

Societal impact of
Novo Nordisk Foundation
grants

Highlights for 2018

The Foundation's vision is to contribute significantly to research and development that improves people's lives and the sustainability of society.

Novo Nordisk Foundation

Funding public research for more than 90 years

Since 1927, the Novo Nordisk Foundation (Foundation) has awarded grants to researchers at universities and hospitals in Denmark and the other Nordic countries. Today, the Foundation supports research in biomedicine, biotechnology, general practice, nursing, art history and scientific objectives within innovation, education and outreach as well as humanitarian and social purposes.

Advocating public research

This brochure presents some highlights from the annual impact report showing the Foundation's input of resources and the subsequent effects on research, health and companies.

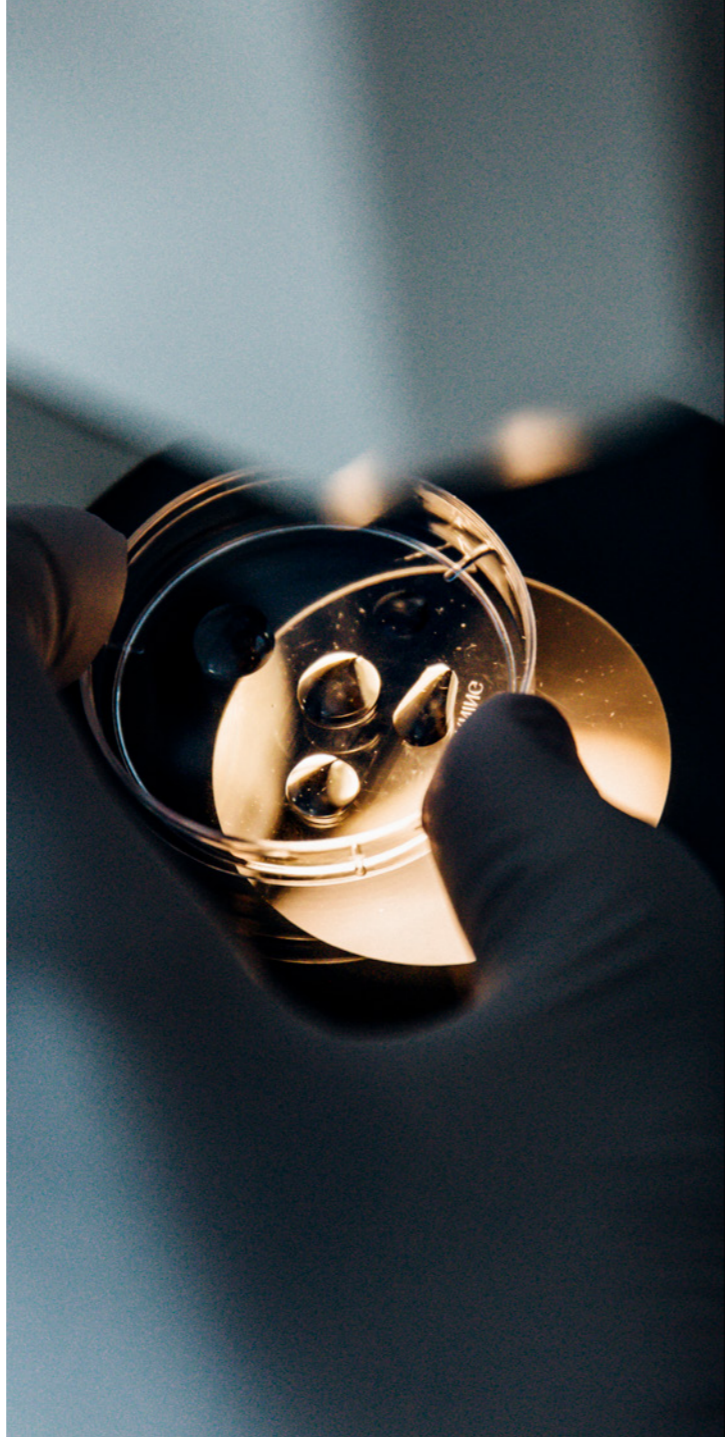
Key messages

Grant awarding activities in 2018 or earlier:

