Danmarks
Grundforskningsfond
Danish National
Research Foundation

ANNUAL REPORT 2017

KEY FIGURES 2013-2017

	2017	2016	2015	2014	2013
Grants and distributions					
Total grants at year-end. centers and Niels Bohr professors	59	58	66	57	59
Annual distributions, million DKK	384.8	381.3	424.5	435.9	423.0
Return on investment					
Bonds and cash, million DKK	128.6	218.6	-44.0	182.7	-38.1
Equities, million DKK	293.4	192.5	1.1	153.8	256.1
Total return, million DKK	422.0	411.2	-42.9	336.4	218.0
Administrative costs					
Administrative costs including depreciation, million DKK	11.3	12.2	11.5	12.1	12.7
Administrative costs compared to distributions, %	2.9	3.2	2.7	2.8	3.0
Administrative costs per grant, million DKK	0.2	0.2	0.2	0.2	0.2
Capital					
Net capital at year-end, million DKK	6,086.2	6,064.2	6,051.8	3,535.4	3,650.6

CONTENTS

WELCOME!

The digital revolution is a paradigm shift of immense importance for science and presents an exceptional opportunity to excel in research. But it is also a challenge to exploit this revolution wisely. The theme of the 2017 annual meeting of the Danish National Research Foundation (DNRF) was Open Data, inspired by our survey of scientists' experience with this concept. The immediate response was: "Open access to data? Of course!"

However, it is not that simple. Open access to data depends on the type of data and there is no "one size fits all." Increased access to data should be implemented wisely. Data need to be of high quality and preferably annotated to optimize reuse. We must learn from the people who know what works and where the challenges and barriers lie. As with many other things in research and society, researchers and data managers, "the hands-on people," need to be consulted.

In 2017, the foundation awarded grants for the 9th round of new Centers of Excellence. It is a privilege and a pleasure to welcome the leaders of our 10 new Centers of Excellence: Professor Ulrik Lund Andersen, Technical University of Denmark; Professor Susanne Mandrup, University of Southern Denmark; Professor Mette Birkedal Bruun, University of Copenhagen; Professor Lone Gram, Technical University of Denmark; Professor Lars Peter Nielsen, Aarhus University; Professor Jørgen Kjems, Aarhus University; Professor Claus Thustrup Kreiner, University of Copenhagen; Professor Anders Nykjær, Aarhus University; Peter Lodahl, University of Copenhagen and Sune Toft, University of Copenhagen.

We look forward to seeing the centers unleash their potential. From the foundation we wish you and your teams success, and we welcome you to the DNRF family, which now includes 110 Centers of Excellence. We shall do all we can to support you.

The foundation visits all Centers of Excellence at the annual follow-up meetings, where we learn about each center's research and discuss hot topics in scientific policy and strategy. In 2017, we discussed, as a special topic, alternative ways to engage the public in science, such as citizen science, festivals, cartoons, etc. It is important to the DNRF that the wider public understands and supports the notion of basic science as a key driver in societal development, and our centers have a special obligation to help create that understanding and enthusiasm by telling their fascinating stories of curiosity-driven endeavours in an easily accessible way.

The subject for our annual meeting in November of this year will be diversity, not only in terms of gender, but also education, background, and nationality, and the importance of diversity in achieving excellence and in recruiting staff. We try to convey the messages of the researchers in our centers and "listen to the grass growing," and in doing so, we transfer knowledge from the bottom up as a real-time monitor of how basic science is doing in Denmark at present. The short report is that it is doing well. The creativity, talent mass, and research level are high, but we can sense that the economy is tighter than before. We receive that message from all stakeholders — from the rectors of the universities to the youngest researchers.

We would like to convey a warm thank you to all of our Centers of Excellence leaders, the Niels Bohr professors, and all of their research groups for their enthusiasm and hard work and for the high quality of their research. It is a pleasure to visit you at the annual follow-up meetings and to gain insight into your victories and challenges. We also extend a warm thank you to our collaborators at the universities, the funders in Denmark and internationally, and all other stakeholders in Danish research.

Furthermore, we warmly thank each and every member of the DNRF secretariat in Holbergsgade for the very professional and efficient job they do. It is a huge responsibility to tender a large sum of public money and to try to hand it out to the best scientists in Denmark. We would also like to warmly thank the members of the DNRF board for the dedicated effort they make, and a special thank you to Eivind Hiis Hauge, Professor Emeritus in Trondheim, who was on the board from 2009-2017. It has been a privilege for us to have him on board, both for his expertise and also for his great sense of quality and integrity. Also, a warm thank you to the board members who accepted a renewal of their appointments: Professor Christina Moberg, Sweden; Professor Bart de Moor, Belgium; and Professor Eero Vuorio, Finland. Thank you to the rest of the board for the dedicated and professional work they do on behalf of the board. We enjoy the collaboration and the nice atmosphere.

Thank you very much to the Minister and Ministry. We gratefully acknowledge the open dialogue, the engagement, and the enthusiasm for research and for us in the foundation. All of these aspects are highly appreciated.

We tender our own endowment in the foundation. At present, we have capital of 6 bio. DKK, with a return of 7.2% last year. The return is above benchmark and positive in these years of low interest rates. We try to secure as much as

possible for research with a low administrative budget of approximately 11 mio. DKK, or less than 3%, which is modest.

Scientific endeavour is carried out for the sake of society. Sometimes it is difficult to see the immediate link between basic science results and positive social outcomes. The connection is not just a straight line, and sometimes it takes a long time before the full potential of a research endeavour is fulfilled. But investigations all over the world demonstrate that basic research is of the utmost importance for progress in society and has been so for a very long time.

We at the DNRF can assure you that our basic scientists in the Centers of Excellence and our Niels Bohr professors provide continuous improvements for society through their brilliant research. They are also aware of the importance of sharing knowledge across society, and you can read more about their endeavours on their home pages and in other media.

We at the foundation also try to spread the word about the benefits of science for society, and we have initiated a competition whereby the centers can submit the best pictures, photos, images, or drawings from their research. This issue of the annual report displays some of those images.

We are proud to announce the winners: First Prize: The Rising fibre moon by Jonas Schou Neergaard-Nielsen, Second Prize: The nests by Søs Grønbæk Mathiassen and Third Prize: Confocal laser-scanning photomicrograph of a cress leaf by Pascal Hunziker. Thank you to the Selection Committee: Director Christine Buhl Andersen, The New Carlsberg Glyptotek; Research Manager Louise Wolthers, The Hasselblad Foundation; Prof. Minik Rosing, DNRF/ University of Copenhagen/Louisiana Museum of Modern Art.

Professor Liselotte Højgaard
Chair of the Board of the DNRF

Professor Søren-Peter Olesen
Director of the DNRF

OPEN DATA — REPORT FROM THE ANNUAL MEETING 2017


nature

OPEN ACCESS TO DATA — THE DNRF ANNUAL MEETING 2017

On November 3, the Danish National Research Foundation's held its annual meeting for research political stakeholders and DNRF grantees. The topic for the meeting was open data.

The foundation's recommendation is that all stakeholders collaborate to develop a well-thought-out strategy for open data, with the aim that open data initiatives should both strengthen research and ensure the individual researcher's career opportunities at the same time.

The speakers at the annual meeting, which included the Minister for Higher Education and Science, advisors and scientists from the Wellcome Trust, the Lundbeck Foundation, and the Wallenberg Foundation, and researchers from the foundation's centers and from universities

Professor Liselotte Højgaard, Chair of the DNRF

and government, offered case stories; they also shared their experiences from abroad; from the natural sciences, the humanities, and the social sciences; and from a political perspective. The discussions revolved around solving the significant challenges of financing and establishing and maintaining the databases.

The foundation's publication *Open access to data — It's not that simple* set the tone for a critical analytical stance on the subject of open access to data. The approach that open data per se is good can, at times, seem a little too automatic, because there are too many related challenges that we simply cannot ignore.

Professor Liselotte Højgaard, chair of the DNRF, opened the meeting with an appeal to get all stakeholders to collaborate in increasing access to data in a smart way. First and foremost, we must listen to researchers and data managers, who know how to collect, share, store, and reuse data. When they were asked about the possibilities and challenges of open data, it is notable that the list of challenges is twice the length of the list of possibilities.

"The digital revolution is an exceptional opportunity for raising the research quality, but it is a challenge to utilize it wisely. One challenge is to ensure fairness for the individual researcher who collects data and, at the same time, to open data for the benefit of society as a whole."
— Professor Liselotte Højgaard, Chair.

The Minister for Higher Education and Science, Søren Pind, advocated for investigating what incentives lead researchers to share data and then use those incentives as an inspiration at the political level to make the sharing of data more appealing to researchers. The minister shared the foundation's more critical and cautious approach to the question of open access to data.

One of the challenges that Professor Søren-Peter Olesen, Director of the DNRF, pointed out in his talk about the foundation's Open Data Survey is the fact that scientific journals request raw data

Professor Søren-Peter Olesen, Director of the DNRF

Søren Pind, Minister for Higher Education and Science

Hans Müller Pedersen, Director of the Danish Agency for Science and Education

Henrik C. Wegener, Rector of the University of Copenhagen

Lia Leffland, Managing Director of the Danish Academy of Technical Sciences

when publishing papers. It is not ideal that the journals gain ownership of the data in this way.

What is data and how can we derive knowledge from data?
"It is infinitely easier to generate data than to get knowledge out of it."
— Professor Mathias Uhlén, Wallenberg Center for Protein Research.

Are these potsherds data? Yes, they are. And although potsherds are not the first thing you associate with data, the picture illustrates many of the challenges connected to collecting, sharing, and storing data. The number of potsherds in the picture alone tells us what resources are needed to annotate every sherd and to store and digitalize them in a way that lets others benefit from them. This is the case for data in general.

Locally produced pottery from Gerasa/Jerash, Jordan. Every excavated sherd, more than a million, has been registered over five years of excavation and will be made available together with a publication of the results from the project, led by Professor Rubina Raja from the Center for Urban Network Evolutions.

Who owns data and who should pay for storing the data?
"Sharing was always upon us, digitalization just makes it easier, and unfortunately endless."
— Rector of the University of Copenhagen, Henrik C. Wegener.

The rector of the University of Copenhagen, Henrik C. Wegener, used his speech to highlight the fact that the most important job for universities is to create the best conditions for research and researchers. In previous times, this would mean establishing and running libraries, and today, the case is, in a way, the same: the digitalizing information/data and establishing high-performance facilities for data processing. The overshadowing challenge is the expenses for doing so. Wegener does not see benefits from being the first mover in this area, especially since the risk of making the wrong investment is intimidating.

Professor Søren-Peter Olesen, Director of the DNRF; Hanne Leth Andersen, Rector of Roskilde University; Professor Bo Elberling, center leader of CENPERM

It's not that simple

The director of the Danish Agency for Science and Education, Hans Müller Pedersen, also reiterated the mantra of the meeting: "It's not that simple." The agency looks forward to seeing the results of its cost-benefit analysis of the introduction of FAIR data in Denmark. Along with the foundation's survey, the analysis will serve as the kick-off for the agency's further work with open science.

The possibilities for Danish research and innovation

Both Lia Leffland, from the Danish Academy of Technical Sciences, and Linus Jönnson, vice president at Lundbeck, highlighted that the quality of Danish data is very high and that the data contains an unexploited potential for Danish research and innovation. Leffland advocated that the DNRF's Centers of Excellence should have leading roles in preparing Ph.D.s and post-docs to work at various companies, where data is money and where they can contribute with their highly specialized knowledge to elevating the companies' earnings and their level of innovation.

Motivation is key

A panel debate ended the meeting by concluding that motivation is the key to producing more high-quality research from the sharing of data. A collaborative effort should be made to reduce the barriers to sharing and to meet the challenges presented by the long-term funding and storing of data. Furthermore, we must be able to distinguish between the different kinds of data and to design solutions that take into account the fact that researchers' needs are partly dependent on specific subject areas.

