



SWEDISH FOUNDATION *for*
STRATEGIC RESEARCH

Annual Report 2016

SSF-REPORT NO. 26 ENG

News & Events
in 2016

January

February

March

April

May

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September

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December

Message from the CEO

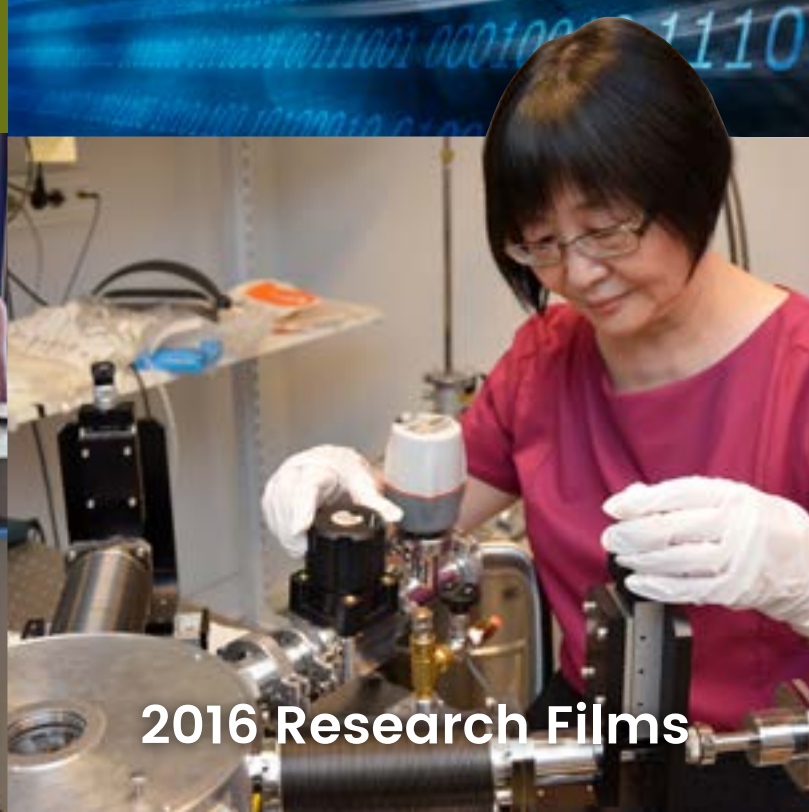
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“As CEO of the Foundation, I would like to highlight the strategic value of the infrastructure of research and the development of its methods.”



PHOTO: CLAES HERRLANDER

Message from the CEO – We fund excellent research that impacts on society

During 2016, I have had discussions with representatives from universities, industry and society on how best to fulfil the Foundation’s obligation to strengthen Sweden’s competitiveness. Their input was very positive, and in several ways this has influenced the Foundation’s new research strategy.

2016 was characterised by calls for proposals for funding, worth a record amount of nearly SEK 1 billion for areas such as Big Data, Systems Biology and Energy Materials, as well as Ingvar Carlsson Awards. During 2016, decisions were also made regarding grants for the specialist programme Future Research Leaders and framework grants for Smart Systems and Materials Synthesis. The annual support for PhD students based in industry and at institutes, and strategic mobility were extended to new sectors such as small business-

es. Mobility is strategic. As CEO of the Foundation, I would also like to highlight the strategic value of the infrastructure of research and the development of methods. Hence, the Foundation is now establishing a graduate school for neutron scattering, in addition to the grants already awarded to key individuals who are developing and making accessible research infrastructure. Several measures are being planned.

During 2016, the Foundation spent SEK 621 million on grants for current research projects and individual researchers.

Another guiding principle for SSF is equality and I note that the grant level is now the same for women and men.

Lars Hultman





Message from the Chair

When it was set up in 1994, the decade-long aim of the Foundation for Strategic Research was to contribute to research within areas of engineering, natural science and medicine that are of strategic importance for Sweden's competitiveness. Twenty two years later, SSF is still a vital source of research funding. The quite remarkable equation reads as follows: Starting with funds worth SEK 6 billion, SSF has distributed a total of SEK 12.9 billion, and still had funds worth around SEK 11 billion at the end of 2016. Whether or not Einstein really commented on compound interest as being one of mankind's greatest inventions, the Foundation's development can still be used as an example of the power of a good return over a long period of time.