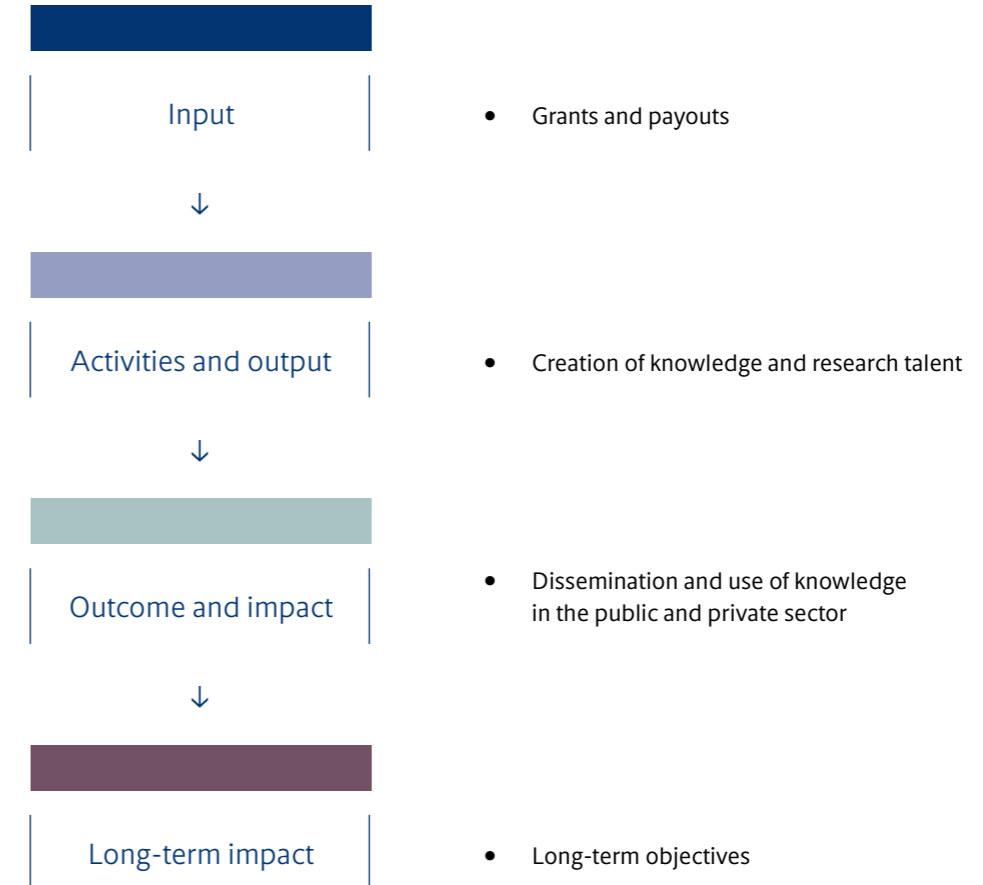
- Pay out of DKK 1.7 billion equivalent to an estimated 7% of the expenditure on public research in Denmark.
- 2614 applications received and 463 grants awarded, totalling DKK 3.9 billion.
- 2998 people in science partly or fully supported.
- 2876 new publications were reported by grant recipients.
- 187 innovation grants from 2007-2018 led to 63 spin-out companies that have attracted DKK 3.3 billion in additional funding.

Journal articles based on research funded by the Foundation in 2018 or earlier:

- 23% were among the world's 10% most frequently cited articles in 2014–2016.
- 53% were co-authored with international researchers.
- 11% were co-authored with researchers from industry.



Impact model



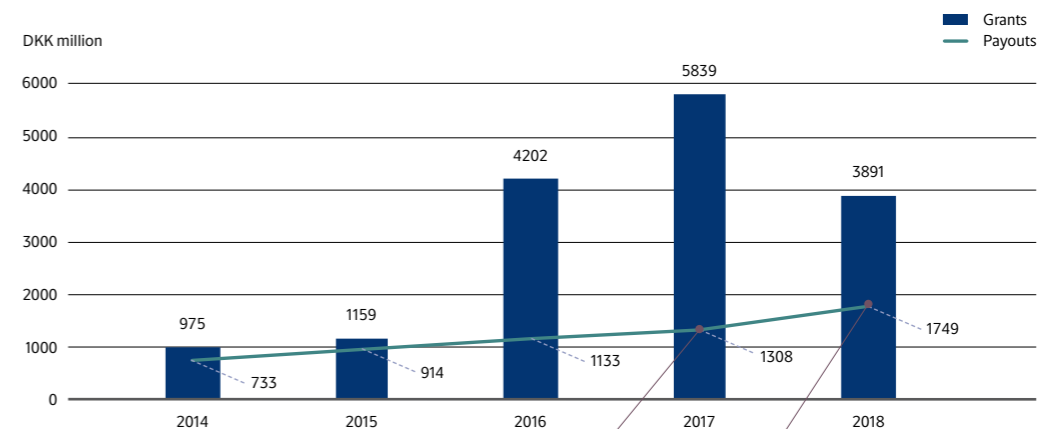
"The overall conclusion of the report is that investing in research and development in society contributes to creating knowledge, employment, growth, innovation and invention of products and services to benefit people."

