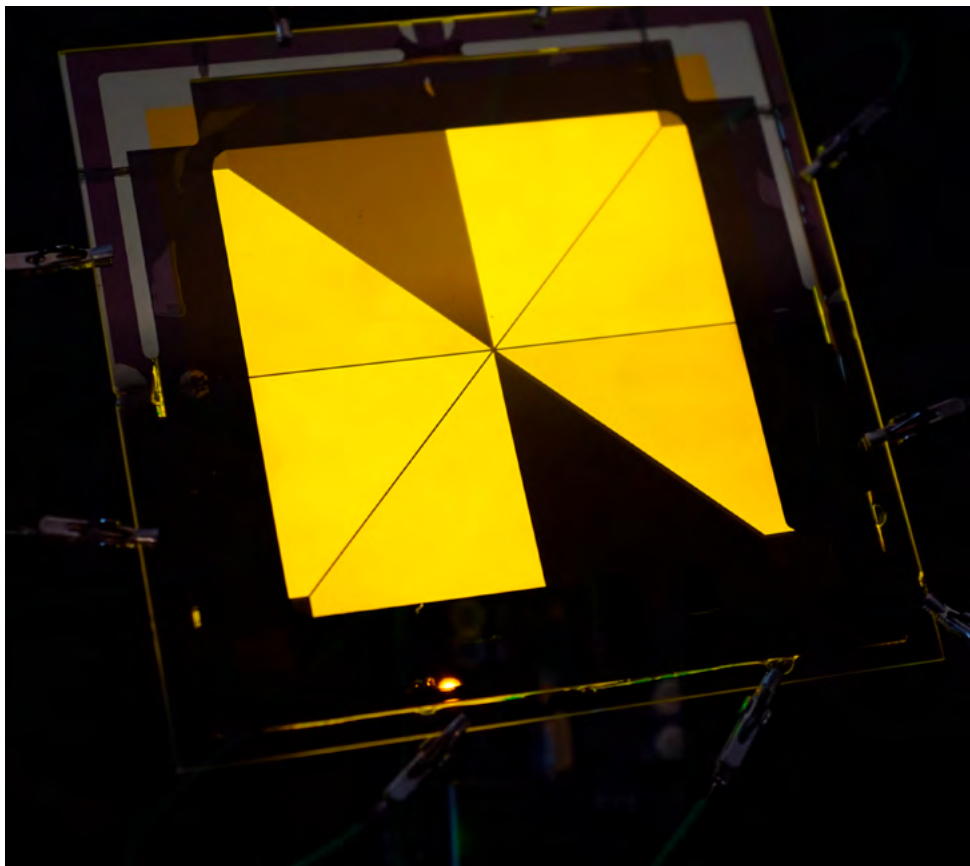
PHOTO: KIT FRAMSTEG





# September 2017

PHOTO: EVA REGÅRDH



**The availability of cheap and stable** components is fundamental to the rapid development of technology within the IT sector. This was especially apparent at SSF's Electronics and Photonics conference in Lund, where mid-results were presented for the framework programme Beyond CMOS. Projects involve everything from electrical baby blankets, e-plasters, high-speed networks to smart materials.

The photo shows Light-emitting Electrochemical Cells, so called LECs, developed by Ludvig Edman's research group at Umeå University in collaboration with scientists at Linköping University.



# October 2017

PHOTO: ISTOCK



**For the second year in a row**, grants are awarded to eight research institute projects.

This year's projects focus on the prevention of bedsores, controlled drug release, clean water, more secure connectivity units, and much more.

At the same time, twelve PhD students based in industry are being financed in order to delve deeper into the Internet of Thing (IoT), autonomous systems, sensors and new security solutions.

Another clear trend among this year's projects is that the pharmaceutical sector is refining and adapting their processes with systems for real time monitoring, individualised medicine and controlled drug release.

Parts of SSF's film about the preservation of the Vasa ship are shown on the Swedish television programme Vetenskapens värld (Science World).