During the past year, following interaction with the research community, the Governing Board established SSF's strategy for the next five years. SSF will continue to support individual researchers within areas essential

for stimulating successful research environments, but will also increase the rate of calls for proposals with regard to framework grants. The Foundation will focus on the interdisciplinary research areas where SSF's efforts can play a special role by supporting new and innovative areas where Sweden needs to have a presence on a quickly evolving global front. When necessary, SSF is also able to act with agility, the Graduate School for neutron scattering being one example. This makes even more sense as Sweden is now the location for the European Spallation Source (ESS). This offers unique opportunities for Sweden that require some investment.

On behalf of the Governing Board, we would like to thank the CEO and the Secretariat for their extraordinarily professional work, and all others who have shown great commitment when participating in the planning and application process during 2016.

Staffan Grefbäck and Harriet Wallberg



SSF's new Strategy for 2017–2021

In 2016, the Foundation established a new Research Strategy for the period 2017–2021. The strategy is based on the statutes specifying that SSF should finance research within engineering, medicine and natural science, aimed at strengthening Sweden's competitiveness. The new strategy means that the funding level is raised at the same time as there will be greater focus on technologies and the social impact of research.

The need for the research to be of the highest quality and to promote the development of strong, interdisciplinary research environments has always been a guiding principle of SSF, together with the requirement that it should be relevant. Through the new research strategy, calls for pro-



posals and projects will be chosen with a view to results being disseminated and utilised more actively by the researchers in order to have greater impact within, for instance, industry.

The following main areas will be prioritised during the period 2017–2021.

- Information, Communication and System Technology (ICT)
- Life Sciences focused on technologies and Bioengineering
- Materials research focused on new and better functionality, and production.

The Foundation intends to award similar amounts to the three main areas.

January 2016

Future Research Leaders (FFL) is one of SSF's highly valued programmes for young scientists. Films featuring the fifth round of research projects, each awarded SEK 10 million, are produced by SSF, and then launched in conjunction with a competition.

Decisions are announced for 2016 programmes within Strategic Mobility, Industrial PhDs and Research Institute PhDs (FID). FID encourages research institutes and seats of higher education to conduct joint research and research training.

Tillväxtanalys delivers an environmental impact analysis commissioned by SSF. It describes the progression of strategic research over a period of five to ten years. The report focuses on strategies and direction, prioritised areas, and support.



PHOTO: MARKUS JUNGHARD

Kasper Moth-Poulsen at Chalmers University of Technology is trying to find the perfect molecule for the storage of solar energy.



February 2016

We launch a new, responsive website with a modern format that is automatically adapted to computers, mobiles or tablets.

Lars Hultman visits Japan with the IVA Royal Technology Mission.

Call for proposals for the research programme Big Data and Computational Science. The programme is set up as a framework grant of SEK 200 million.

Call for proposals for grants for Industrial PhDs 2016 (ID 2016).

SSF's Programme Manager Joakim Amorim is elected to represent SSF in the Nordic neutron programme of Nordforsk.



PHOTO: ISTOCK

March 2016

PHOTO: FREDRIK PERSSON



Annica Black-Schaffer, Uppsala University, and Kristiina Tammimies, Karolinska Institute, are the recipients of the “For Women in Science” award from L’Oréal – Unesco. Both Annica and Kristiina are also recipients of large individual grants from SSF.

SSF sponsors a major conference on cancer at Karolinska Institute.

Lars Hultman delivers a speech to the Swedish parliament’s Education Select Committee.



April 2016

The Science Festival opens with Forum for Research Communication, co-organised by SSF, the 2016 topic being “Evolving Research Communication”.

The Board approves funding for ten projects within Smart Systems. Each project receives between SEK 22 million and nearly SEK 35 million from a total budget of SEK 300 million. Financed



projects deal with, among other things, intelligent interaction between systems and humans, and smart traffic systems.

Ten projects are awarded SEK 25–33 million each from Materials Science 2015, where the total is also SEK 300 million. The projects focus on new methods for synthesis and advanced process control for functional and structural materials.

The Board decides to call for proposals for the seventh generation of Ingvar Carlsson Awards (ICA). SEK 48 million are earmarked for 12 grants of SEK 4 million. SEK 15 million are also earmarked for the annual Strategic Mobility grant.