Lars Rebien Sørensen, Chairman, Board of the Directors, Novo Nordisk Foundation.



Input

Grants and payouts from the Novo Nordisk Foundation, 2014–2018

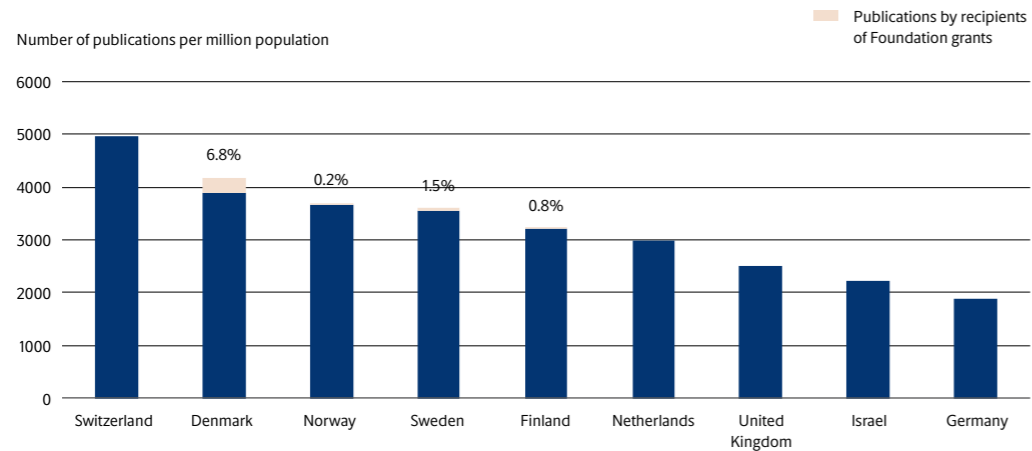


The 2017 payouts comprised 5.5% of all public research funding in Denmark

The 2018 payouts comprised 7.0% of all public research funding in Denmark

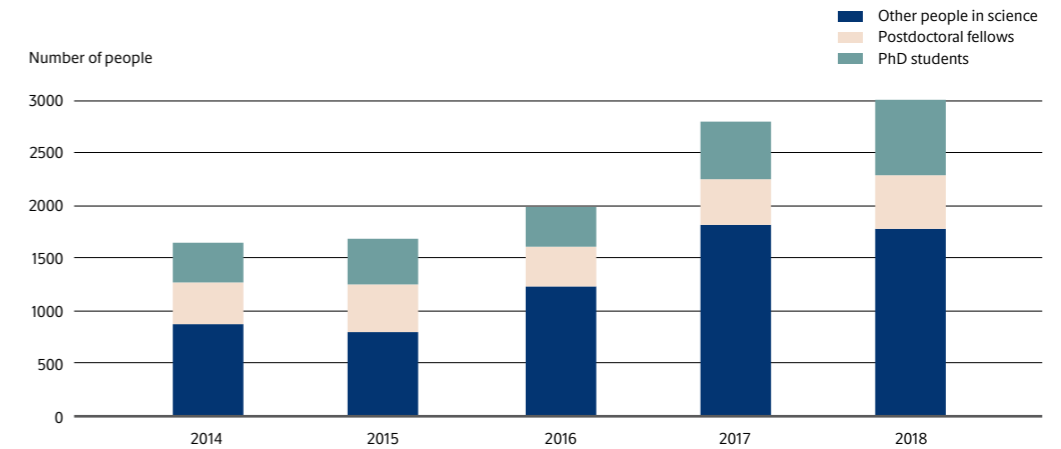
Trends in the Foundation's grant-awarding and payouts show that the Foundation has increased its grants in recent years. Some funded initiatives take several years to be paid out, which is why the annual payouts are lower than the grants awarded in the same year.

