

A green-tinted image of the Statue of Liberty, showing her head with the crown, her right arm raised holding a torch, and her left arm holding a tablet. The statue is set against a dark blue background.

Report on research collaborations and investments in the United States



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Country report on Danish-US relations in NNF grants and NH investments

Executive summary

- NNF has awarded a total of US\$ 76 million to 18 projects involving US and Danish applicants.
- NNF Grant recipients collaborate with 10 of the top 10 US universities.
- NNF grant recipients have co-authored 2711 publications with US-located researchers. 31.5% of these are among the top 10% most cited in their field.
- NNF grant recipients collaborate with 275 US companies. 45% are in the biotechnology sector and 50% have less than 250 employees.
- Between 2016 – 2020, Novo Holdings invested US\$ 2.4 billion in a total of 103 US companies with an overall value of US\$ 4 billion.
- US\$ 376 million was invested in 31 IPOs for US listed companies
- Since 2016, Novo Holdings has funded an average of 14 US companies each year as part of its portfolio.
- 44% of all Life Science investments made by Novo Holdings between 2016 and 2020 is in US companies.

Introduction

The Novo Nordisk Foundation is an independent Danish foundation with corporate interests.

The Foundation has two objectives:

- to provide a stable basis for the commercial and research activities of the companies in the Novo Group (Novo Holdings A/S, Novo Nordisk A/S and Novozymes A/S); and
- to support scientific, humanitarian and social causes.

Since 2016, the Foundation has invested US\$ 4.4 billion in science and society.

This report is presented in two parts;

- Activities that Novo Nordisk Foundation (NNF) grant recipients have with institutions or organisations in the US.
- An overview of Novo Holdings' investments in the US.

This report showcases NNF's contribution to the US academic community and industry.

Through figures and case studies, it demonstrates the different kinds of relationships and activities between NNF grant recipients and US academic and industry partners. Data in the presentation are based on activities between 2016 and 2020 (inclusive).

An independent Danish foundation with corporate interests

novo nordisk fonden

Grants

Grants awarded in 2020:
US\$ 881 million
(DKK 5.54 billion)

- Biomedical and health science research and applications
- Patient-centred and research based care
- Life science research and industrial applications promoting sustainability
- Natural and technical science research and interdisciplinarity
- Innovation
- Education & outreach
- Social, Humanitarian and Development aid

Dividends

100% SHARES

novo holdings

Investors in life science

Dividends

28.1% SHARES*
76.5% VOTES



25.5% SHARES*
72.4% VOTES



Investments

Investment result in 2020:
US\$ 4.6 billion
(DKK 29.0 billion)

- Principal investments
- Growth equity
- Venture investments
- Seed investments
- Financial investments

*) Through Novo Holdings, the Foundation has A-shares in Novo Nordisk and Novozymes. A-shares have 10 times voting power per share

Our vision

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

Our mission

- › To enable Novo Nordisk A/S and Novozymes A/S to create world-class business results and contribute to growth
- › To develop knowledge-based environments in which innovative and talented people can carry out research of the highest quality and translate discoveries into new treatments and solutions
- › To inspire and enable children and young people to learn

Case stories

The CAR-Network

CAR-Network (Community Action Research Network) is a global diabetes prevention and management network initiated by **Steno Diabetes Centre Copenhagen** in 2017. The network includes many international collaboration partners, such as **University of Texas**.

An university collaboration

In 2019, NNF funded an international research and education collaboration between **North Carolina State University** and the **Technical University of Denmark**. The purpose is to facilitate the creation of new bioindustrial processes through biotechnology and educational programmes for students and employees in the industry. These processes and skills will optimise bioindustrial production and accelerate the green transformation.



US academic and industry collaborations involving NNF grant recipients 2016-2020

16 projects funded by NFF include Danish and US researchers as co-applicants

The Novo Nordisk Foundation has in the last five years (2016-2020) funded **18** projects that have had **24** co-applicants from United States. Co-applicants are members of the international group applying for an NNF grant. The total funding allocated to these projects is US\$ **76 million**.