The Career Development Programme for Young Research Leaders (KFL) arrange a study trip to Britain and Switzerland (see photo).



May 2016

PHOTO: ISTOCK



Lars Hultman visits Brazil together with the Swedish Academic Collaboration Forum. Travelling with them are representatives from six Swedish seats of higher education, eager to develop their international exchange programmes.

FFL4 arranges a closing event at Stora Brännbo in Sigtuna.

Lars Hultman meets the Association of Swedish Engineering Industries' (Teknikföretagen's) reference group for production managers in Finspång.



June 2016

PHOTO: ISTOCK



Eight projects are awarded SEK 2.5 million each within the programme Research Institute PhDs (FID15).

Call for proposals is announced for the framework grant Systems Biology 2016, totalling SEK 300 million.

SEK 120 million are awarded a broad Swedish constellation in the Graduate School for neutron scattering 2015 (Swedness). The aim of the programme is to train PhDs in order to strengthen the competence base and take advantage of the future opportunities offered by ESS.



July 2016

At the largest Almedalen stage, SSF holds a seminar on the subject “Crook, sick person or relative – who should have your DNA?”, featuring the Icelandic doctor and founder of Decode, Karl Stefansson, Liselott Nielsen Sundberg from the Swedish National Forensic Centre (NFC), and Ann Heberlein from Lund University. The panel also included the Minister for Domestic Affairs Anders Ygeman and Anders Ekholm from the Institute for Futures Studies.

In connection with the seminar, a report with the same name was produced, which proved very popular in schools. Before the end of the autumn, nearly ten thousand copies had been ordered by schools nationwide.

Members of SSF’s Governing Board were also active in Almedalen. Among them, Christer Fuglesang attracted attention with accounts of his space trav-



PHOTO: SOFIE PEHRSSON

The SSF seminar “Crook, sick person or relative – who should have your DNA?” attracted a large audience and caught the attention of the media.

els, and Anders Ynnerman visualised space in a very popular evening lecture called “UppRymd”
The National Archive inspects and approves SSF’s archive procedures.



August 2016

PHOTO: ISTOCK



The Board ratifies SSF's Research Strategy for the period 2017–2021. This sets out the basis for strategic research and is characterised by:

- Quality in research combined with researchers' freedom to choose scientific methods and to run the project
- The impact and utilisation of the research
- Focus on the engineering aspects within and between the Foundation's target areas ICT, Life Sciences and Materials.



September 2016

Staffan Grefbäck takes over as Chair of SSF's Governing Board. Former Chair Harriet Wallberg continues as a member of the Board.

For the first time, SSF takes part in the Book Fair in Gothenburg, with a stall at the fair's Research Market.



PHOTO: EVA REGÅRDH

October 2016



Lars Hultman visits Taiwan for talks with representatives of the country's Ministry of Science and Technology and Ministry of Education, and visits several universities and industrial parks.

Most of the participants in the Career Development Programme for Young Research Leaders and Lars Hultman travel to Japan to take part in the Science and Technology in Society Forum.

SSF takes part in the Swedish government's strategic cooperation programme within "Connected Industry and New Materials".



November 2016

Voting starts in the Music Hunt organised by the Researcher's Help, a project aimed at secondary school students, enabling them to do research “for real”. It is run by the Nobel Museum and financed by SSF.

Björn O. Nilsson is confirmed as the new Chair of SSF's Governing Board as from the beginning of 2017. Björn leaves the position of CEO of IVA and has a PhD in Biochemistry from KTH.

Preparations for a call for proposals for grants for Industrial Research Centres (IRC) draws to a close after a hearing featuring the nine highest ranking projects. Decisions regarding the grants is to be made in February 2017.



SSF collaborates with Japan Society for the Promotion of Science (JSPS) and announces the opportunity for Swedish candidates to gain Postdoc Fellowships in Japan.

December 2016

Call for proposals for grants of SEK 300 million for SSF Material for Energy Applications. The research projects should contribute to solving problems and social challenges, and to create the prerequisites for sustainable social development.

Call for proposals for grants worth SEK 20 million within the programme Research Institute PhDs 2016 (FID16).