Creation of knowledge



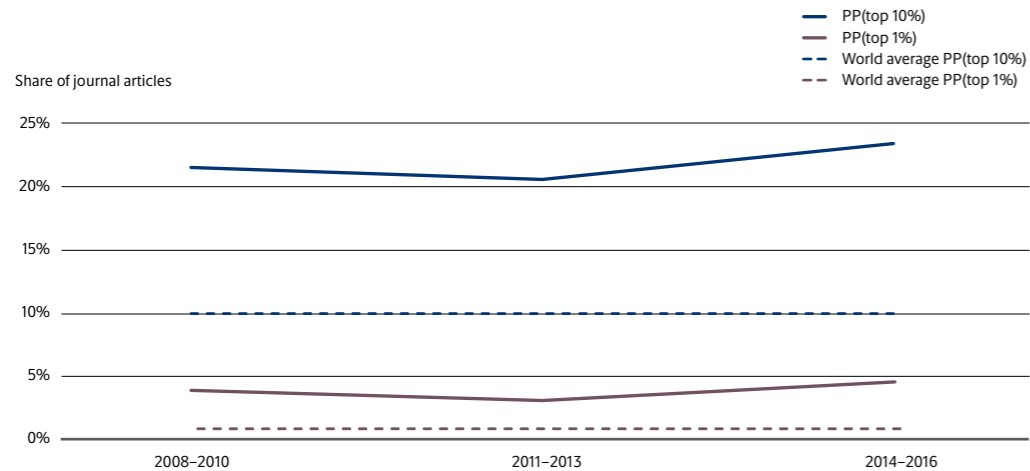
The Foundation's support for public research is substantial and visible from the total publication activities in Denmark, Norway, Sweden and Finland in 2017. The Foundation contributes substantially to Denmark's high placement in the ranking of countries by scientific output per million population. Researchers receiving Foundation grants accounted for 6.8% of the publications in Denmark.

Creation of research talent



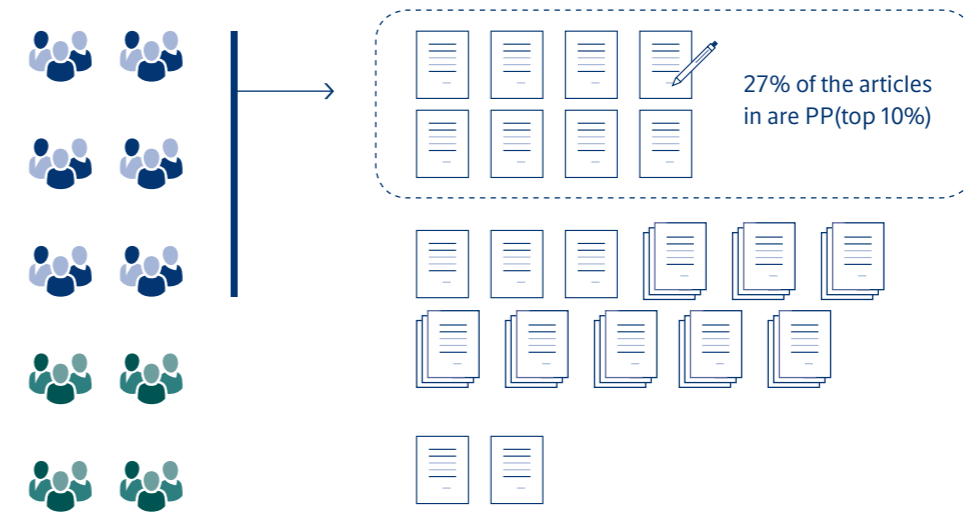
The number of people in science supported fully or partly by Foundation grants was 2998 in 2018; 40% were PhD students or postdoctoral fellows.

Dissemination and use of knowledge in academia – research excellence



The share of Foundation-funded journal articles in the top 1% and top 10% most frequently cited articles worldwide within the same scientific field and year is a way of tracking research excellence. With more than 20% of Foundation-funded articles among the 10% most frequently cited within their field worldwide, their citation performance exceeds the world average more than twice.

