

Report on research collaborations and investments in the United States

REPORT

A low-angle photograph of the Statue of Liberty in New York City, set against a clear blue sky. The statue is the central focus, with its right arm raised holding a torch and its left arm holding a tablet. The image is overlaid with the title text and the word 'REPORT' in large, bold, blue letters.

Executive summary

Novo Holdings



Between 2017 and 2021, Novo Holdings has invested in 110 companies based in the United States. The current 2022 portfolio includes 2 Seed investments, 5 Principal investments, 50 Venture investments and 11 Growth equity investments



Between 2017 and 2021, Novo Holdings has funded an average of 14 US companies each year as part of its portfolio.

Novo Nordisk Foundation



Between 2017 and 2021, the Novo Nordisk Foundation (NNF) financed 19 projects with US applicants, totaling US\$ 86 million.



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

Grant recipients

257

The Foundation's grant recipients collaborates with many international project's partners, including 257 US based universities and university hospitals.



Between 2017 and 2021, NNF grant recipients collaborated with 205 US companies. 117 within the biotechnology sector, and 72 of the companies have less than 50 employees.



Between 2017 and 2021, US grant recipients have published 2309 journal articles. 42% of these are among the top 10% most cited in their field.

10/10

10 out of 10 top US universities collaborate with NNF grantees

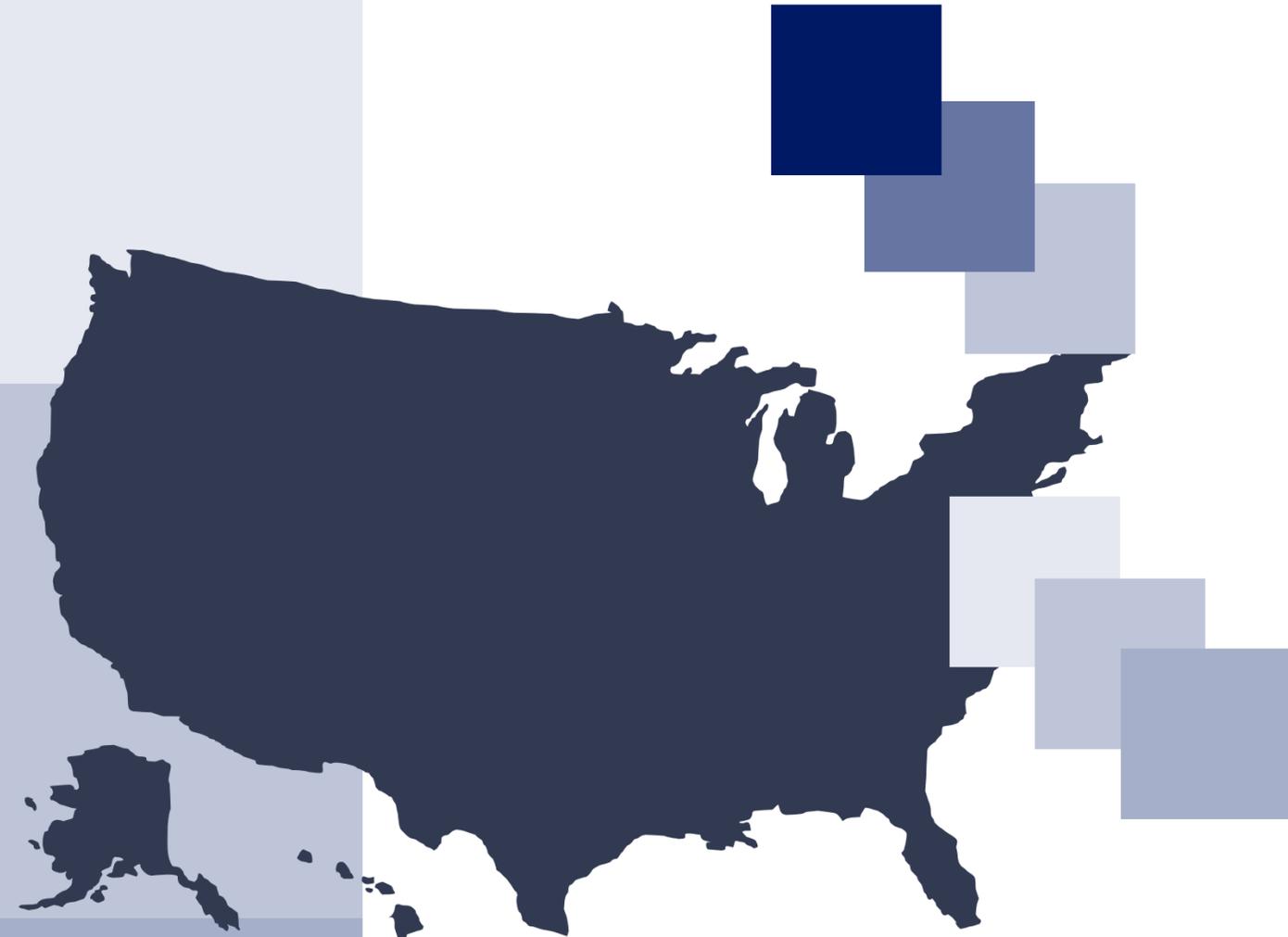
Introduction

This report is presented in two parts;

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

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 2017 and 2021 (inclusive).