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10 NEW CENTERS OF EXCELLENCE

> From the Board of the DNRF we would like to congratulate our new Centers of Excellence and welcome them to the DNRF family. It is a heavy obligation to be trusted with such a large sum of public money, and we look very much forward to following and supporting you as you transform the funding into brilliant research.

Professor Liselotte Højgaard, Chair of the DNRF

CENTER FOR FUNCTIONAL GENOMICS AND TISSUE PLASTICITY (ATLAS)

Center leader: Professor Susanne Mandrup
Host institution: University of Southern Denmark
Period: 2017-2023
Grant: 65.0 MDKK

https://www.sdu.dk/en/atlas

“ ATLAS will uncover how changes in the properties of different cell types control liver and adipose tissue function during development of obesity. The overall aim is to obtain a detailed molecular and cell type-resolved understanding tissue plasticity, and to improve diagnosis and treatment of obesity-related diseases.

CENTER FOR MACROSCOPIC QUANTUM STATES (BIGQ)

Center leader: Professor Ulrik Lund Andersen
Host institution: Technical University of Denmark
Period: 2018-2024
Grant: 63.0 MDKK

http://www.bigq.fysik.dtu.dk/

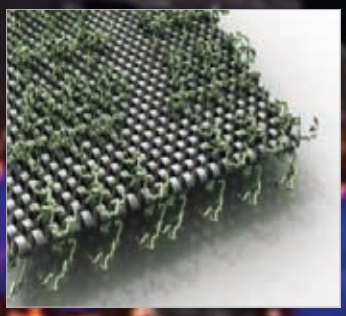
“ In bigQ we will design, construct and measure macroscopic quantum states in optical and mechanical systems consisting of many elementary constituents, thus promoting our understanding of the macroscopic quantum world and allowing potential breakthroughs in quantum information science.

CENTER FOR ECONOMIC BEHAVIOR AND INEQUALITY (CEBI)

Center leader: Professor Claus Thustrup Kreiner
Host institution: University of Copenhagen
Period: 2017-2023
Grant: 57.0 MDKK

http://www.econ.ku.dk/cebi/

“ Inequality across people in income, wealth and many other outcomes arises from differences in circumstances and differences in behavior. CEBI asks: What is the role of behavioral differences across individuals in generating unequal outcomes? Answering this question is fundamental for obtaining a better understanding of the sources of inequality and how policy affects inequality.

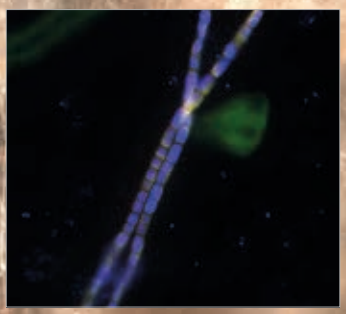


CENTER FOR CELLULAR SIGNAL PATTERNS (CELLPAT)

Center leader: Professor Jørgen Kjems
Host institution: Aarhus University
Period: 2017-2023
Grant: 61.0 MDKK

http://inano.au.dk/about/research-centers/cellpat/

“ The CellPat center will uncover the fundamental mechanism for how animal cells sense their surroundings through complex patterns of multivalent interactions and use this knowledge to rationally design biomimetics that can promote drug targeting and tissue regeneration.



CENTER FOR ELECTRO-MICROBIOLOGY (CEM)

Center leader: Professor Lars Peter Nielsen
Host institution: Aarhus University
Period: 2017-2023
Grant: 56.0 MDKK

http://bios.au.dk/forskning/center-for-electromicrobiology/

“ CEM investigates cable bacteria — centimeter-long newly discovered life forms based on internal electric wires. We will unravel how the wires work and how cable bacteria and bacteria around them use the wires to couple distant biological processes with electric currents.

CENTER FOR MICROBIAL SECONDARY METABOLITES (CEMIST)

Center leader: Professor Lone Gram
Host institution: Technical University of Denmark
Period: 2018-2023
Grant: 58.0 MDKK

http://www.cemist.dtu.dk/english

> In CeMiSt we will unravel the roles and impact of microbial secondary metabolites in natural and engineered microbial systems using a multidisciplinary approach based on microbial ecology, molecular microbiology, bioinformatics, and chemistry

CENTRE FOR PRIVACY STUDIES (PRIVACY)

Center leader: Mette Birkedal Bruun
Host institution: University of Copenhagen
Period: 2017-2023
Grant: 50.0 MDKK

http://teol.ku.dk/privacy/

“ Privacy concerns the bond between individual and society: too much threatens society; too little harms individuals. This double idea emerges in 1500–1800. We examine privacy at specific sites, bringing together church history, architectural history, legal history and the history of ideas, and aiming to understand factors that shape notions of privacy.

Photo: Peter de Hooch: Moedertaak (1658-1660), Rijksmuseum, Amsterdam

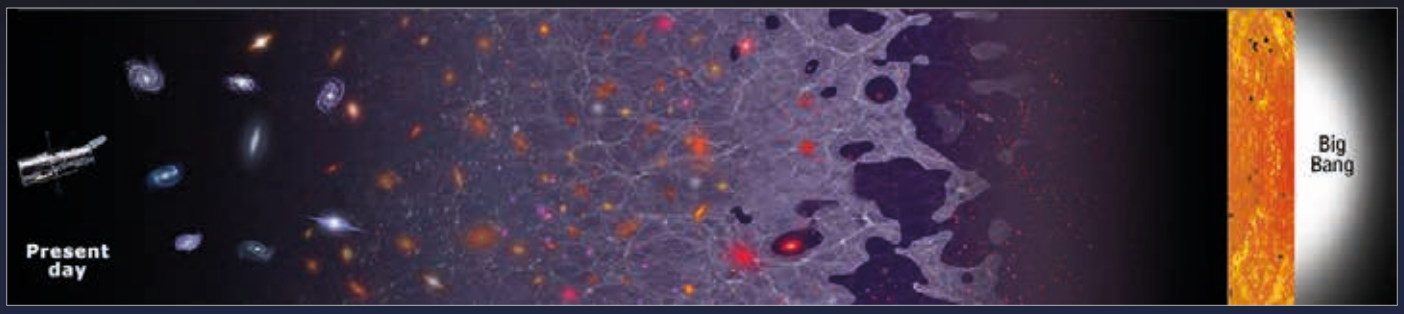
CENTER FOR HYBRID QUANTUM NETWORKS (HY-Q).

> In Hy-Q we will unite the different quantum science disciplines photonics, mechanics, and spin physics. Our ambition is to scale up photonic quantum networks and ultimately pave the way for a quantum internet.

Center leader: Professor Peter Lodahl
Host institution: University of Copenhagen
Period: 2018-2024
Grant: 62.0 MDKK

http://quantum-photonics.nbi.ku.dk/

DAWN



COSMIC DAWN CENTER (DAWN)

Center leader: Professor Sune Toft
Host institution: University of Copenhagen
Period: 2018-2024
Grant: 66.0 MDKK

http://dawn.nbi.ku.dk/

“ The cosmic dawn occurred when our infant Universe transitioned from a dark, opaque soup to a transparent Universe sprinkled with bright clusters of stars. The diverse DAWN team of scientists and engineers are exploring this critical transition that ended the Cosmic Dark Ages and revealed the first galaxies, stars and black holes.

CENTER FOR PROTEINS IN MEMORY (PROMEMO)

Center leader: Professor Anders Nykjær
Host institution: Aarhus University
Period: 2017-2023
Grant: 62.0 MDKK

http://promemo.au.dk/

“ PROMEMO will integrate a number of advanced technologies including structural biology, tailored animal models, memory engineering and 2-photon microscopy to identify and understand the proteins in neurons that determine the persistence of memories. This may help explain fundamental traits of cognition, emotion, and learning.

> The vision is to support and strengthen research that is ground-breaking. Research that may end up making a difference to the way we live and think.

Søren-Peter Olesen, Director of the DNRF

The Center of Excellence (CoE) program is DNRF's primary funding mechanism and the foundation's flagship. A center grant is large and flexible, and a center may have a lifetime of up to 10 years. Only top researchers with the most ambitious ideas will be awarded a CoE through fierce competition involving a two-stage application process. The objective of the CoE program is to strengthen Danish research by providing the best possible working conditions and organizational set-up for selected top researchers. Centers may be established within or across all fields of research.

The DNRF's clear strategy is to focus on supremely talented individuals and provide them with sufficient funds, long-term funding horizons, and autonomy.

THE DNRF PHOTO COMPETITION

In 2017, the DNRF launced a photo competition for the foundation's grantees.

The selection criteria were as follows:

- Degree to which the photo raises curiosity in the eye of the beholder
- Degree to which the photo works as visual entry point to the story behind the specific research result
- Aesthetic quality of the photo

The selection panel, Christine Buhl Andersen, Director at Glyptoteket; Louise Wolthers, Research Manager/Curator at the Hasselblad Foundation; and Minik Rosing, Professor at the Natural History Museum, board member at the DNRF and the Louisiana Museum of Modern Art has chosen the following for first, second and third prize:

First Prize: The Rising fiber moon
Jonas Schou Neergaard-Nielsen from Center for Macroscopic Quantum States (BigQ)

The photo's beauty and photographic quality make it immediately fascinating. What at first glance looks like the full moon in a night sky turns out to be a wall projection of microscopic fibers. The photo shows an innovative use of microscopy. In terms of quality, the photo is perfect with regard to composition, lighting, and distinctness. It is a classic photo and, at the same time, an advanced high-tech experimental display.

Second Prize: The nests
Søs Grønbæk Mathiassen from Center for Autophagy, Recycling and Disease (CARD)

This photo is a beautiful composition in both structure and color, which speaks to imagination and curiosity. It makes the observer want to find out what the photo shows. It creates a number of associations with jellyfish, nebula, and organs, but the scale and material are unclear. The photo is fascinating in terms of understanding what autophagy is and how fluorescent photo micrography works.

Third Prize: Confocal laser-scanning photomicrograph of a cress leaf
Pascal Hunziker from Center for Dynamic Molecular Interactions (DynaMo)

A beautiful and poetic picture of something as recognizable as a leaf appears in a whole new light in this photo. The delicate and fragile structures are actually part of the plant's defense system, which has been made visible by advanced protein markers. The photo has a high technical quality and looks like a harmonious whole, even though it is composed of 74 smaller pictures covering 15 layers of the leaf's depth.

The DNRF would like to convey a warm thank you to the panel for their assessments. The foundation is impressed with the many magnificent photos it received for this year's competition. The winners have received a basket filled with supplies for a festive celebration for the whole center.

A photo has great potential to raise curiosity about and interest in the underlying research story. We would like to share our enthusiasm for the many exciting research stories, and to this end, the DNRF will launch a photo competition again in 2018 as an initiative to reach a broader audience.