# November 2017

**A ceremony is held for the winners** of SSF's newly established Exploitation Award. Agneta Richter-Dahlfors, professor at the Karolinska Institute, receives the top award of SEK 100,000. Professors Johan Elf, Uppsala University, and Malin Lindstedt, Lund University, each receive SEK 75,000, see photo.

For a third time, SSF and Vinnova arrange a joint conference about software for competitiveness.

SEK 240 million are invested in the call for proposals for the SSF **project for the development of Instruments, Techniques and Methods.**

The winners of the **Ingvar Carlsson Award 7** receive their diplomas from the hand of the former Swedish Prime Minister Ingvar Carlsson at a ceremony moderated by Malou von Sivers.

Projects within Biological Production Systems



PHOTO: SOFIE PEHRSSON

are introduced at a programme conference. Most projects involve renewable raw materials that are being refined into high-value products using modern biotechnology methods.



# December 2017

**Grants within the Strategic Mobility** programme are awarded to projects focusing on, for instance, new nanomaterials aimed at producing light-weight, low-fuel and low-cost aircraft, Virtual Reality (VR) tools for understanding the acoustics in new buildings, and simpler methods for measuring the toxicity of Botulinum type A, also known as Botox.

SSF sponsors and co-organises the Scientific Journalists' Day together with the science and research magazine Forskning & Framsteg.



PHOTO: PIXABAY





# Funding Calls and Decisions 2017

## New calls for proposals

<b>February</b>	Cyber Security 2017
	Industrial PhDs 2017
<b>April</b>	Strategic Mobility 2017
<b>October</b>	Development of Instruments, Techniques and Methods 2017
<b>December</b>	Research Institute PhDs 2017

## Funding Decisions

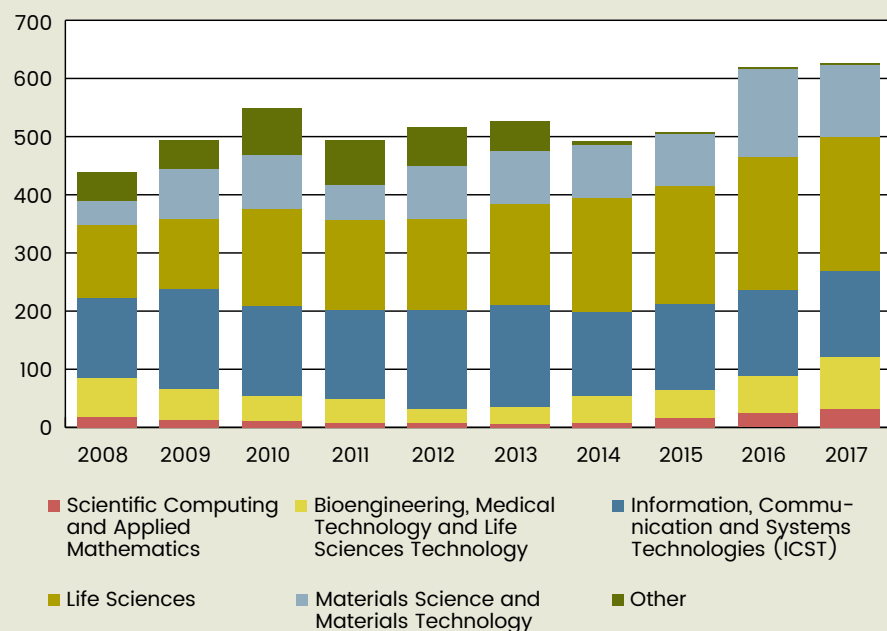
<b>February</b>	Big Data 2015
	Industrial Research Centres (IRC)
<b>April</b>	Ingvar Carlsson Award (ICA 7)
<b>August</b>	Systems Biology 2016
<b>October</b>	Research Institute PhDs 2016
	Industrial PhDs 2017
<b>December</b>	Strategic Mobility 2017