Dissemination and use of knowledge in academia – sources of research excellence



Of all journal articles by recipients of open-competition Foundation grants, 27% are among the 10% most frequently cited worldwide – a sign of research excellence. However, these articles originate from 61% of the grants, demonstrating that Foundation-funded success is based on a broad range of grants and not only a small subset of especially successful grants.

Dissemination and use of knowledge in the public health sector

Public research activity



Research activity conducted by the recipients of Foundation grants and published in journals. Since 1927, the recipients of Foundation grants have published more than 23,500 publications, of which 10,715 have been published as journal articles from 2014 to 2018. 53% were co-authored with international researchers.

Clinical guidelines



Publications reported by the grant recipients are well cited in guidelines from Denmark, and other countries. 53% of the diabetes guidelines in Denmark and elsewhere reference journal articles by recipients of the of Foundation grants. Further, grant recipients act as experts who advise or present evidence to government institutions and other authorities.

Examples of how Foundation-funded public research can benefit patients

Research-based teaching activity

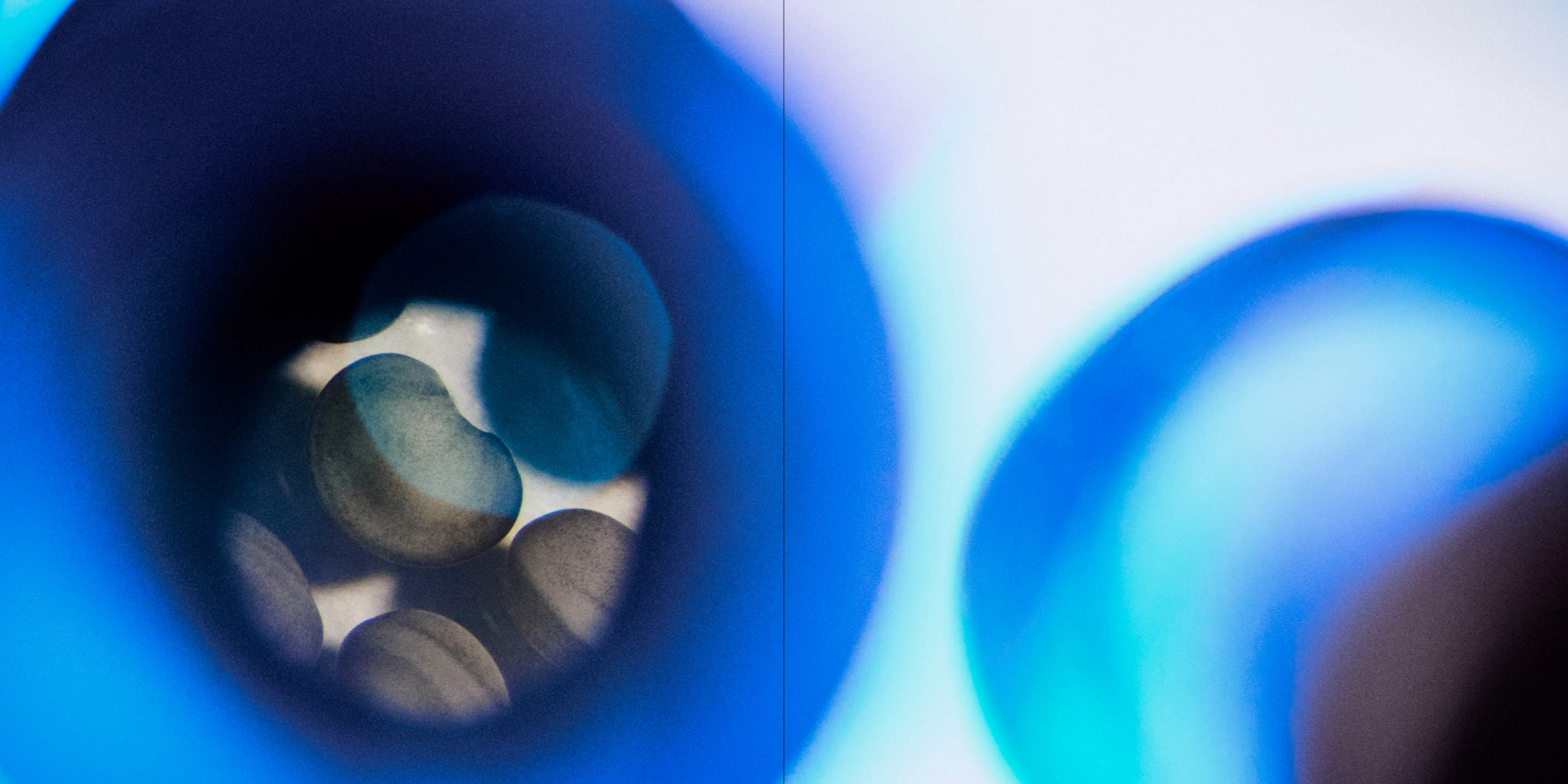


The grant recipients disseminate their knowledge to professionals in the public sector through courses training practitioners and researchers, conferences, speeches, reports and meetings. For 2017–2018, the Foundation's grant recipients reported 1422 dissemination activities targeting healthcare professionals, patients and caregivers.