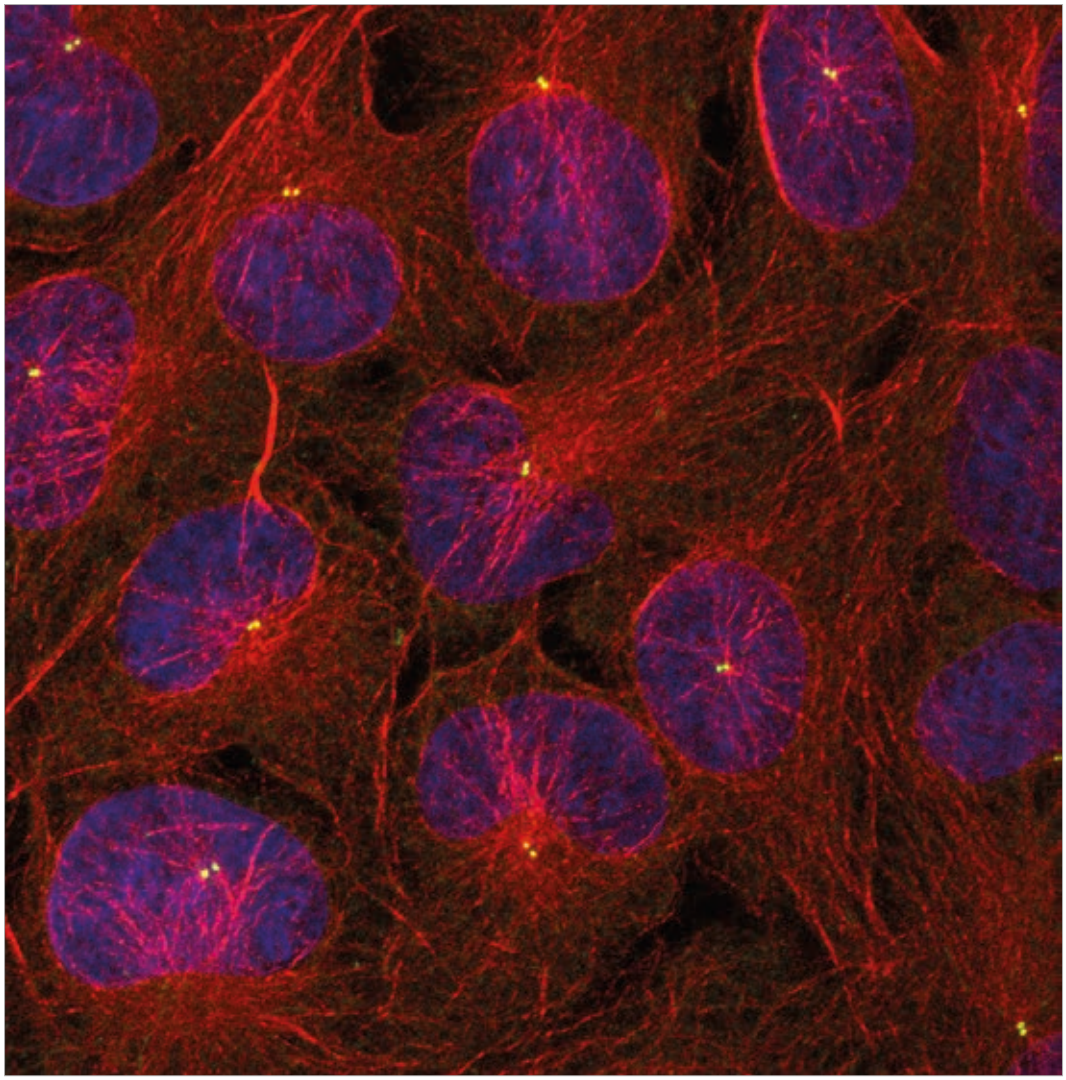
A wall projection of the output of a strong halogen light bulb, guided by a bundle of around 15,000 optical fibres.

When we do fibre-optic experiments, we typically work with just a few single-mode fibres. This device is completely different with its massive bundle of multi-mode fibres. It is used with a microscope for illuminating a small area of around 1 mm diameter with very bright light. For this image we went the other way and projected the output to about a meter in size. This makes all the individual fibre outputs clearly visible.

The Rising fibre moon
Jonas Schou Neergaard-Nielsen

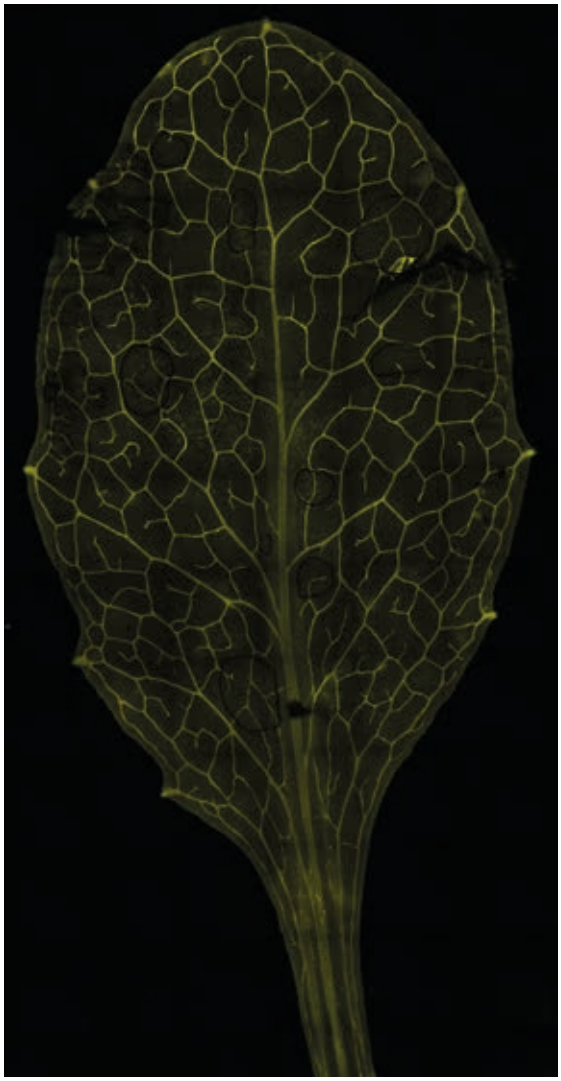
Ground work to study the unknown role of autophagy factors in centrosome structure and function.

U2OS cells stained for β-tubulin (microtubules) and γ-tubulin (centrosomes). CLSM700 Zeiss.



The nests
Søs Grønbæk Mathiassen

Confocal laser-scanning micrograph showing an entire leaf of a thale cress plant. The yellow signal visualizes the localization of a crucial transport protein identified by the DynaMo Center. This protein is responsible for loading defense compounds into the plant's circulatory system; the picture reveals that the plant is able to defend all of its cells using a continuously finer and finer transport network. The image is a tile scan consisting of 74 single images stitched together. On top of this, each of the 74 images represents a projection of 15 layers in order to cover the whole depth of the leaf.



Confocal laser-scanning photomicrograph of a cress leaf
Pascal Hunziker

PROFESSOR EIVIND HIIS HAUGE

BOARD MEMBER
1.11.2009 - 31.10.2017

In the fall 2017, professor Eivind Hiis Hauge from the Department of Physics at the Norwegian University of Science and Technology, attended his last DNRF board meeting after eight years on the board.

> “Thank you to Eivind for his dedicated and impressive work through eight years on the board

Professor Liselotte Højgaard, Chair of the DNRF.

"ENCOURAGE THE BRIGHTEST MINDS IN THE COUNTRY TO CREATE EPOCHAL NEW KNOWLEDGE"

Lise og Ole Trock-Jansen, J. H. Schultz Fonden

These words came from Lise Trock-Jansen during a conversation when I visited her in her home north of Copenhagen at the beginning of 2018. Together with her now-deceased husband, Ole Trock-Jansen, she has donated DKK 500,000 annually for the past four years to the Danish National Research Foundation through the J.H. Schultz Foundation. When I asked about the couple's thoughts behind the recurring donation, Lise answered without hesitation: "We have always believed that research is vital as a foundation for the future development of society in a rapidly changing world."

Ole Trock-Jansen passed away at the beginning of 2018, at 94 years old, after an eventful and memorable life. He was a seventh generation executive and sole shareholder in the Schultz Company. In 1988, he created the J.H. Schultz Foundation, after which he donated 95 percent of the company's shares to the foundation, and thus gave his life's work to the betterment of society. As Lise described it, Ole was "always ready to fight for what he found to be right." This attitude permeated both his professional and personal life. He took part in the Danish resistance movement during the Second World War, during which he was wanted by the Gestapo and had to flee to Sweden on several occasions. After the Second World War, Ole worked in the US for ten years. He considered himself to be a very lucky man because he always saw new opportunities, ones that he was often able to take advantage of — not unlike our best researchers. Schultz was a royal printing company that printed a variety of publications, such as Salomonsen's Encyclopedia and the novels of Ernest Hemingway. In the early digital age, Ole also led a major restructuring at Schultz. During this restructuring, the company installed an IBM batch facility in 1968. In the 1980s, the company underwent a total transformation from a classic printing company to an IT company.

The Trock-Jansens have always been inquisitive and interested in the dissemination of knowledge in society. Lise remembered that Ole often humorously said that "it is important to be in front of the future." For both business and leisure purposes, Lise and Ole traveled all over the globe and stimulated their interdisciplinary interests at the Folkeuniversitetet. In this context, Lise told me, they were exposed to numerous interesting and dynamic research environments. She mentioned that "it is important to support research widely, as no one knows what the world will need in 10 or 20 years."

As director of the Danish National Research Foundation, I am very delighted to hear a life-experienced woman like Lise talking enthusiastically about the importance of creating and disseminating basic knowledge in society. In addition, I welcome the Trock-Jansen family's initiative to support this agenda.

— Professor Søren-Peter Olesen,
Director of the DNRF

TALENT DEVELOPMENT — PIVOTAL MOMENTS AND QUANTUM JUMPS

The DNRF and the Carlsberg Foundation together arranged a networking meeting for research funders and research councils in Denmark on October 11, 2017. Under the headline, Pivotal moments and Quantum jumps, the meeting revolved around how research funders and universities can strengthen the careers of talented young researchers.

The Danish research funding system plays an essential role in the identification and funding of the most talented young researchers by providing the opportunity to develop and nurture an independent research culture among the younger generation of researchers.

In the opening speech, chair of the Board of the DNRF, Liselotte Højgaard, called for a long-term political and financial support of Danish research, if the current high standing is not to be undermined. According to Højgaard, the recent joint policy paper "Forskning for fremtiden" ("Research for the Future") from the Confederation of Danish Industry and the Central Organisation of Industrial Employees in Denmark outlines visionary and precise measures to be taken. Research funders, researchers, and stakeholders, should help raise awareness of the importance of science and research among the wider public as well as the government.

In the first part of the program, four talented young scientists representing different areas

> "Long-term political and financial support is key to sustain the current standard of Danish research.
>
> Professor Liselotte Højgaard, Chair of the DNRF

Professor Liselotte Højgaard, Chair of the DNRF

"Research for the Future" published by the Confederation of Danish Industry and the Central Organisation of Industrial Employees in Denmark

of research gave their personal accounts of pivotal moments in their careers and of their breakthrough discoveries.

Dorthe Ravnsbæk, associate professor in chemistry at the University of Southern Denmark, made the point that institutions should provide an arena for inspirational meetings between students and researchers. She noted how inspirational teachers, supervisors, and more experienced researchers were extremely important for her choice of career and how they have motivated her research in groundbreaking chemical research.

Associate professor in history at the University of Aarhus, Nina Javette Koefoed, gave an account of how her affiliation with research networks within the humanities had not only defined her choice of becoming a researcher but also enabled her to stay in research and excel during a very challenging period of her life.

For professor Martin Bizzarro from the DNRF's Center for Star and Planet Formation, his early experience as an elite sportsman was translatable to the demands of a successful research career. Today, as an experienced research leader, he strives to attract diverse research talents that, using a football metaphor, fill out roles as defenders, midfielders, and forwards.

Associate Professor
Dorthe Ravnsbæk

Associate Professor
Nina Javette Koefoed

Center leader and Professor
Martin Bizzarro

Professor Hans Wandall

Professor and Vice Chancellor Max Lu

Professor Hans Wandall, from the DNRF's Copenhagen Glycomics Center, also emphasized the importance of meeting a mentor early in his research career and how the thrill of exploring uncharted territory has motivated him to do research. Wandall also mentioned how serendipity had played a crucial role at several steps in his research career.

The speakers in the second part of the program gave Danish and international perspectives on the opportunities provided to young research talents by universities and research funders.