The Nobel Museum is awarded continued funding for the Researcher's Help programme for a period of four years.

Grants decisions within FFL 6: 20 young scientists receive SEK 12 million each from a total of SEK 240 million. Included in the programme is a comprehensive leadership programme, organised by SSF.

12 projects of the nearly 60 that had applied are awarded SEK 2.5 million each within the



PHOTO: ISTOCK

annual programme Industrial PhDs (ID16).

Another 12 projects are granted between nearly SEK 800,000 and SEK 1.5 million within the programme Strategic Mobility 2016, aimed at enabling scientists and development engineers to move between academia and industry.



Funding Calls and Decisions

Calls for proposals 2016

February	Industrial PhDs 2016
April	Ingvar Carlsson Award 7
	Strategic Mobility 2016
	Systems Biology 2016
December	SSF Materials for Energy Applications 2016
	Research Institute PhDs 2016
	Utilisation Award 2017

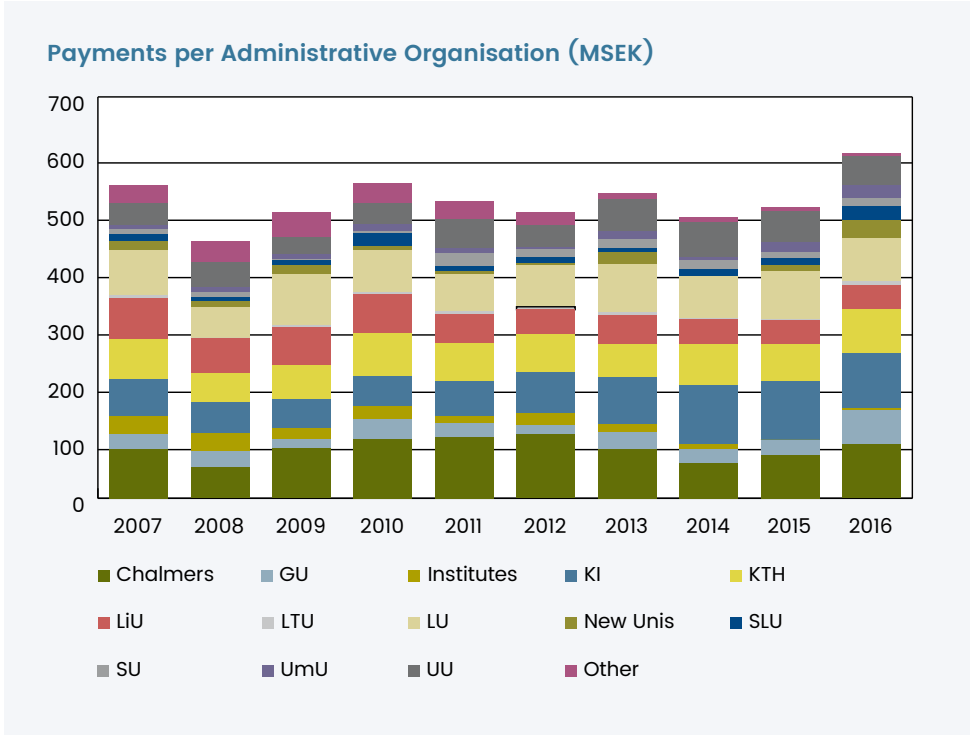
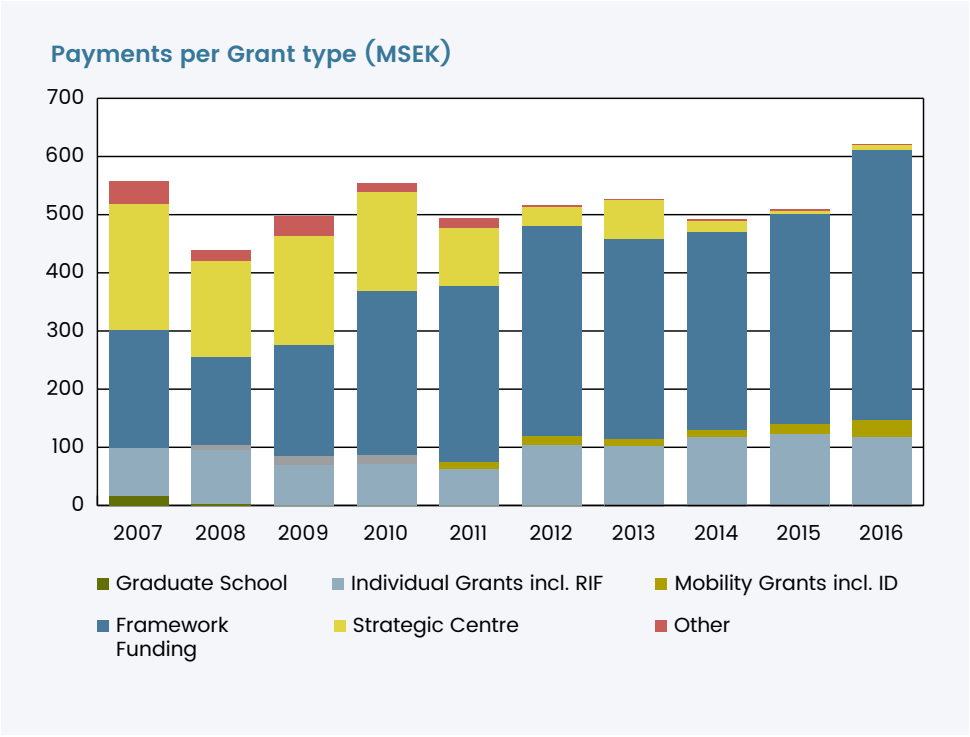
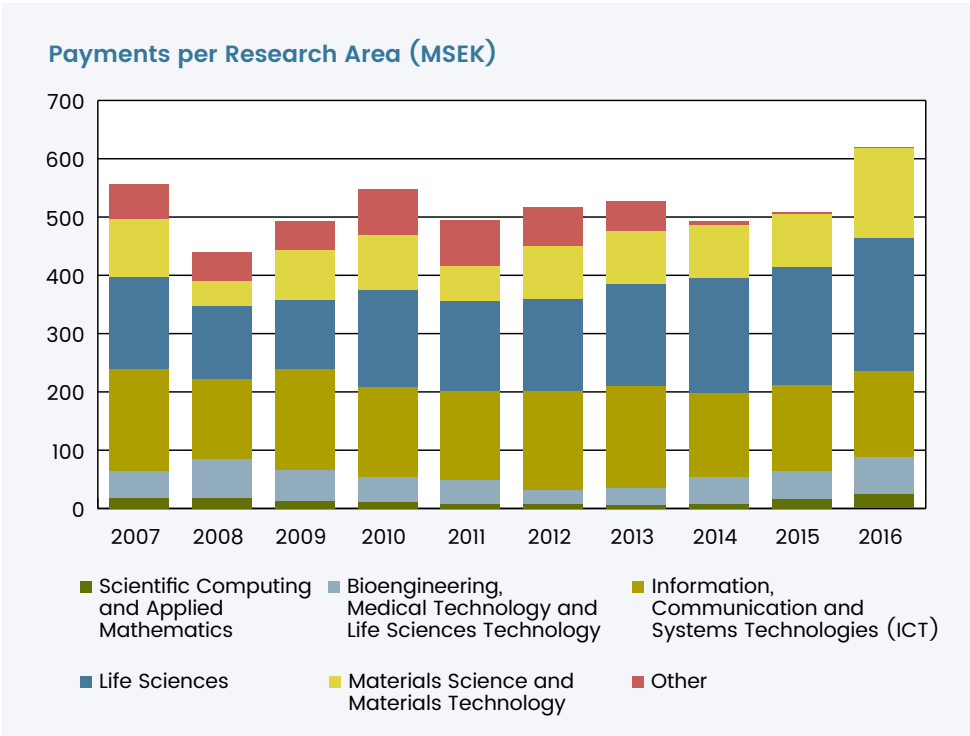
Funding Decisions 2016

February	Strategic Mobility 2015
April	Smart Systems 2015
	Materials Science 2015
June	Research Institute PhDs 2015
	Graduate School for neutron scattering 2015
December	Another 4 years of Researcher's Help
	Future Research Leaders 6
	Industrial PhDs 2016
	Strategic Mobility 2016



Distribution of Grants

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



2016 Research Films

The search is on for a molecule that is perfect for storing solar energy, whilst other scientists are using a new graphene material to develop processors that are nearly 1,000 times faster.