The funded projects span research areas including Innovation, Biomedicine, Biotechnology, Patient Care and Nat-Tech. 16 projects were awarded in open competition, while 2 were awarded as standalone grants.



Since 2014, **195** young US researchers have been awarded a grant to attend the Copenhagen Bioscience Conferences.

“An opportunity that will facilitate transatlantic training for PhD students and postdocs”

NNF - Applicant 2015

NNF Grant recipients' project collaborations with US partners

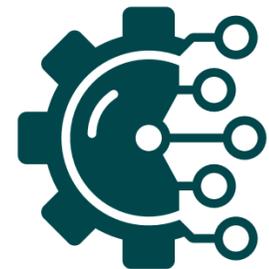
Between 2016 & 2020...



The Foundation's grant recipients have collaborated with many international project partners on projects, including **1010** collaborations between Danish and US partners.



506 of those partners are universities and university hospitals.



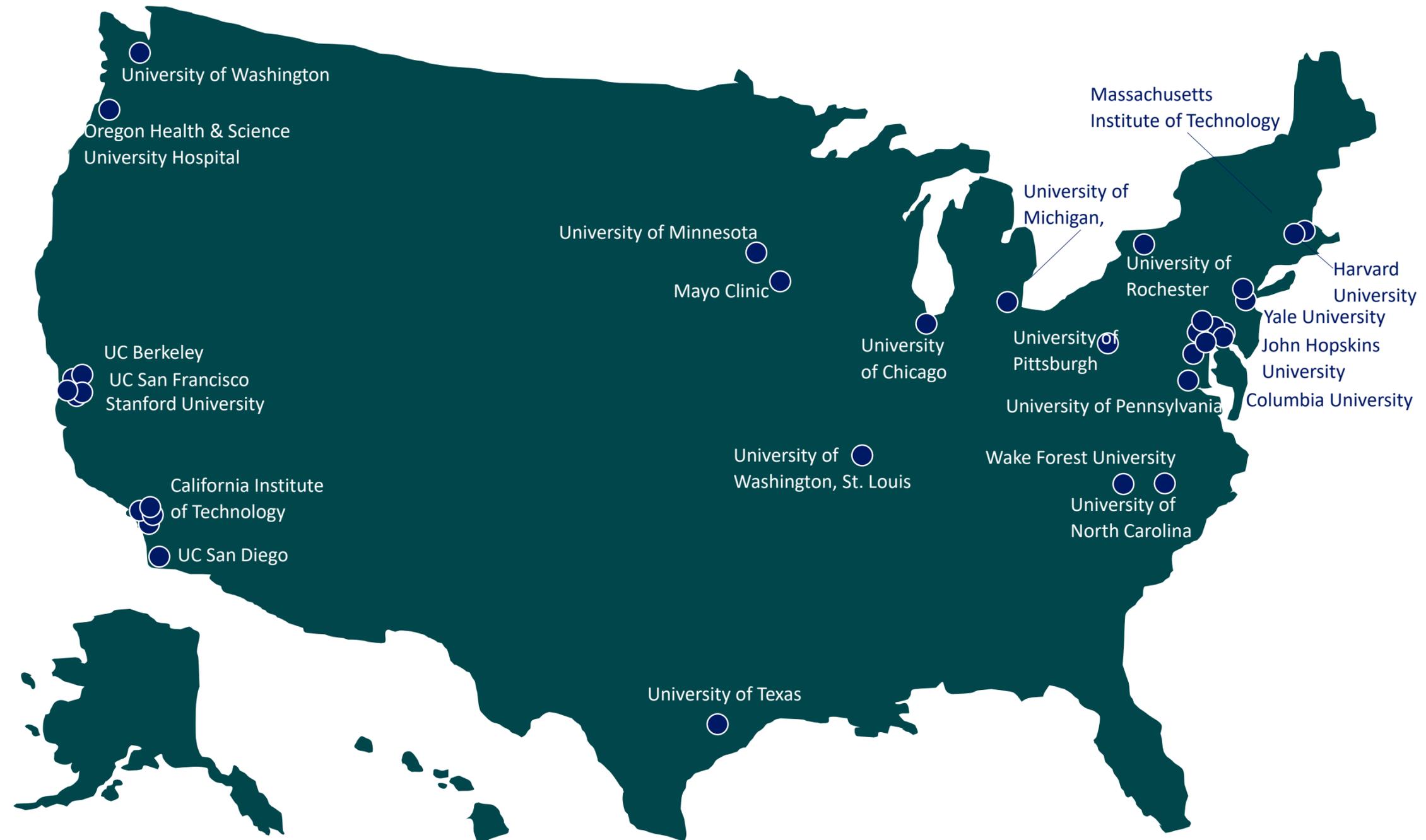
232 US companies co-authored at least one scientific article with grant recipients from the Novo Nordisk Foundation.