Professor and vice chancellor of the University of Surrey, G.Q. Max Lu, gave examples from his career in Asia, Australia, and the UK. At the University of Surrey, Professor Lu has implemented his philosophy for talent development that combines an emphasis on research excellence, the development of soft skills and cooperation with Industry. In addition, Lu also presented the model used by the University of Surrey to illustrate its impressive direct and indirect impact on society.

Recruiting the very best research talents is essential if Denmark is to keep up with global development, according to the chairman of the Carlsberg Foundation, Flemming Besenbacher. In addition, Danish decision makers should increase their awareness about how fast change is occurring in the most dynamic academic environments, the consequences of digitalization and the fourth industrial revolution and the grand societal challenges. One measure is to strengthen the research institutions by reorganizing Danish universities.

The director of the DNRF, Søren-Peter Olesen, described how research funding agencies and foundations are the main source of funding in the 10-15 important years during which researchers finish their Ph.D.s and perhaps gain a tenured position at a university. Therefore, the foundations play an important role in determining who will be the next generation of full professors. In particular, grants of 10 MDKK aimed at talented senior post-docs are an important step toward a permanent position. In Denmark, these grants are unevenly distributed among the research fields, and even though ERC grants have become successful in the last 10 years, there is an obvious need for more Sapere Aude grants. In Sweden, the Wallenberg Foundation has developed a program for young researchers in cooperation with the universities,

> Research funding agencies and foundations are the main source of funding in the 10-15 important years during which researchers finish their Ph.D.s and perhaps gain a tenured position at a university. Therefore, the research foundations play an important role in determining who will be the next generation of full professors.
>
> Professor Søren-Peter Olesen, Director of the DNRF

the Wallenberg Academy Fellows. Although the program is inspiring, it does not operate in a bottom-up manner, something that is highly appreciated in the Danish funding system.

The final discussion focused on the importance of supporting scientific excellence and young researchers with the potential for scientific breakthroughs. Another widely acknowledged issue was that scientific excellence always leads to a positive societal impact.

The networking meeting for research funders and research councils is an annual event that gathers all of the large Danish public and private research funders and their stakeholders. This year's meeting took place at the Carlsberg Academy, the former residence of brewer J.C. Jacobsen, the founder of Carlsberg, and the honorary residence of several prominent Danish researchers, including Niels Bohr.

Professor Flemming Besenbacher, Chair of the Carlsberg Foundation

Professor Søren-Peter Olesen, Director of the DNRF

ONGOING ACTIVITIES

CENTERS OF EXCELLENCE ESTABLISHED IN 2007

Center for Research in Econometric Analysis of Time Series (CREATES)

Location:	Aarhus University
Center leader:	Professor Niels Haldrup
Total grant:	80.2 million DKK

Centre for Carbohydrate Recognition and Signaling (CARB)

Location:	Aarhus University
Center leader:	Professor Jens Stougaard
Total grant:	90.6 million DKK

Centre for DNA Nanotechnology (CDNA)

Location:	Aarhus University
Center leader:	Professor Kurt Vesterager Gothelf
Total grant:	94.5 million DKK

Center for Epigenetics

Location:	University of Copenhagen (and University of Southern Denmark)
Center leader:	Professor Kristian Helin
Total grant:	110.7 million DKK

Centre for Ice and Climate

Location:	University of Copenhagen
Center leader:	Professor Dorthe Dahl-Jensen
Total grant:	116.3 million DKK

Center for Massive Data Algorithmics (MADALGO)

Location:	Aarhus University
Center leader:	Professor Lars Arge
Total grant:	72.5 million DKK

Center for Membrane Pumps in Cells and Disease (PUMPkin)

Location:	Aarhus University
Center leader:	Professor Poul Nissen
Total grant:	106.7 million DKK

CENTERS OF EXCELLENCE ESTABLISHED IN 2009/2010

Center on Autobiographical Memory Research (Con Amore)

Location:	Aarhus University
Center leader:	Professor Dorthe Berntsen
Total grant:	84.1 million DKK

Center for Particle Physics Phenomenology (CP3 – Origins)

Location:	University of Southern Denmark
Center leader:	Professor Francesco Sannino
Total grant:	80.0 million DKK

Center for Particle Physics (Discovery)

Location:	University of Copenhagen
Center leader:	Professor Peter H. Hansen
Total grant:	80.0 million DKK

Centre for Symmetry and Deformation (SYM)

Location:	University of Copenhagen
Center leader:	Professor Jesper Grodal
Total grant:	90.5 million DKK

Center for Materials Crystallography (CMC)

Location:	Aarhus University
Center leader:	Professor Bo Brummerstedt Iversen
Total grant:	105.2 million DKK

Center for GeoGenetics

Location:	University of Copenhagen
Center leader:	Professor Eske Willerslev
Total grant:	100.8 million DKK

Centre for Quantum Geometry of Moduli Spaces (QGM)

Location:	Aarhus University
Center leader:	Professor Jørgen Ellegaard Andersen
Total grant:	89.3 million DKK

Center for Macroecology, Evolution and Climate (CMEC)

Location:	University of Copenhagen
Center leader:	Professor Carsten Rahbek
Total grant:	112.2 million DKK

Center for Star and Planet Formation (STARPLAN)

Location:	University of Copenhagen
Center leader:	Professor Martin Bizzarro
Total grant:	82.6 million DKK

CENTERS OF EXCELLENCE ESTABLISHED IN 2012

Centre for Medieval Literature (CML)

Location:	University of Southern Denmark
Center leader:	Professor Lars Boje Mortensen
Total grant:	60.0 million DKK

Center for Dynamic Molecular Interactions (DynaMo)

Location:	University of Copenhagen
Center leader:	Professor Barbara Halkier
Total grant:	81.7 million DKK

Center for Permafrost (CENPERM)

Location:	University of Copenhagen
Center leader:	Professor Bo Elberling
Total grant:	99.7 million DKK

Center for Quantum Devices (QDev)

Location:	University of Copenhagen
Center leader:	Professor Charles Marcus
Total grant:	64.4 million DKK

Center for Financial Frictions (FRIC)

Location:	Copenhagen Business School
Center leader:	Professor David Lando
Total grant:	48.0 million DKK

Center for Nanostructured Graphene (CNG)

Location:	Technical University of Denmark
Center leader:	Professor Antti-Pekka Jauho
Total grant:	54.1 million DKK

Center for Geomicrobiology

Location:	Aarhus University
Center leader:	Professor Bo Barker Jørgensen
Total grant:	58.3 million DKK

Center for International Courts (iCourts)

Location:	University of Copenhagen
Center leader:	Professor Mikael Rask Madsen
Total grant:	70.0 million DKK

Stellar Astrophysics Centre (SAC)

Location:	Aarhus University
Center leader:	Professor Jørgen Christensen-Dalsgaard
Total grant:	55.0 million DKK

Copenhagen Center for Glycomics (CCG)

Location:	University of Copenhagen
Center leader:	Professor Henrik Clausen
Total grant:	103.3 million DKK

Center for Vitamins and Vaccines (CVIVA)

Location:	Statens Serum Institut
Center leader:	Professor Christine Stabell Benn
Total grant:	58.0 million DKK

CENTERS OF EXCELLENCE ESTABLISHED IN 2015

Center for Chromosome Stability (CCS)

Location:	University of Copenhagen
Center leader:	Professor Ian D. Hickson
Total grant:	65.0 million DKK

Center for Stem Cell Decision Making (StemPhys)

Location:	University of Copenhagen
Center leader:	Professor Lene Oddershede
Total grant:	60.0 million DKK

Center for Music in the Brain (MIB)

Location:	Aarhus University
Center leader:	Professor Peter Vuust
Total grant:	52.2 million DKK

Centre for Carbon Dioxide Activation (CADIAC)

Location:	Aarhus University
Center leader:	Professor Troels Skrydstrup
Total grant:	60.0 million DKK

Center for Urban Network Evolutions (UrbNet)

Location:	Aarhus University
Center leader:	Professor Rubina Raja
Total grant:	65.0 million DKK

Center for Bacterial Stress Response and Persistence (BASP)

Location:	University of Copenhagen
Center leader:	Professor Kenn Gerdes
Total grant:	50.0 million DKK

Center for Neuroplasticity and Pain (CNAP)

Location:	Aalborg University
Center leader:	Professor Thomas Graven-Nielsen
Total grant:	60.2 million DKK

Center for Intelligent Oral Drug Delivery and Sensing using Microcontainers and Nanomechanics (IDUN)

Location:	Technical University of Denmark
Center leader:	Professor Anja Boisen
Total grant:	56.0 million DKK

Center for Silicon Photonics for Optical Communications (SPOC)

Location:	Technical University of Denmark
Center leader:	Professor Leif Katsuo Oxenløwe
Total grant:	59.0 million DKK

Center for Hyperpolarization in Magnetic Resonance (HYPERMAG)

Location:	Technical University of Denmark
Center leader:	Professor Jan Henrik Ardenkjær-Larsen
Total grant:	55.0 million DKK

Center for Autophagy, Recycling and Disease (CARD)

Location:	The Danish Cancer Society
Center leader:	Professor Marja Jäättelä
Total grant:	50.0 million DKK

Center for Personalized Medicine Managing Infectious Complications in Immune Deficiency (PRESIMUNE)

Location:	Rigshospitalet
Center leader:	Professor Jens Lundgren
Total grant:	60.0 million DKK

CENTERS OF EXCELLENCE ESTABLISHED IN 2017

Center for Proteins in Memory (PROMEMO)

Location:	Aarhus University
Center leader:	Professor Anders Nykjær
Total grant:	62.0 million DKK

Center for Economic Behavior and Inequality (CEBI)

Location:	University of Copenhagen
Center leader:	Professor Claus Thustrup Kreiner
Total grant:	57.0 million DKK

Center for Cellular Signal Patterns (CellPAT)

Location:	Aarhus University
Center leader:	Professor Jørgen Kjems
Total grant:	61.0 million DKK

Center for Electromicrobiology (CEM)

Location:	Aarhus University
Center leader:	Professor Lars Peter Nielsen
Total grant:	56.0 million DKK

Center for Privacy Studies (PRIVACY)

Location:	University of Copenhagen
Center leader:	Professor Mette Birkedal Bruun
Total grant:	50.0 million DKK

Center for Functional Genomics and Tissue Plasticity (ATLAS)

Location:	University of Southern Denmark
Center leader:	Professor Susanne Mandrup
Total grant:	65.0 million DKK

CENTERS OF EXCELLENCE TO BE ESTABLISHED IN 2018

Center for Microbial Secondary Metabolites (BigQ)

Location:	Technical University of Denmark
Center leader:	Professor Ulrik Lund Andersen
Total grant:	63.0 million DKK

Center for Microbial Secondary Metabolites (CeMiSt)

Location:	Technical University of Denmark
Center leader:	Professor Lone Gram
Total grant:	58.0 million DKK

Center for Hybrid Quantum Networks (Hy-Q)

Location:	University of Copenhagen
Center leader:	Professor Peter Lodahl
Total grant:	62.0 million DKK

Cosmic Dawn Center (DAWN)

Location:	University of Copenhagen
Center leader:	Professor Sune Toft
Total grant:	66.0 million DKK

JOINT FUNDING ACTIVITIES

National Natural Science Foundation of China (NSFC),
Danish-Chinese Center for the Theory of Interactive Computation

Location:	Aarhus University
Leader:	Professor Peter Bro Miltersen
Total grant:	24.9 million DKK

National Natural Science Foundation of China (NSFC),
Danish-Chinese Center for IDEA4CPS: Foundations for Cyber-Physical Systems

Location:	Aalborg University
Leader:	Professor Kim Guldstrand Larsen
Total grant:	24.0 million DKK

National Science Foundation (NSF)
(7.0 million DKK, which is included in the above mentioned center grants).