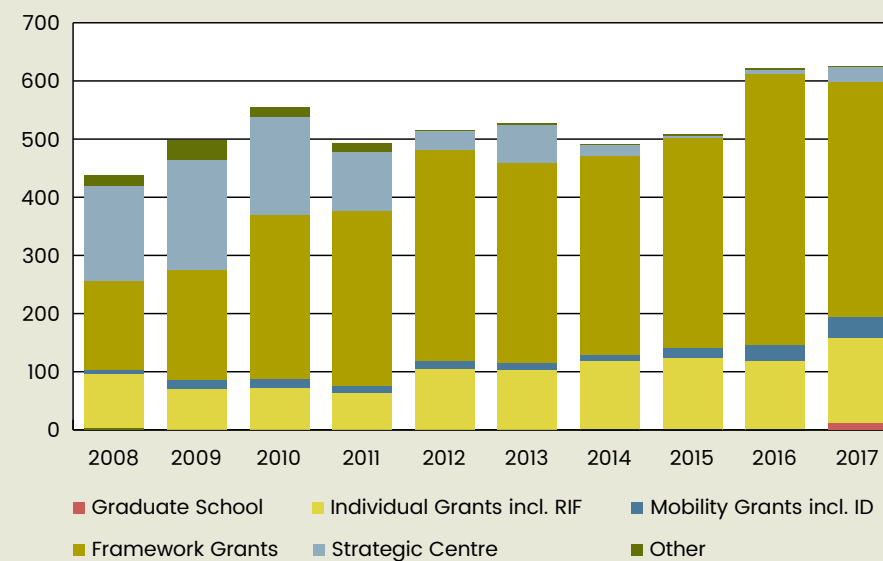
# Distribution of Grants

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

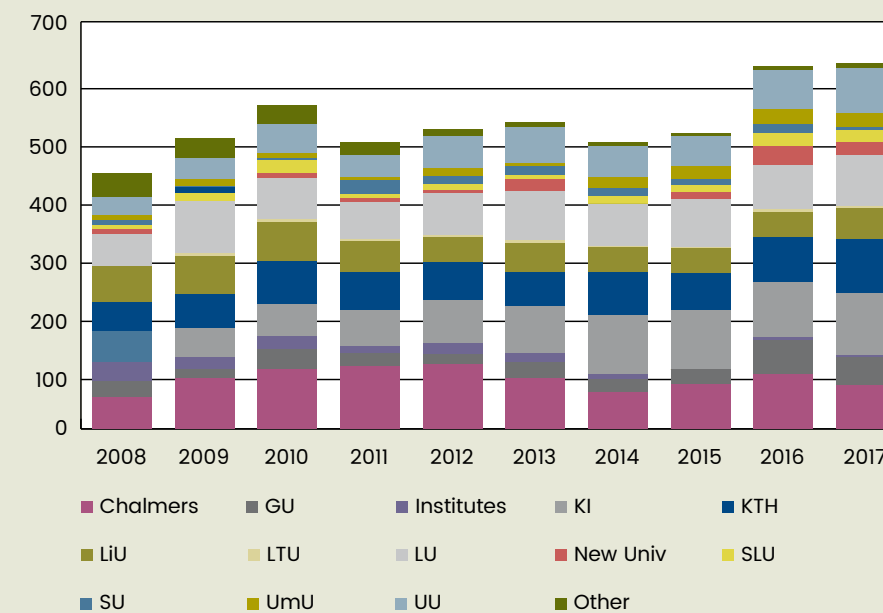
Payments per Research Area (MSEK)



Payments per Grant type (MSEK)



Payments per Administrative Organisation (MSEK)





# 2017 Research Films

In 2017, SSF's film about the efforts to halt the degradation of the Vasa ship is released, and parts of it are aired on Swedish television. Films from the series "Career Development Programme for Young Research Leaders" focus on, for instance, brains grown in cell culture dishes, new data architecture making networks 100 times more efficient, and future quantum computers based on Majorana fermions.

PHOTO: MARKUS JUNGHARD



**The degradation of the Vasa** is halted with a scientifically designed cradle – watch the film about the SSF research in support of Vasa.