NNF Grant recipients' collaboration with top US universities

10 out of 10 top universities collaborate with NNF grantees

- 1 Rockefeller University
- 2 Massachusetts Institute of Technology
- 3 Princeton University
- 4 California Institute of Technology
- 5 Stanford University
- 6 Harvard University
- 7 University of California, Berkeley
- 8 University of California, San Francisco
- 9 University of Chicago
- 10 Yale University

Source: Novo Nordisk Foundation, Leiden Ranking 2021,
Note: Universities are ranked on PPTop10%



Publication collaborations between NNF grant recipients and US partners



Between 2016 and 2020, NNF grant recipients have co-authored **2711** publications with US-located researchers.



The highest number of US partners come from Harvard Medical School (369 publications) followed by University of California, San Diego (250 publications) and Massachusetts General Hospital (170 publications).

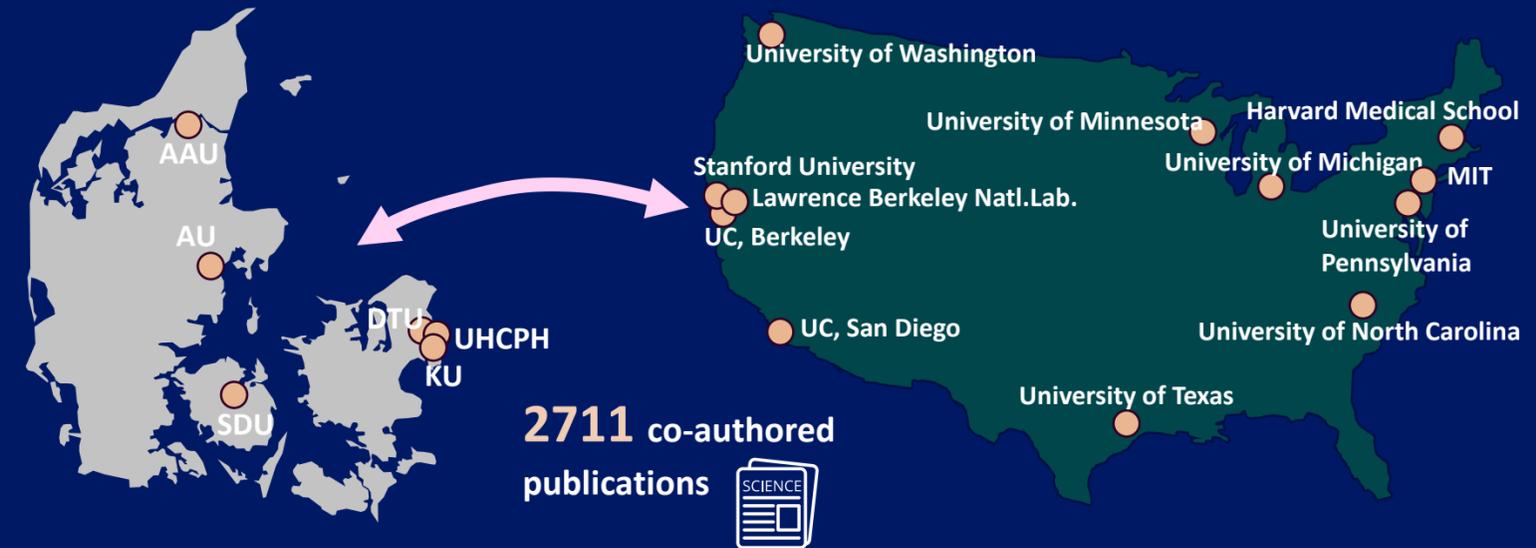


59.8% of the co-authored publications are within the research areas *Medicine* and *Biochemistry, Genetics & Molecular Biology*.



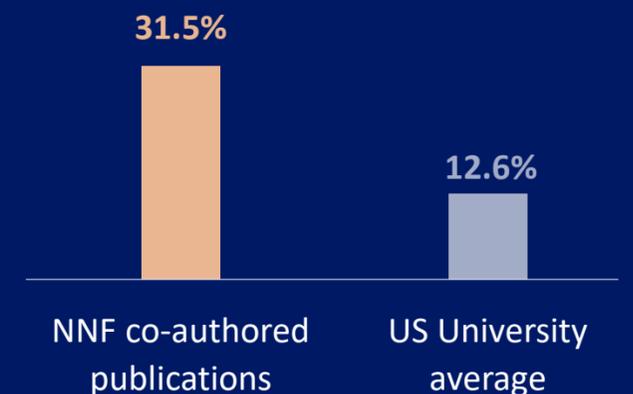
31.5% of the co-authored publications are within the top 10% most cited publications in their research field. The national average among the top US universities is 12.6%.

Selected links between the United States and Denmark



NNF grants contribute to research excellence

Share of co-authored publications among the top 10% most cited world-wide in the same research field and year



Researchers receiving grants from the Novo Nordisk Foundation collaborate with US companies

275 companies located in United States collaborate with the NNF grant recipients either on formalised research projects (43) and or by co-authoring scientific publications (232)