NIELS BOHR PROFESSORSHIPS ESTABLISHED IN 2013

Professor Anna Lowenhaupt Tsing, University of California, Santa Cruz

Location:	Department of Culture and Society, Aarhus University
Total grant:	29.4 million DKK

Professor David Needham, Duke University

Location:	Department of Physics, Chemistry and Pharmacy, University of Southern Denmark
Total grant:	29.0 million DKK

Professor Lars Hesselholt, Nagoya University

Location:	Department of Mathematical Sciences, University of Copenhagen
Total grant:	30.0 million DKK

Professor Charles Lesher, University of California, Davis

Location:	Department for Geoscience, Aarhus University
Total grant:	30.0 million DKK

Professor Jaan Valsiner, Clark University

Location:	Department of Communication and Psychology, Aalborg University
Total grant:	20.0 million DKK

Professor Subir Sarkar, University of Oxford

Location:	Niels Bohr Institute, University of Copenhagen
Total grant:	29.0 million DKK

NIELS BOHR PROFESSORSHIPS ESTABLISHED IN 2016/2017

Professor Rita Felski, University of Virginia

Location:	Department for the Study of Culture, University of Southern Denmark
Total grant:	28.0 million DKK

Professor Matthew Collins, The University of York

Location:	Natural History Museum of Denmark, University of Copenhagen
Total grant:	30.9 million DKK

Professor John McGrath, University of Queensland

Location:	School of Business and Social Science, Aarhus University
Total grant:	29.9 million DKK

Professor Thomas Pohl, Max Planck Institute for the Physics of Complex Systems

Location:	Department of Physics and Astronomy, Aarhus University
Total grant:	30.0 million DKK

Professor Morten Bennedsen, INSEAD

Location:	Department of Economics, University of Copenhagen
Total grant:	29.9 million DKK

Professor Professor Enrico Ramirez-Ruiz, University of California

Location:	Niels Bohr Institute, University of Copenhagen
Total grant:	30.0 million DKK

COURSE ACTIVITIES FOR CENTER LEADERS/OUTREACH PROGRAM FOR CENTERS

Total grant:	11.2 million DKK

TOTAL ASSETS AND RETURN ON INVESTMENT

In 2017, the foundation realized a return on investment of 7.1%, and total return on investment was 422 mio. DKK. Broken down into asset classes, return on equities amounted to 293 million DKK and return on the fixed income portfolio amounted to 129 million DKK. Administrative and direct financial expenses amounted to 15.1 million DKK.

Total assets at the end of 2017 were 6,088 million DKK, compared to total assets of 6,066 million DKK at the end of 2016. The foundation distributed 385 million DKK in 2017, which is lower than the maximum distribution level, according to regulations, of 452 million DKK (in 2017 prices).

The strategic asset allocation was unchanged during 2017, with an allocation to bonds and equities of, respectively, 65% and 35%.

Total return
Calculated as a time-weighted return, the total return on investment in 2017 was 7.1%, which was higher than the benchmark return of 6.9%.

From a five-year perspective, covering the period 2013 to 2017, the foundation's return of 6.0% was the same as the annual benchmark return of 6.0%.

Return on investment	2017	2016	2015	2014	2013
Bonds and cash, million DKK	128.6	218.6	-44.0	182.7	-38.1
Equities, million DKK	293.4	192.5	1.1	153.8	256.1
Total return, million DKK	422.0	411.2	-42.9	336.4	218.0
Foundation return, % [1]	7.1	6.8	1.5	9.3	5.6
Benchmark, %	6.9	6.9	1.9	8.7	5.6
Foundation 5 years p.a. return, % [2]	6.0	6.7	6.4	7.9	8.7
Benchmark 5 years p.a. return, % [2]	6.0	6.6	6.2	7.6	8.5

1) The annual return of the total investment is a weighted average of each portfolio's time-weighted return.
2) The geometric mean.

Return on equities
The foundation's equity portfolio consists of a combination of equities in developed countries and emerging markets countries. The split between the developed and emerging countries in the portfolio follows the breakdown in MSCI's benchmark for global equities (MSCI ACWI).

The return from the developed markets equity portfolio was 7.9% compared to a benchmark return of 7.7%. The developed markets equity portfolio is invested in the following passively managed funds: Danske Invest Global Indeks, klasse DKK W d, Northern Trust World Custom ESG Equity Fund, Northern Trust World Custom ESG EUR hedged Equity Fund, and Nykredit Invest Globale A UIAB.

Eighty percent of the exposure to USD and JPY in the developed markets equity portfolio is hedged to DKK except for the investment in the Northern Trust World Custom ESG EUR hedged Equity Fund, where all the currency exposure is hedged to EUR. Both the USD and the JPY were weakening against the DKK during 2017, which resulted in a positive return from the currency hedging. The return on the developed markets equity portfolio, including the currency hedge, was 14.6%.

The emerging markets equity portfolio totaled 3.9% of total assets during the year. This investment takes place through the mutual fund Danske Invest Global Emerging Markets I. The return on the emerging markets equity portfolio in 2017 was 11.2%, which is significantly lower than the return on the benchmark (MSCI emerging markets) of 20.7%. The reasons for the underperformance are a low allocation to Chinese stocks (which had good returns in 2017) and a generally poor stock selection across all regions.

Return on bonds
Danish government and mortgage bonds represent the largest part of the fund's asset, and 37% of the strategic allocation is managed by Nykredit Asset Management (Nykredit). The Danish bond portfolio gave a return of 4.1%, which was higher than the benchmark of 2.5%. The overweight of mortgage bonds in the bond portfolio (about 95%) compared to a share in the benchmark of 75% added to the general performance of the bond portfolios, since the mortgage bonds did better than the government bonds in 2017. Equally important, Nykredit was placed correctly within the mortgage bond market, which also added to the excess return.

The strategic allocation to global inflation-linked bonds is 11% and is managed by Danske Asset Management. The portfolio's return in 2017 was zero compared to the benchmark return of 0.3% The benchmark was changed during 2017 from

a combination of a customized Barclays benchmark (60%) and 40% Barclays WGILB A3/A- or Better 1-10Yr Hedged DKK (hedged to DKK) to 100% Barclays WGILB A3/A- or Better 1-10Yr (hedged to DKK) to reduce the interest rate sensitivity.

The return on the European corporate bond portfolio in 2017 was 2.3% versus the benchmark return of 2.6%. The allocation to European corporate bonds is 10% and the benchmark is Barclays Capital Euro Major Corporate Index (hedged to DKK). The portfolio is managed by Danske Asset Management.

The US high-yield bond portfolio represents 7% of the strategic allocation and the portfolio is managed by Columbia Threadneedle. During 2017, the high-yield bond portfolio gave a return of 4.4%, which is lower than the benchmark return of 5.2%. The benchmark for the high-yield portfolio is ML US High-Yield Bonds, Constrained (hedged to DKK).

Responsible investment policy

Since the foundation wishes to act as a responsible investor, it is crucial that the mutual fund and portfolio managers have a responsible investment policy. To keep costs down, the foundation often makes its investments in mutual funds together with other investors. As a minority investor in a mutual fund, the foundation cannot decide the mutual fund's responsible investment policy, but it is crucial that there is a policy within this area. The foundation's investments in government and mortgage bonds are not covered by a responsible investment policy.

In general, the portfolio managers' goal is to avoid investing in companies that do not fulfill recognized norms and standards for human rights, arms production, working conditions, the environment, and anti-corruption. The portfolio managers' responsible investment policy is often based on some of the following internationally recognized norms and standards:

- UN Global Compact (human and labor rights, environment, and anti-corruption)
- UN Guiding Principles on Business and Human Rights
- OECD Guidelines for Multinational Enterprises
- The ILO conventions on labor rights (child labor, discrimination, forced labor, etc.)
- Weapons-related conventions (cluster munitions, anti-personnel landmines, biological/chemical weapons, etc.).

The mutual fund's responsible investment policy varies. For example, some of the DNRF's mutual fund/portfolio managers do not invest in companies involved in the production of tobacco, while others do. An overview of the portfolio managers' responsible investment policies is in the table below.

Portfolio/mutual fund	Danske Invest	Nykredit Invest	Northern Trust	Danske Invest	SEB Invest	Danske AM
Asset type	Equities	Equities	Equities	Emerging markets equities	High-yield bonds	Investment grade bonds
UN Global Compact	Yes	Yes	Yes	Yes	Yes	Yes
UN Guiding Principles on Business and Human Rights	Yes	Yes	No	Yes	Yes	Yes
OECD Guidelines for Multinational Enterprises	Yes	Yes	No	Yes	Yes	Yes
The ILO conventions on labor rights	Yes	Yes	No	Yes	Yes	Yes
Weapons-related conventions	Yes	Yes	Yes	Yes	Yes	Yes
Exclude tobacco producers	No	No	Yes	No	No	Yes
Exclude producers of nuclear weapons and depleted uranium weapons	Yes [1)]	No	Yes	Yes	Yes	No
Exclusion of companies with high extraction of thermal coal	No	No	No	No	Yes	No
Exercises voting privileges	Yes	Yes	Yes	No	N/A	N/A
Engages	Yes	Yes	Yes	Yes	N/A	N/A

1) Danske Invest does not automatically exclude depleted uranium weapons but does exclude companies directly involved in R&D, the production of nuclear warheads, or related activities.

Donation of 500,000 DKK from J.H. Schultz Foundation
For the fourth year in a row, the board of the J.H. Schultz Foundation has decided to donate half a million DKK to the DNRF. The J.H. Schultz Foundation was established in 1988 when Ole Trock-Jansen donated 95% of the Schultz Company's stocks to the J.H. Schultz Foundation.

THE BOARD

In 2017, the board conducted six regular meetings and was represented at 27 follow-up meetings with the centers. The composition of the board end 2017 was as follows:

Liselotte Højgaard (Chair)
Professor, University of Copenhagen, Head of Department, Rigshospitalet. Appointed by the Minister for Higher Education and Science (01.01.13-31.12.18)

Morten Overgaard Ravn (Deputy Chair)
Professor, Department of Economics, University College London. Nominated by the Danish Rectors' Conference (01.01.16-31.12.19)

Minik Thorleif Rosing
Professor, Natural History Museum of Denmark, University of Copenhagen. Nominated by the Joint Committee of Directors at the Governmental Research Institutes (01.01.16-31.12.19)

Christina Moberg
Professor, Royal Institute of Technology, KTH, Stockholm. Nominated by the Independent Research Fund Denmark (01.11.13-30.11.21)

Bart De Moor
Professor, KU Leuven. Appointed by the Minister for Higher Education and Science (01.11.13-30.11.21)

Jesper Ryberg
Professor, Ethics and Philosophy of Law, Roskilde University. Nominated by the Royal Danish Academy of Sciences and Letters (01.01.16-31.12.19)

Anne Scott Sørensen
Professor, Department for the Study of Culture, University of Southern Denmark. Nominated by the Independent Research Fund Denmark (01.01.16-31.12.19)

Eero Vuorio
Professor, University of Turku, Finland. Nominated by the Independent Research Fund Denmark (01.11.13-30.11.21)

STATEMENT BY MANAGEMENT ON THE ANNUAL REPORT

The board and the director have today considered and approved the annual report of the Danish National Research Foundation for the financial year 2017.

The annual report is presented in accordance with the Consolidated Act on the Danish National Research Foundation, the Danish Executive Order on the Administration of the Funds of the Danish National Research Foundation, the Royal Decree on the Charter of the Danish National Research Foundation and the provisions of the Danish Financial Statements Act with the adjustments resulting from the special nature of the Danish National Research Foundation.

In our opinion, the annual accounts give a true and fair view of the foundation's financial position at December 31, 2017 and of the results of its operations for the financial year January 1 to December 31, 2017. In addition, we believe that the management commentary contains a fair review of the affairs and conditions referred to therein.

Finally, it is our opinion that the established administrative procedures and internal controls covered by the financial statements comply with the appropriations granted, statutes, other regulations, agreements and usual practice, and that sound financial management is exercised in the administration of the funds and activities covered by the financial statements.