Patients



Patient care is an integrated part of several Foundation grants. The grant recipients have reached and affected several thousand patients: for example, through research-based teaching in the Foundation nursing programmes or cancer projects, which focus on disease prevention and health promotion, rehabilitation and palliative care with the aim of improving treatment for patients.



Dissemination and use of knowledge in the private sector

Public research activity



Public research funded by the Foundation.

Collaboration



In 2018, recipients of Foundation grants collaborated with 196 companies in 268 collaborations; 20% of the companies were Danish.

The Foundation supports public research to benefit society. Tracking the dissemination and use of knowledge in the private sector is difficult, but some observable channels do exist. Two such channels are joint journal articles co-authored by grant recipients and industrial researchers and patents citing Foundation-funded research.

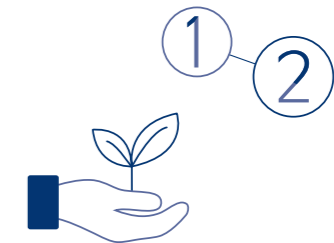
Journal articles



Grant recipients publish their research in scientific journals.

Industrial researchers co-authored 11% of Foundation-funded journal articles.

Patent activities, citations and spin-outs

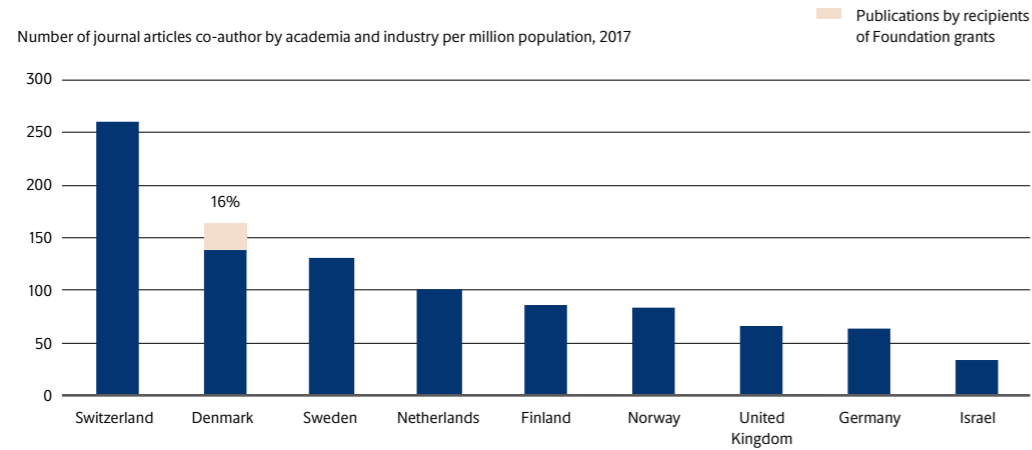


One in 18 Foundation-funded journal articles has been cited in patent applications and patents.

2742 citations of funded journal articles in more than 2200 patent applications and patents.