50% companies have less than 250 employees, and 81 have less than 50 employees.

123 companies are in the biotechnology sector.

40 are categorised as pharmaceutical companies.

33 are either in the medical device sector, IT, Consultancy or Hospital & Health Care sector.

“A group at the University of Aarhus has, in collaboration with industry partners including Biogen, developed a screening method for inhibitors of α -synuclein aggregation, critical in development of Parkinson's Disease. Among the 746,000 compounds screened, they identified the 6 that interact best with α -synuclein to reduce aggregation. They also identified compounds promoting aggregation, which can be useful to model Parkinson's Disease. The compounds have the potential to further elucidate the mechanisms underlying Parkinson's Disease, which will provide necessary insights for future therapies.”

Reporting in Researchfish, 2019

Location of NNF grantees' collaborating partners in the US



Source: Novo Nordisk Foundation (2019) based on ResearchFish® reporting

- Hospital & Health Care
- Medical devices
- Software
- Biotechnology
- Chemicals
- Pharmaceuticals
- Other



Novo Holdings A/S in the USA

Our mission

Novo Holdings is to be a supportive owner of the Novo Group companies and to make a growing and positive impact on health, science and society by generating attractive long-term returns on the assets of the Novo Nordisk Foundation.

Novo Holdings A/S Investments in USA

Novo Holdings A/S has in the period 2016-2019 invested US\$ 1.5 billion in 81 US companies. In 2020, this number increased to US\$ 2.4 billion with investments in a total of 103 US companies with an overall value of US\$ 4 billion.

44% of the total Life Science investments made by Novo Holdings A/S are in US companies.