Copenhagen, March 23, 2018.

Søren-Peter Olesen
Director

Board members:

Liselotte Højgaard
Chair

Morten Overgaard Ravn
Deputy Chairman

Minik Thorleif Rosing

Christina Moberg

Bart De Moor

Jesper Ryberg

Anne Scott Sørensen

Eero Vuorio

INDEPENDENT AUDITOR'S REPORT

TO THE BOARD OF THE DANISH NATIONAL RESEARCH FOUNDATION

REPORT ON THE FINANCIAL STATEMENTS

Opinion
We have audited the financial statements of the Danish National Research Foundation for the financial year 01.01.2017 – 31.12.2017, which comprise the accounting policies, income statement, balance sheet and notes. The financial statements are prepared in accordance with the Danish Financial Statements Act subject to the adjustments caused by the special nature of the Foundation.

In our opinion, the financial statements give a true and fair view of the Foundation's financial position at 31.12.2017 and of the results of the Foundation's operations for the financial year 01.01.2017 – 31.12.2017 in accordance with the Danish Financial Statements Act subject to the adjustments caused by the special nature of the Foundation.

Basis for opinion
We conducted our audit in accordance with International Standards on Auditing (ISAs) and additional requirements applicable in Denmark as well as the standards on public auditing as the audit was conducted in accordance with the provisions of section 9(2) of the Danish Auditor General's Act. Our responsibilities under those standards and requirements are further described in the Auditor's responsibilities for the audit of the financial statements section of this auditor's report. We are independent of the Foundation in accordance with the International Ethics Standards Board of Accountants' Code of Ethics for Professional Accountants (IESBA Code) and the additional requirements applicable in Denmark, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

The Management's responsibilities for the financial statements
The Management is responsible for the preparation of financial statements that give a true and fair view in accordance with the Danish Financial Statements Act subject to the adjustments caused by the special nature of the Foundation, and for such internal control as the Management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Management is responsible for assessing the Foundation's ability to continue as a going concern, for disclosing, as applicable, matters related to going concern, and for using the going concern basis of accounting in preparing the

financial statements unless the Management either intends to liquidate the Foundation or to cease operations, or has no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements
Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs and the additional requirements applicable in Denmark as well as the standards on public auditing, will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit conducted in accordance with ISAs and the additional requirements applicable in Denmark as well as the standards on public auditing, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Foundation's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Management.

- Conclude on the appropriateness of the Management's use of the going concern basis of accounting in preparing the financial statements, and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Foundation's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures

are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Foundation to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures in the notes, and whether the financial statements represent the underlying transactions and events in a manner that gives a true and fair view.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Statement on the management commentary
The Management is responsible for the management commentary.

Our opinion on the financial statements does not cover the management commentary, and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the management commentary and, in doing so, consider whether the management commentary is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

Moreover, it is our responsibility to consider whether the management commentary provides the information required under the Danish Financial Statements Act subject to the adjustments caused by the special nature of the Foundation.

Based on the work we have performed, we conclude that the management commentary is in accordance with the financial statements and has been prepared in accordance with the requirements of the Danish Financial Statements Act subject to the adjustments caused by the special nature of the Foundation. We did not identify any material misstatement of the management commentary.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

Statement on compliance audit and performance audit
The Management is responsible for the transactions covered by the financial statements complying with the appropriations granted, statutes, other regulations, agreements and usual practice, and for ensuring that sound financial management is exercised in the administration of the funds and in the operation of the activities covered by the financial statements.

As part of our audit of the financial statements, it is our responsibility to perform compliance audit procedures and performance audit procedures on selected subject matters in accordance with the standards on public auditing. In our compliance audit, we test selected subject matters to obtain reasonable assurance about whether the transactions covered by the financial statements comply with appropriations granted, statutes, other regulations, agreements and usual practice. In our performance audit, we make an assessment to obtain

reasonable assurance about whether the systems, processes or transactions examined support the exercise of sound financial management in the administration of the funds and in the operation of the activities covered by the financial statements.

If, based on the procedures performed, we conclude that material critical comments should be made, we are required to report this.

We have no material critical comments to report in this respect.

Copenhagen, 23.03.2018

Deloitte
Statsautoriseret Revisionspartnerselskab
Business Registration No 33 96 35 56

Jens Sejer Pedersen
State-Authorised Public Accountant
Identification No. (MNE) 14986

ACCOUNTING POLICIES

The annual report is presented in accordance with the Consolidated Act on the Danish National Research Foundation, the Danish Executive Order on the Administration of the Funds of the Danish National Research Foundation, the Royal Decree on the Charter of the Danish National Research Foundation and the provisions of the Danish Financial Statements Act governing reporting class C enterprises (large) with the adjustments resulting from the special nature of the foundation.

The provisions of the Danish Financial Statements Act governing reporting class C enterprises (large) prescribe preparation of a cash flow statement. Due to the nature of the foundation's activities, the cash flows cannot reasonably be broken down by cash flows from operating, investing and financing activities, for which reason the cash flow statement has been omitted, referring to Section 11(3) of the Danish Financial Statements Act. In addition, the foundation has decided to derogate from the format requirements laid down by the Danish Financial Statements Act for the income statement in order to illustrate the special nature of the foundation.

The accounting policies applied are consistent with those applied last year.

INCOME STATEMENT

Interest income
Interest income from bonds and bank deposits are accrued so it relates to the financial year under audit.

Dividend
Dividend received on shares is included in the income statement at the time of distribution.

Realized capital gains and losses on and market value adjustments of securities
Realized capital gains and losses on and market value adjustments of securities (bonds and equities) are included in the income statement.

Other income
Under the Danish Appropriation Act, more funds have been made available to the foundation for distribution. The funds are recognized when transferred to the foundation.

Distribution
Funds distributed are expensed in the financial year in which they are distributed. Funds are distributed as research plans are implemented; see note 16b. Time lags may exist to a limited extent.

External expenses for the scientific activities of the Foundation
Such expenses comprise expenses for the foundation's scientific activities, including expenses for the consideration of applications and evaluation of grants.

BALANCE SHEET

Fixed assets
Leasehold improvements are recognized in the balance sheet at cost less accumulated depreciation. Fixed assets are depreciated straight-line over their estimated useful lives of five years.

Office equipment and furniture is recognized at cost less accumulated depreciation. Office equipment and furniture is depreciated straight-line over their estimated useful lives, meaning three years for IT hardware and software and five years for other office equipment.

Assets costing less than DKK 25,000 per unit are expensed in the year of acquisition.

Securities
Listed securities (bonds and equities) are measured at fair value (quoted price) at the balance sheet date.

Bonds redeemed at the time of presentation of the annual accounts are recognized at par value.

Other investments are measured at the lower of the value at the date of acquisition and fair value.

Distribution obligations
Distributions by the foundation mainly take the form of multiannual total grants awarded over a number of years as research projects are completed; however, grants usually are not awarded for more than a six-year period.

The distribution obligations that can be accommodated by equity and budgeted earnings are not provided for in the balance sheet. Instead, distribution obligations are disclosed in notes 16a and 16b stating estimated residual amounts to be distributed.

Income tax
The foundation is not liable to tax.

Foreign currency translation
Foreign currency transactions are translated into Danish kroner applying the exchange rate at the transaction date.

Realized and unrealized gains and losses are recognized in capital income in the income statement.

Bank deposits and securities denominated in foreign currencies are translated into DKK applying the balance sheet date exchange rate. Realized and unrealized foreign exchange gains and losses are recognized in capital income in the income statement.

Derivative financial instruments
The Danish National Research Foundation only applies derivative financial instruments to hedge the currency and interest rate risks involved in the portfolio of securities.

Changes in the fair value of derivative financial instruments classified as and complying with the re quirement for hedging the fair value of a recognized asset or a recognized liability are recorded in the income statement together with changes in the value of the hedged asset or the hedged liability. In doing so, symmetrical recognition of gains and losses on the item hedged and the hedging instrument, respectively, is ensured.

Premiums received or paid as well as forward premiums and discounts are recognized in the income statement over the terms of the instruments.

The fair value of derivative financial statements classified as and qualifying for hedging of an instrument to hedge a recognized asset or liability is recognized in the balance sheet along with the asset or liability to which hedging relates.

INCOME STATEMENT
JANUARY 1 – DECEMBER 31

	Note	2017	2016
Return on investment			
Realized gains and losses, bonds		71,283,229	140,572,375
Unrealized gains and losses, bonds		57,319,978	78,254,588
Realized gains and losses, equities		103,399,425	36,023,682
Unrealized gains and losses, equities		190,022,531	156,519,853
Interest, bank deposits		-14,220	-198,908
Return on investment, total		422,010,943	411,171,590
Other receipts, net	1	477,232	475,492
Costs			
Distributions	16	-384,769,460	-381,285,547
Custody and bank fees etc.	2	-3,964,071	-5,771,232
Salaries etc.	3	-7,415,697	-7,142,792
Office expenses	4	-528,975	-588,114
Premises	5	-1,030,101	-973,041
Accountant/attorney remuneration etc.	6	-860,330	-1,245,910
External expenses, external research activities	7	-682,491	-1,371,366
Other costs	8	-577,222	-722,446
Costs, total		-399,828,347	-399,100,448
Result before depreciation		22,659,828	12,546,634
Depreciation	9	-162,030	-131,105
Result for the year		22,497,798	12,415,529

BALANCE SHEET
AS OF DECEMBER 31

	Note	2017	2016
ASSETS			
Fixed assets			
Tangible fixed assets	10		
Leasehold improvements		196,443	225,485
Office equipment and furniture		142,844	79,330
		339,287	304,815
Fixed asset investments	11		
Other investments		0	42,964
Deposits		240,784	231,112
		240,784	274,076
Fixed assets, total		580,071	578,891
Current assets			
Receivables			
Accrued interest		18,193,290	23,482,452
Other receivables		885,941	2,125,359
Deferred charges		67,990	125,997
		19,147,221	25,733,808
Liquid assets			
Securities, bonds	12	3,926,809,854	3,881,452,567
Securities, equities	13	2,128,561,666	2,134,073,708
Bank deposits	14	13,231,043	24,105,302
		6,068,602,563	6,039,631,577
Current assets, total		6,087,749,784	6,065,365,385
ASSETS, TOTAL		6,088,329,855	6,065,944,276
EQUITY AND LIABILITIES			
Net capital	15	6,086,674,727	6,064,176,929
Payables			
Short-term payables			
Payables and back costs		1,655,128	1,767,347
Payables, total		1,655,128	1,767,347
EQUITY AND LIABILITIES, TOTAL		6,088,329,855	6,065,944,276
Distribution obligations	16		
Contingent liabilities	17		

NOTES

	2017	2016
1 OTHER RECEIPTS, NET		
Private donation	500,000	500,000
Market value adjustment, other investments, see note 11	-22,768	-24,508
Other receipts, total	477,232	475,492
2 CUSTODY AND BANK FEES, ETC.		
Bonds	3,804,526	3,941,037
Equities	140,669	1,651,272
Fees, portfolio managers	3,945,195	5,592,309
Remuneration regarding investment of capital injection	0	156,250
Bank	7,209	10,485
Other	11,667	12,188
Custody and bank fees, total	3,964,071	5,771,232
3 SALARIES ETC.		
Director and board members	2,678,809	2,386,749
Salaries, other employees	4,156,723	4,163,832
Wage reimbursement	-151,170	0
Pension costs	678,982	545,130
Danish Labor Market Supplementary Pension Scheme (ATP)	52,353	47,081
Salaries etc., foundation staff, total	7,415,697	7,142,792
Average staff number, accounting year	9	9
4 OFFICE EXPENSES		
Office supplies	30,428	42,582
Postage and freight	11,164	17,681
Telephone, Internet	127,916	135,785
Minor acquisitions	73,507	77,124
Journal, books, etc.	28,285	19,667
Servicing contracts etc.	257,675	295,275
Office expenses, total	528,975	588,114