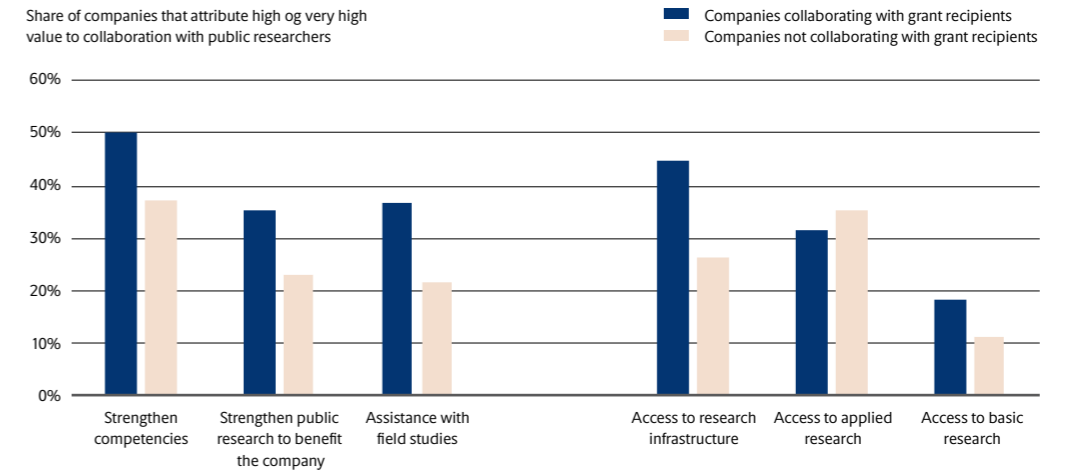
Recipients of Foundation grants reported 76 patent applications and 10 patents between 2015 and 2018.

Dissemination and use of knowledge in the private sector



Grant recipients are involved in co-publications by academia and industry. This is a sign of knowledge exchange between the public and private sectors and a sign of private sector use of public sector research.

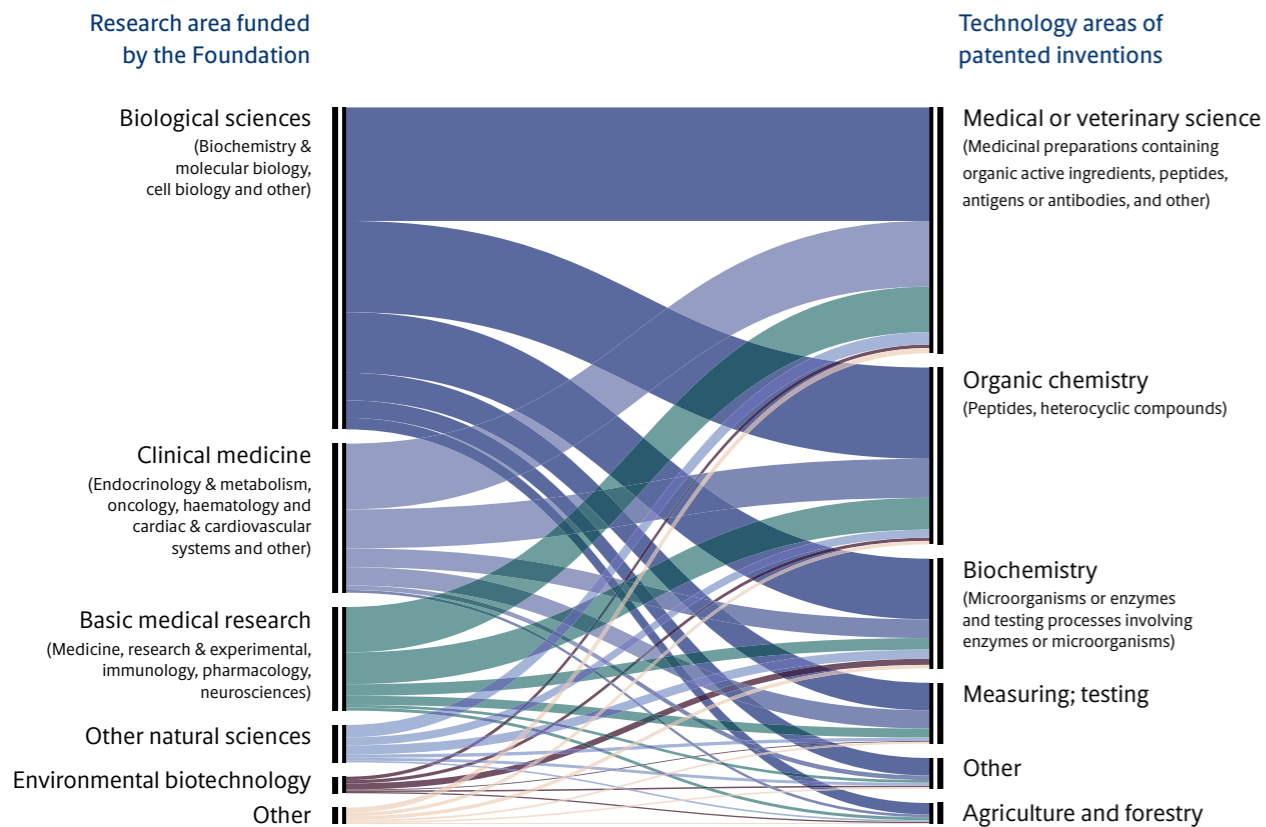
Why do companies collaborate with public researchers?