Companies in the current portfolio



Examples of Novo Holdings A/S investments in Eastern USA

Entasis Therapeutics, a company focused on the discovery and development of breakthrough anti-infective products, completed a \$50 million Series B financing to advance its pipeline of clinical and preclinical products. The financing was led by Clarus and included Frazier Healthcare Partners, Novo Holdings A/S, and Eventide Funds, who joined founding investor AstraZeneca.

April 2016

Cirus Therapeutics, a pharmaceutical company which develops innovative therapies to treat liver and metabolic diseases, based in San Diego and Michigan. It is trialling a novel treatment for NASH (nonalcoholic fatty liver disease) - a disease which currently affects 16 million Americans and projected to grow to 27 million by 2030. The Novo Holdings took lead in the 2017 Series A financing round of the company.

April 2017



Examples of Novo Holdings A/S investments in Western USA



*The Novo Holdings REPAIR Impact Fund completed a USD 5.25 million investment in **Curza**, a small-molecule therapeutics company based in Salt Lake City, Utah, to accelerate its lead program, a new class of antibiotics focused on drug-resistant Gram-negative bacteria.*

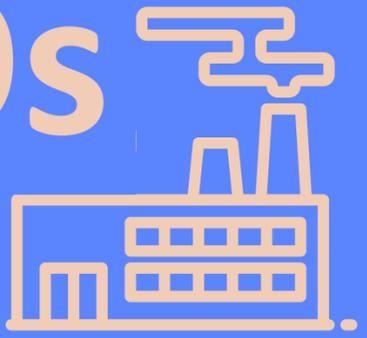
***Si-Bone**, a medical device company headquartered in Santa Clara, California. The company has pioneered a minimally-invasive surgical implant - iFuse - which treats the joint dysfunction that often causes severe back pain. Since iFuse was introduced in 2008, more than 45,000 procedures have been performed by surgeons in the US and 33 other countries, providing patients with lasting relief from back pain.*

Novo Holdings A/S investments in USA

Between 2016 – 2020, Novo Holdings A/S invested in IPOs alone US\$ 376 million in 31 US listed companies.

Novo Holdings' US-publicly listed investments can generally be characterized as:

- Innovative clinical stage and/or early stage biopharmaceutical companies
- High growth, revenue stage medical technology companies
- Micro- and/or small-cap market capitalizations typically between \$100 million and \$5 billion

31 IPOs 

Morphic Therapeutics, a biopharmaceutical company discovering and developing oral small-molecule integrin therapeutics, in June 2019 raised US\$ 90 million in their debut IPO on NASDAQ.

Source: Novo Holdings & Novo Nordisk Foundation (2019)

Methods and sources

Methods:

- Collaborations were defined as either a project collaboration or a publication collaboration funded by NNF with at least one US collaborator/US institute
- University ranking was based on the time period 2016-2019, across all sciences, with institutions with at least 100 publications, and based on the PP(top10%)
- Publications were defined as publications with at least one US and one Danish author
- US industry collaborators were defined as collaborations with companies registered in the US
- US research partners were defined as successful NNF grant applications with at least one US co-applicant
- The number of US attendees at the Copenhagen Bioscience Conference series were defined as applicants and attendees registered to a US research institute
- The number of recruitments to the NNF international Copenhagen Bioscience PhD programme were defined as students affiliated with a US research institute at the time of recruitment
- Clinical trials were defined as clinical trials listing NNF as funding and the US as a location
- Novo Holdings A/S investments in the US were defined as investments in companies with their headquarter located in the US

Sources:

- Researchfish (NNF grant data)
 - Research publication collaborations
 - Company project collaborations
 - Publications
- Data Warehouse, NORMA and OMADA (NNF grant application data)
 - Co-applicants
 - Copenhagen Bioscience PhD programme applicants
- The Leiden Ranking 2021
 - University rankings
 - Publication impact data
- Clinicaltrials.org
 - Clinical trials data
- Novo Holdings A/S
 - Investment data