	2017	2016
5 PREMISES		
Rent of office	722,352	693,336
Electricity, heating	90,158	82,335
Cleaning	145,210	139,609
Repairs and maintenance	72,381	57,761
Premises, total	1,030,101	973,041
6 ACCOUNTANT/ATTORNEY REMUNERATION ETC.		
Accountant remuneration, Deloitte	230,000	221,250
Accountancy consultation, Deloitte	-11,250	109,375
Attorney's remuneration	114,125	193,169
Other consultancy services	527,455	722,116
Accountant/attorney remuneration etc., total	860,330	1,245,910
7 EXTERNAL EXPENSES, RESEARCH ACTIVITIES		
Peer review expenses	225,470	776,960
Preparation of publications	160,501	324,507
Research presentations, meetings etc.	242,300	218,647
European Science Foundation, Science Europe membership fee	54,220	51,252
External expenses, research activities, total	682,491	1,371,366
8 OTHER EXPENSES		
Travelling and accomodation	270,940	317,437
Advertising	12,306	4,875
Entertainment expenses, gifts	3,131	3,076
Courses	87,097	140,209
Insurance	86,350	98,170
Cost of staff and board	117,398	158,679
Other expenses, total	577,222	722,446
9 DEPRECIATION		
Leasehold improvements, see note 10	111,042	94,642
Office furniture and equipment, see note 10	50,988	36,463
Depreciation, total	162,030	131,105

	Leasehold improvements	Office equipment and furniture	Total
10 TANGIBLE FIXED ASSETS			
Acquisition cost, January 1, 2017	2,018,942	1,120,461	3,139,403
Additions	82,000	114,502	196,502
Disposals	0	0	0
Acquisition cost, December 31, 2017	2,100,942	1,234,963	3,335,905
Depreciation, accumulated, January 1, 2017	-1,793,457	-1,041,131	-2,834,588
Depreciation for the year	-111,042	-50,988	-162,030
Reversed depreciation, disposals for the year			0
Depreciation, accumulated, December 31, 2017	-1,904,499	-1,092,119	-2,996,618
Book value at year-end	196,443	142,844	339,287

	Other investments	Deposits	Total
11 FIXED ASSET INVESTMENTS			
Acquisition cost, January 1, 2017	1,773,954	231,112	2,005,066
Additions	0	9,672	9,672
Disposals	-1,773,954	0	-1,773,954
Acquisition cost, December 31, 2017	0	240,784	240,784
Value adjustments, accumulated, January 1, 2017	-1,730,990	0	-1,704,501
Value adjustment for the year	-22,768	0	-22,768
Reversed value adjustments, disposals for the year	1,753,758	0	0
Value adjustments, accumulated, December 31, 2017	0	0	0
Book value at year-end	0	240,784	240,784

	2017	2016
12 SECURITIES, BONDS		
Asset classes		
Danish bonds	2,241,143,639	2,202,616,767
European corporate bonds	591,986,507	590,692,920
Global inflation-linked bonds	663,931,600	661,935,128
US High yield bonds *	429,748,108	426,207,752
Bonds, total	3,926,809,854	3,881,452,567

* Option adjusted duration, December 31, 2017: 5.72 (December 31, 2016: 4.22)

Danish bonds
Distribution by type of security:

Mortgage bonds	2,236,721,339	1,992,368,167
Government bonds	4,422,300	210.248,600
	2,241,143,639	2,202,616,767

Option adjusted duration December 31, 2017: 4.35 (December 31, 2016: 4.28)

	2017	2016

12 SECURITIES, BONDS

European corporate bonds
Distribution by rating category and forward currency contract:

AA	20,919,497	28,225,880
A	205,283,675	173,724,975
BBB	366,416,817	388,548,720
Forward currency contracts, EUR	-406,630	271,851
Forward currency contracts, USD	0	0
Forward currency contracts, GBP	0	0
Interest rate futures, EUR	-226,852	-78,506
Interest rate futures, USD	0	0
	591,986,507	590,692,920

Rating category according to Standard & Poor's Long-Term Credit Rating.
Option adjusted duration, December 31, 2017: 5.15 (December 31, 2016: 5.14)

Global inflation-linked bonds
Distribution by country and forward currency contract:

	2017	2016
Denmark	2,941,721	2,222,268
Canada	42,227,455	31,504,638
Germany	6,472,440	48,877,530
France	91,763,708	154,098,778
Great Britain	72,451,732	127,223,183
Sweden	13,563,393	0
USA	417,696,955	300,467,966
New Zeeland	2,452,757	2,581,210
Australia	9,575,259	3,099,776
Forward currency contracts, CAD	-119,899	-587,306
Forward currency contracts, EUR	-62,176	-355,879
Forward currency contracts, GBP	-297,403	-407,937
Forward currency contracts, SEK	-101,223	0
Forward currency contracts, USD	5,652,562	-6,597,764
Forward currency contracts, NZD	-81,971	1,442
Forward currency contracts, AUD	-203,710	-192,777
	663,931,600	661,935,128

Adjusted duration, December 31, 2017: 2.67 (December 31, 2016: 4.67).

	2017	2016
13 SECURITIES, EQUITIES		
Nykredit Invest Globale A UIAB	156,351,037	164,541,168
NT World Custom ESG Equity Fund	569,785,919	574,047,387
NT World Custom ESG EUR HDG EQY	588,867,895	578,610,091
Danske Invest Global Indeks, klasse DKK W d	562,964,722	589,397,859
Danske Invest Global Emerging Markets I	242,604,724	232,633,098
Forward currency contracts, JPY	1,073,175	1,097,353
Forward currency contracts, USD	6,914,194	-6,253,248
Equities, total	2,128,561,666	2,134,073,708
14 LIQUID ASSETS		
Cash	5,038	4,122
Current bank accounts	1,500,270	630,461
Portfolio accounts	11,725,735	23,470,719
Liquid assets, total	13,231,043	24,105,302
15 NET CAPITAL		
Net capital, January 1	6,064,176,929	6,051,761,400
Result for the year	22,497,798	12,415,529
Net capital, December 31, total	6,086,674,727	6,064,176,929

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Centers established in 1993/94							
1.	Søren Kierkegaard Research Center	27,739	61,654		89,393		-
2.	The Danish Epidemiology Science Center	41,932	54,152		96,084		-
3.	Center for Labour Market and Social Research	25,127	1,293		26,420		-
4.	Theoretical Astrophysics Center	47,340	40,045		87,385		-
5.	Center for Atomic Physics	53,999	45,899		99,898		-
6.	Center for Atomic-Scale Materials Physics	39,595	50,139		89,734		-
7.	Center for Basic Research In Computer Science	32,608	15,925		48,533		-
8.	International Research Centre for Computational Hydrodynamics	43,950	4,586		48,536		-
9.	Danish Center for Remote Sensing	50,742			50,742		-
10.	Danish Lithosphere Center	71,874	101,653		173,527		-
11.	Danish Center for Experimental Parasitology	48,013	53,216		101,229		-
12.	Center for Biological Sequence Analysis	25,271	35,000		60,271		-
13.	Center for Biomolecular Recognition	35,080			35,080		-
14.	The Copenhagen Muscle Research Center	72,326	85,078		157,404		-
15.	Center for Sensory-Motor Interaction	25,000	64,329		89,329		-
16.	Center for Sound Communication	22,713	25,175		47,888		-
17.	Center for Crystallographic Studies	25,451	30,127		55,578		-
18.	Center for Enzyme Research	22,472	809		23,281		-
19.	Center for Gene Regulation and Plasticity of Neuro-Endocrine Network	37,571	2,442		40,013		-
20.	Center for Semiotic Research	12,741	5,000		17,741		-
21.	Copenhagen Polis Center	7,991	10,714		18,705		-
22.	Center for Maritime Archaeology	40,364	50,047		90,411		-
23.	Economic Policy Research Unit	17,921	19,674		37,595		-
To be carried forward		827,820	756,957		1,584,777	0	0

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		827,820	756,957		1,584,777	0	0
Other activities							
24.	The National Center for Register-Based Research	11,573	15,000		26,573		-
25.	Statistics Denmark, Research Unit Aarhus	7,090	3,122		10,212		-
26.	Research Machine, Statistics Denmark	1,357			1,357		-
27.	ERAS (Danish Data Archives)	6,401			6,401		-
28.	Research School, Aarhus	95,074			95,074		-
29.	Research School, Aalborg	39,572			39,572		-
30.	Danish National Birth Cohort	17,990			17,990		-
Centers established in 1997/98							
31.	Center for Solid Phase Organic Combinatorial Chemistry	20,527	19,505		40,032		-
32.	Center for Catalysis	24,986	29,901		54,887		-
33.	Center for Plant-Microbe Symbiosis	24,119			24,119		-
34.	Center for Demographic Research	34,987			34,987		-
35.	The Danish Center for Earth System Science	50,189	9,098		59,287		-
36.	Network in Mathematical Physics and Stochastics	23,519	12,800		36,319		-
37.	Center for Molecular Plant Physiology	40,000	49,558		89,558		-
38.	Center for Experimental BioInformatics	34,603	35,674		70,277		-
39.	Center for Human-Machine Interaction	25,027			25,027		-
Centers established in 2001							
40.	Center for Metal Structures in 4 Dimensions	36,572	33,825		70,397		-
41.	Center for Nucleic Acid (NAC)	34,307	32,550		66,857		-
42.	Center for Applied Microeconometrics	26,723			26,723		-
43.	Center for Biomembrane Physics	35,137	30,456		65,593		-
44.	Center for Quantum Optics	29,800	50,795		80,595		-
To be carried forward		1,447,373	1,079,241		2,526,614	0	0

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		1,447,373	1,079,241		2,526,614	0	0
45.	The Water and Salt Research Center	32,503	33,380		65,883		-
46.	Quantum Protein Center	30,468	5,311		35,779		-
47.	Center of Functionally Integrative Neuroscience	33,765	42,198		75,963		-
48.	Wilhelm Johannsen Center for Functional Genome Research	30,226	29,597		59,823		-
Centers established in 2002							
49.	Center for the Study of Cultural Heritage of Medieval Rituals	15,209	12,206		27,415		-
50.	Center for Black Sea Studies	17,292	17,637		34,929		-
51.	Center for Subjectivity Research	19,148	17,230		36,378		-
Initiatives established in 2003							
52.	National Platform for Integrative Biology	17,909			17,909		-
Centers established in 2005							
53.	Nordic Center for Earth Evolution	43,954	45,352		89,306		-
54.	Center for Individual Nanoparticle Functionality	38,942	45,605		84,547		-
55.	Centre for Inflammation and Metabolism	25,824	30,063		55,887		-
56.	Center for Genotoxic Stress	39,533	26,000		65,533		-
57.	Centre for Social Evolution	32,827	44,204	-12	77,019	-12	-
58.	Centre for mRNP Biogenesis and Metabolism	39,264	40,686		79,950		-
59.	Center for Insoluble Protein Structures	39,934	40,016		79,950		-
60.	Center for Oxygen Microscopy and Imaging	22,228	28,026		50,254		-
61.	Centre for Viscous Fluid Dynamics	38,392	30,000		68,392		-
To be carried forward		1,964,791	1,566,752	-12	3,531,531	-12	0