Given that 11% of Foundation-funded journal articles are co-authored by public researchers and industrial researchers, we asked 152 research-based Danish companies what motivates them to collaborate with public researchers. The results show that companies collaborating with grant recipients are especially motivated to collaborate with public researchers to strengthen their competencies and obtain access to research infrastructure.

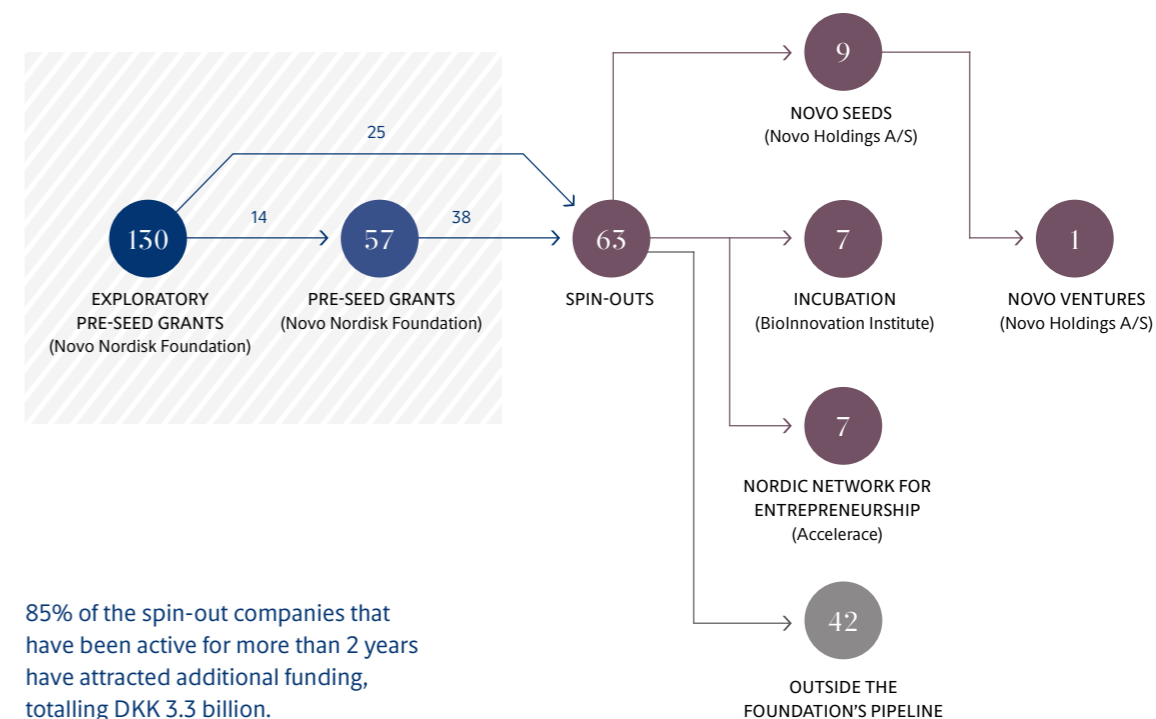
How Foundation-funded public research is used in inventions

Research-based patented inventions often cite public research. The figure shows in which research areas journal articles by the recipients of Foundation grants are published and in which fields of technology they are used for inventions.



Overview of the Foundation's ecosystem for life science start-ups

Since 2007, the Foundation has awarded 130 exploratory pre-seed grants and 57 pre-seed grants, leading to 63 spin-out companies. Some of the companies have continued in other Foundation initiatives.



85% of the spin-out companies that have been active for more than 2 years have attracted additional funding, totalling DKK 3.3 billion.

Note: The number of companies on the right side of the figure does not add up to 63 because three spin-outs are present in multiple initiatives.



Creating knowledge

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