**She grows brains** in cell culture dishes using re-programming technology – watch the film featuring Anna Falk and her research group at the Karolinska Institute (KI).



**New data networking** architecture makes the networks 100 times more efficient – watch the film about Jiajia Chen and the scientists at the Royal Institute of Technology (KTH).



**Future quantum computers** will use Majorana fermions – watch the film featuring Annica Black Schaffer at Uppsala University's Ångström laboratory.

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





# Annual Accounts 2017



**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 23 years, the Foundation had funds totalling around SEK 11 billion on 31 December 2017 after the distribution of research grants worth around SEK 13.5 billion during the period 1994–2017.

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



# Message from the Chair of the Asset Management Committee – Another year of good return

**At the start of 2018**, the Foundation for Strategic Research had access to capital worth more than SEK 11 billion. A return of 7.2 percent was achieved in 2017. The past five years have seen an average return of 8.5 percent in real terms. This is well in excess of SSF's target for operational returns of 2.5–3 percent. Since the start in 1994, SSF has had an average annual return of 9.1 percent. In 1994, the original capital was SEK 6 billion. Since its creation, the Foundation has distributed SEK 13.5 billion.

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

**2017 was another year** of good return. However, it was not an easy year, sometimes it was an uphill battle. Just over a fifth of SSF's assets are held in USD that saw a depreciation against SEK (–11 percent). The EUR remained largely unchanged. The currency fluctuations resulted in around one percent lower return. However, in the past few years and measured in SEK, SSF has gained from the Swedish Riksbank's stubborn attempts to create inflation by keeping SEK at a low value.

At the same time, most of the world's long and short rates increased, primarily as a result of US rate policy. The financial players have started to believe that the long period of artificially low rates is over. Steered by politicians and central banks, this process has so far progressed without any turmoil.

Strengthening growth has helped, and the expectations for growth in the large regions are today higher than for several years. However, Sweden is showing clear signs of slower growth.

In total, the year resulted in a good return on the world's stock markets, including the Swedish one.

During the year, KfK has again lowered the risks in the portfolio. Primarily, this was achieved through a decreased shareholding, with Swedish stocks decreasing more than foreign ones.

Shares and properties were the strongest contributors in the portfolio. Most investment managers for these types of assets have been successful. The same is true for Kammarkollegiet (the Legal, Financial and Administrative Services Agency) that manages the bulk of the interest bearing assets – despite increasing long rates and negative short rates which have put rates managers in a difficult situation.

During the year, KfK has analysed in several ways how the management has worked or not worked in the past few years. As already stated, KfK is satisfied with many asset managers of shares, rates and property. However, the same cannot be said for the choice of venture capital funds. There is room for improvement in this area, and also, although to a lesser extent, within hedge funds.

2018 has had a weak start. After six years of rising stock markets, this is hardly surprising.

**Per Afrell**



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# SSF's Secretariat

PHOTO: CLAES HERRLANDER



From left: Joakim Amorim, Magnus Jacobsson, Sara Marakbi Häkkinen, Jan Fahleson, Mattias Blomberg, Henryk Wos, Birgitta Talu, Olof Lindgren, Inger Florin, Sofie Pehrsson, Gunnel Rådström, Lars Hultman, Mattias Lundberg and Eva Regårdh. Monica Andersson is missing from the photo.

For further information, please contact SSF's secretariat using the contact details on the previous page.





# SSF's Governing Board

PHOTO: EVA REGÅRDH



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.

For information regarding declarations of board memberships and other interests of the members of the Board, the CEO and the members of the Asset Management Committee, please contact SSF's Secretariat.



# The Foundation for Strategic Research

- Supports research and research training in engineering, medicine and the natural sciences through grants annually worth SEK 600 – 800 million aimed at strengthening Sweden's competitiveness.
- Builds bridges between basic research and the utilisation of research results.
- Funds several hundred research projects at universities and other seats of higher education – many of them in cooperation 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 Technology.
- Promotes interdisciplinary collaboration, the utilisation of research results and the infrastructure of research, and mobility between academia and industry, nationally as well as internationally.



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