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		1,964,791	1,566,752	-12	3,531,531	-12	0
62.	Dark Cosmology Centre	49,162	65,123		114,285		-
63.	Centre for Language Change in Real Time	29,757	41,305		71,062		-
64.	Centre for Textile Research	19,387	25,338		44,725		-
65.	Center for Models of Life	22,053	29,856		51,909		-
66.	Danish Arrhythmia Research Centre	29,692	40,000		69,692		-
67.	Center for Sustainable and Green Chemistry	24,797			24,797		-
68.	Center for Molecular Movies	31,098	4,320		35,418		-
Niels Bohr Professorships established in 2006							
69.	David Arnot, University of Copenhagen	20,008			20,008		-
70.	Dale T. Mortensen, Aarhus University	12,630			12,630		-
71.	Nikolai Reshetikhin, Aarhus University	21,118			21,118		-
72.	Christopher Frith, Aarhus University	13,033			13,033		-
73.	Cathie Martin, University of Copenhagen	16,823			16,823		-
74.	Hassan Aref, Technical University of Denmark	10,795			10,795		-
DNRF Professorships established in 2007							
75.	Steen Rasmussen, University of Southern Denmark	22,075			22,075		-
76.	Jørgen S. Nielsen, University of Copenhagen	19,090			19,090		-
77.	John Couchman, University of Copenhagen	21,917			21,917		-
Centers established in 2007							
78.	Center for Research in Econometric Analysis of Time Series	40,204	40,000		80,204	2,707	0
79.	Centre for Carbohydrate Recognition and Signaling	45,581	45,000		90,581	3,555	0
80.	Center for Comparative Genomics	16,489			16,489		-
81.	Centre for DNA Nanotechnology	44,501	50,000		94,501	660	0
82.	Center for Epigenetics	61,014	50,000	-270	110,744	1,165	0
83.	Centre for Ice og Climate	60,985	55,311		116,296	4,472	0
84.	Center for Massive Data Algorithm	32,541	40,000		72,541	5,393	0
85.	Centre for Membrane Pumps in Cells and Disease	56,296	50,415		106,711	2,454	0
Joint funding							
86.	National Natural Science Foundation of China (NSFC), seminars	641			641		-
86-1.	NSFC, Danish-Chinese Center for Proteases and Cancer	11,534	10,000		21,534		-
86-2.	NSFC, Danish-Chinese Center of Breast Cancer Research	12,681	9,864		22,545		-
To be carried forward		2,710,693	2,123,284	-282	4,833,695	20,394	0

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		2,710,693	2,123,284	-282	4,833,695	20,394	0
86-3.	NSFC, Danish-Chinese Center for Self-Assembly and Function of Molecular Nanostructures on Surfaces	14,755	10,000		24,755		-
86-4.	NSFC, Danish-Chinese Center for Molecular Nano-Electronics	14,536	10,000		24,536		-
86-5.	NSFC, Danish-Chinese Center for Nanometals	13,589	10,069		23,658		-
86-6.	NSFC, Danish-Chinese Center for Proton Conducting Systems	14,537			14,537		-
86-7.	NSFC, Danish-Chinese Center for Organic-based photovoltaic cells	15,000	9,997		24,997		-
86-8.	NSFC, Danish-Chinese Center for Applications of Algebraic Geometry	13,052			13,052		-
86-9.	NSFC, Danish-Chinese Center for the Theory of Interactive Computation	14,908	10,000		24,908	857	0
86-10.	NSFC, Danish-Chinese Center for IDEA4CPS: Foundations for Cyper-Physical Systems	14,399	10,000	-392	24,007	2,792	0
87.	Max Planck Society, Center for Geomicrobiology	24,029			24,029		-
Course activities for center leaders/outreach program							
88.	Management course/communication	3,550	2,600	5,000	11,150	310	6,780
Centers established in 2009/2010							
89.	Center on Autobiographical Memory Research	42,085	42,000		84,085	8,024	18,089
90.	Center for Particle Physics Phenomenology	40,000	40,000		80,000	8,129	16,599
91.	Centre for Particle Physics	40,000	40,000		80,000	7,319	21,145
92.	Center for Symmetry and Deformation	50,104	40,415		90,519	8,596	24,516
93.	Center for Materials Crystallography	50,174	55,000		105,174	9,579	21,865
94.	Center for Geogenetics	50,210	50,639		100,849	8,753	10,130
95.	Centre for Quantum Geometry of Moduli Spaces	54,271	35,000		89,271	7,316	9,815
96.	Center for Macroecology, Evolution and Climate	60,747	51,486		112,233	9,030	19,859
97.	Center for Star and Planet Formation	38,400	44,000	150	82,550	9,040	10,645
Centers established in 2012							
98.	Centre for Medieval Literature	36,000		24,000	60,000	6,896	24,590
99.	Center for Dynamic Molecular Interactions	49,000		32,700	81,700	7,757	32,700
100.	Center for Permafrost	60,242		39,500	99,742	7,438	39,057
101.	Center for Quantum Devices	64,415			64,415	10,762	5,003
102.	Center for Financial Frictions	48,000			48,000	10,670	3,137
103.	Center for Nanostructured Graphene	54,000		138	54,138	5,623	1,383
104.	Center for Geomicrobiology	58,301			58,301	10,286	0
105.	Center for International Courts	42,000		28,000	70,000	8,934	29,204
To be carried forward		3,690,997	2,584,490	128,814	6,404,301	168,505	294,517

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		3,690,997	2,584,490	128,814	6,404,301	168,505	294,517
106.	Stellar Astrophysics Centre	55,000			55,000	9,347	2,259
107.	Copenhagen Center for Glycomics	62,000		41,300	103,300	9,946	41,300
108.	Center for Vitamins and Vaccines	58,000			58,000	10,581	4,084
Niels Bohr Professorships established in 2013							
109.	Anna Tsing, Aarhus University	29,000		415	29,415	4,899	6,598
110.	David Needham, University of Southern Denmark	29,000			29,000	8,201	828
111.	Lars Hesselholt, University of Copenhagen	30,000			30,000	6,412	1,793
112.	Charles Lesher, Aarhus University	29,952			29,952	5,613	2,188
113.	Jaan Valsiner, Aalborg University	20,000			20,000	5,634	824
114.	Subir Sarkar , University of Copenhagen	29,000			29,000	7,878	5,464
Centers established in 2015							
115.	Center for Chromosome Stability	65,000			65,000	6,261	41,769
116.	Center for Stem Cell Decision Making	60,000			60,000	9,628	35,948
117.	Center for Music in the Brain	52,207			52,207	6,026	38,464
118.	Center for Carbon Dioxide Activation	60,000			60,000	11,394	35,199
119.	Center for Urban Network Evolutions	65,000			65,000	13,241	44,380
120.	Center for Bacterial Stress Response and Persistence	50,000			50,000	6,517	33,516
121.	Center for Neuroplasticity and Pain	60,000		242	60,242	11,860	37,727
122.	Center for Intelligent Oral Drug Delivery and Sensing using Microcontainers and Nanomechanics	56,000			56,000	11,535	31,549
123.	Center for Silicon Photonics for Optical Communications	59,000			59,000	12,024	31,411
124.	Center for Hyperpolarization in Magnetic Resonance	55,000			55,000	7,719	38,444
125.	Center for Autophagy, Recycling and Disease	50,000			50,000	7,578	24,739
126.	Center for Personalized Medicine Managing Infectious Complications in Immune Deficiency	60,000			60,000	10,878	38,672
To be carried forward		4,725,156	2,584,490	170,771	7,480,417	351,677	791,673

16A DISTRIBUTION OBLIGATIONS

2017 distributions and total grants, DKK thousand

Grant No		Grant 1st period	Grant 2nd period	Changes in 2017	Grants total	Disbursed 2017	Residual disbursement, expected
Brought forward		4,725,156	2,584,490	170,771	7,480,417	351,677	791,673
Niels Bohr Professorships established in 2016-2017							
127.	Rita Felski, University of Southern Denmark	27,997			27,997	5,750	21,377
128.	Matthew Collins, University of Copenhagen	30,860			30,860	3,811	26,717
129.	John McGrath, Aarhus University	29,948			29,948	7,600	22,262
130	Thomas Pohl, Aarhus University			29,976	29,976	3,762	26,215
131	Morten Bennedsen, University of Copenhagen			29,909	29,909	3,840	26,069
132	Enrico Ramirez-Ruiz, University of Copenhagen			29,959	29,959	4,577	25,382
Centers established in 2017							
133.	Center for Proteins in Memory			62,000	62,000		62,000
134.	Economic Behavior and Inequality			57,000	57,000	790	56,210
135.	Cellular Signal Patterns			61,000	61,000	512	60,488
136.	Center for Electromicrobiology			56,000	56,000	1,156	54,844
137.	Center for Microbial Secondary Metabolites			58,000	58,000		58,000
138.	Center for Privacy Studies			50,000	50,000	405	49,595
141.	Center for Functional Genomics and Tissue Plasticity			65,000	65,000	889	64,111
Grant and distribution, total		4,813,961	2,584,490	669,615	8,068,066	384,769	1,344,943

The number of grants listed in the key figures includes the Centers of Excellence, the joint funding activities and the Niels Bohr Professorships, listed on pages 36-43.

All payments are subject to a contractual qualification that the foundation has to receive the expected and required revenue.

16B DISTRIBUTION OBLIGATIONS

Annual disbursments, DKK thousand:	Disbursed	Expected disbursements to activities listed above	Total
1993	19,133		
1994	141,708		
1995	154,509		
1996	176,194		
1997	200,876		
1998	247,751		
1999	243,346		
2000	224,484		
2001	228,789		
2002	256,877		
2003	239,916		
2004	173,489		
2005	195,185		
2006	195,225		
2007	242,803		
2008	321,277		
2009	274,998		
2010	387,270		
2011	358,754		
2012	390,990		
2013	423,038		
2014	435,944		
2015	424,512		
2016	381,286		
2017	384,769		
2018		436,361	
2019		363,689	
2020		273,988	
2021		160,612	
2022		67,612	
2023		42,681	
	6,723,123	1,344,943	8,068,066

The disbursements specified above are distributed according to the expected year of disbursement.

Disbursements are made on the basis of the grant holders' revised budgets. In consequence, the final presentation of accounts to the foundation may result in adjustments of the disbursements for the following years.

16C EXPECTED DISTRIBUTIONS 2018-2022

In addition to the distribution obligations listed in notes 16a and 16b, new centers will be established in 2018 as a result of the 9th application round, which was announced in 2015. In the period 2018-2022, total (given and planned) distributions are expected to be as follows:

	million DKK
2018	498
2019	450
2020	398
2021	434
2022	363
	2,143

17 CONTIGENT LIABILITIES

The foundation has to give six months' notice to terminate the tenancy agreement, at December 31, 2019 at the earliest. The obligation amounts to DKK 1,463,160

The foundation has entered into forward currency contracts for the purchase and sale of the following currencies (amounts calculated in the currencies in question):

		2017
Currency	Purchase	Sale
AUD	0	1,970,000
USD	2,580,721	167,717,798
JPY	53,708,863	1,779,566,880
CAD	116,000	8,781,000
EUR	1,516,205	92,891,000
GBP	0	8,510,000
NZD	0	556,000
SEK	0	17,845,000

		2016
Currency	Purchase	Sale
AUD	2,091,262	2,688,000
USD	3,351,112	142,655,291
JPY	0	1,548,508,267
CAD	196,000	7,542,000
EUR	61,460	105,470,033
GBP	1,275,567	17,633,000
NZD	0	523,000

The market price of the forward currency contracts as of December 31 is set at the value of the securities in question, see notes 12 and 13.

The foundation has entered into interest-rate futures for the purchase and sale of the following, calculated in the currencies in question:

		2017
Currency	Purchase	Sale
EUR	5,700,000	2,500,000

		2016
Currency	Purchase	Sale
EUR	4,100,000	3,100,000

The market price of the interest-rate futures as of December 31 is set at the value of the securities in question, see note 12.

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Audit
The Office of the Auditor General and a chartered accountant shall audit the foundation's annual accounts. The board appoints the chartered accountant for a three-year term and the chartered accountant has to be approved by the Minister for Higher Education and Science. Jens Sejer Pedersen (Deloitte), State Authorized Public Accountant is appointed for the period May 1, 2016 to Maj 31, 2019.

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