PHOTOS: MARKUS JUNGHARD



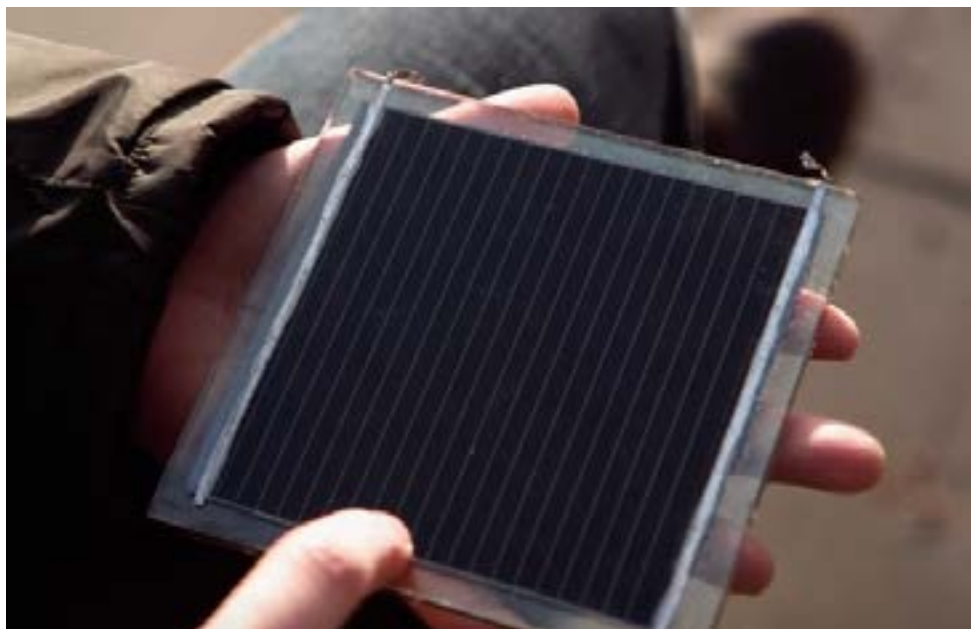
Why do electrons act the way they do?

– Per Johnsson, Lunds University.



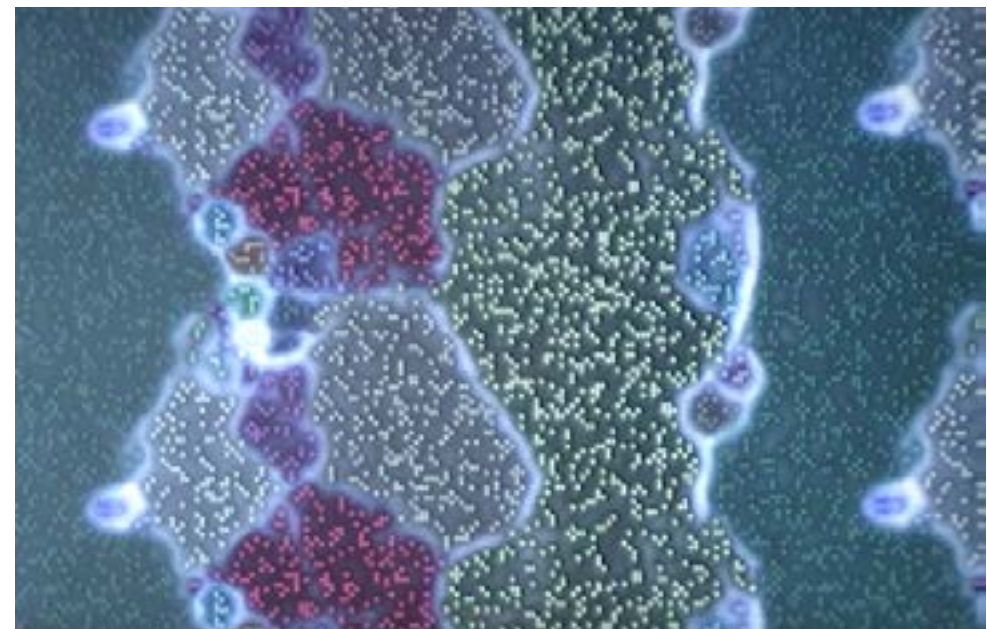
New graphene material makes processors nearly 1,000 times faster

– Vanya Darakchieva, Linköpings University.



Major focus on thin-film solar cells

– Charlotte Platzer-Björkman, Ångström Laboratory, Uppsala University



The origin of mankind?

– Thijs Ettema, Uppsala University

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



Annual Accounts 2016



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 22 years, the Foundation had funds totalling around SEK 11 billion on 31 December 2016 after the distribution of research grants worth nearly SEK 13 billion during the period 1994–2016.

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



Message from the Chair of the Asset Management Committee – Another successful year

At the start of 2017, the Foundation for Strategic Research had access to capital worth SEK 11 billion. A return of 7.7 percent was achieved in 2016. The past five years have seen an average return of 9.3 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 9.2 percent. In 1994, the original capital was SEK 6 billion. Since its creation, the Foundation has distributed SEK 13 billion.

An Asset Management Committee (KfK), delegated by the Board and made up of external members with sound experience of financial markets, is responsible for assessing different asset management markets and for investing and reinvesting the Foundation's capital, and for tracking individual fund managers. Furthermore, assisting the Committee are a Financial Manager and a Portfolio Manager, both of whom are experienced and knowledgeable in financial matters.

2016 was a successful year for most fund managers who like SSF work in SEK. The US dollar increased by 9 percent against SEK, and the EUR by 5 percent. As a result, the Foundation's holdings in foreign currencies increased significantly in value. Partly due to the fall of the value of SEK, and partly due to the rise of most financial markets.

The latter rose as a result of increased growth in

both the US and Europe. Such financial news was often overshadowed by more spectacular and headline-grabbing political developments.

Growth continued to be strong in Sweden with a remarkable combination of extremely low interest rates, excellent growth among the OECD countries, and a labour market which was in large parts overheated.

A major challenge facing central banks and financial policy-makers in Sweden and Europe in 2017 and beyond is how to exit the more than five-year long period of low rates without creating a rapid slowdown of asset prices that might harm finances and growth.

The combination of geopolitical risks, the necessary dismantling of the low rate experiment, and uncertainties surrounding the EU and the economic policies of the Trump administration has resulted in considerable risks today and henceforth.

During last year, the aim was to gradually lower the risks in the portfolio. The most important reason is that SSF's Governing Board has decided to increase the annual disbursement rate from SEK 500–600 million to SEK 1 billion. In accordance with that aim, net sales of both Swedish and foreign shares were made, accompanied by net investments in the Swedish property market and in assets less dependent on rate and stock markets

Per Afrell



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Note: Ulla Elofsson held a temporary position as scientific secretary from 25 May, 2015, to 1 March, 2016.



SSF's Governing Board

The Board in 2016



From left:

Christer Fuglesang, Helene Andersson Svahn, Anders Ynnerman, Ulf Wahlberg, Marie Anvret, Harriet Wallberg, Staffan Grefbäck, Monica Bellgran, Sten Stymne and Pia Sandvik.

At the end of the second quarter of 2016, Marie Anvret, Sten Stymne and Pia Sandvik resigned and were replaced by Jörgen Hansson and Cecilia Holm.

The Board in 2017



PHOTO: EVA REGÅRDH

From left:

Cecilia Holm Wallenberg, Christer Fuglesang, Harriet Wallberg, Ulf Wahlberg, Björn O. Nilsson, Monica Bellgran, Anders Ynnerman and Jörgen Hansson.

Helene Andersson Svahn and Hans Rydstad are missing from the photo.

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 postgraduate studies in science, engineering, and medicine aimed at strengthening Sweden's competitiveness.
- Builds bridges between excellent basic research and exploitation of research results.
- Funds several hundred research projects at higher education institutions – many of them in cooperation with industry and research institutes.
- Awards grants to prominent research leaders, with emphasis on younger talents.
- Launches targeted initiatives aimed at such areas as Information and Communication Technology, Bioengineering, and Materials Development.
- Promotes interdisciplinary collaboration, the exploitation of research results, use of research infrastructure and mobility between academia and industry, nationally as well as internationally.
- Has a growing annual disbursement purse of around SEK 600 million.



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