Novo Nordisk Foundation



The history of the Novo Nordisk Foundation



The Novo Nordisk Foundation dates back to 1922, when Nobel laureate August Krogh returned home from the United States and Canada with permission to produce insulin in the Nordic countries. This marked the beginning of the development of world-class diabetes medicine in Denmark and the establishment of several foundations that, many years later, merged into today's Novo Nordisk Foundation.

1952 – the **Novo Foundation** was established as the owner of the Novo Terapeutisk Laboratorium.

1989 – the Novo Foundation and the Nordisk Insulin Foundation were merged into **Novo Nordisk Foundation** as part of the merger between the two firms Novo Terapeutisk Laboratorium and Nordisk Insulinlaboratorium in Novo Nordisk A/S.

In 2021 the **Novo Nordisk Foundation** awarded 617 grants with a total amount of US\$ 1180 million.

For more information, please see the [Impact Report 2020](#)

1922 – the **Nordisk Insulin Foundation** was established as the owner of the Nordisk Insulinlaboratorium. The founders agreed that the profit from the sale of diabetes medicine should be used for scientific and humanitarian purposes.

The Novo Nordisk Foundation is an independent Danish enterprise foundation

novo nordisk
fonden
Benefiting people and society

Dividends

100%
SHARES

novo
holdings
Investors in life science

Dividends



novo nordisk
 28.1% shares
 76.5% votes



novozymes
Rethink Tomorrow
 25.5% shares
 72.4% votes

+ 149 other companies

Grants

Awarded in 2021:
 DKK 8.8 billion
 (US\$ 1.2 billion)
Projected grants in 2030:
 DKK +10.0 billion

Focus areas

- Scientific research
- Diabetes treatment
- Innovation
- Education & outreach
- Humanitarian and social causes

Investments

Investment result in 2021:
 DKK 37 billion*
 (US\$ 5 billion)
Assets under mgmt.:
 US\$ ~90 billion

Focus areas

- Principal Investments
- Growth Investments
- Venture Investments
- Seed Investments
- Capital Investments

* 35% NN/NZ, 65% other investments

Facts about the Novo Nordisk Foundation

3

The world's
third largest
measured in grants

1

The world's
largest
measured in assets:

US\$ **92** billion*

2021 in numbers

Awarded DKK
8.8 billion
US\$ 1.2 billion

Paid out DKK
4.8 billion
US\$ 660 million

617
Grants awarded

2,771
Applications
received

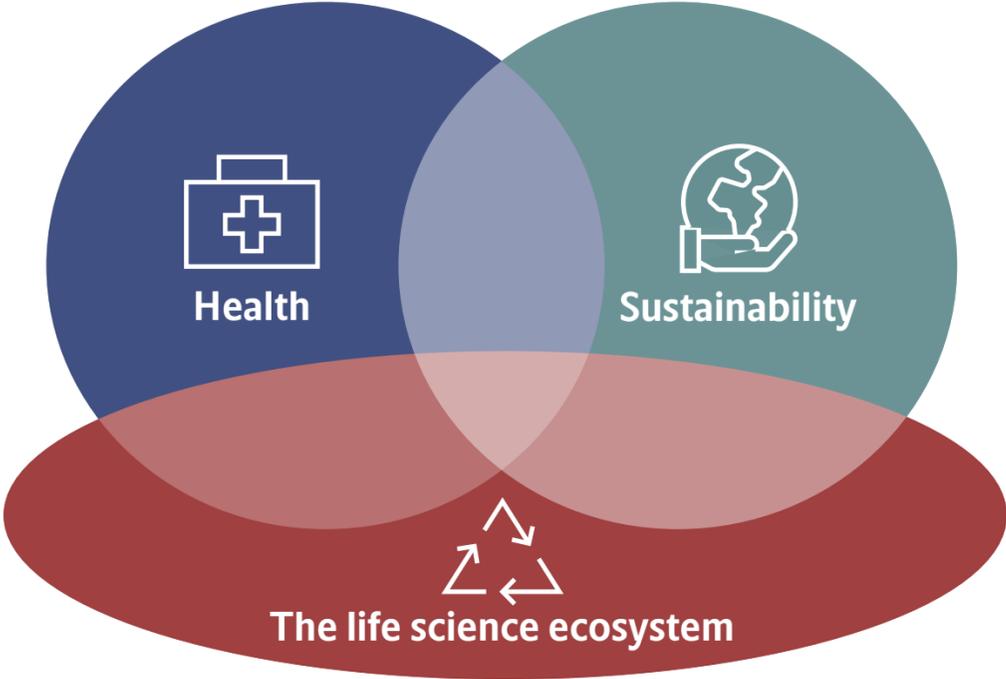
18%
Success rate for
research applications
among open calls

Investment result 2021
37 DKK billion
US\$ 5 billion

*Preliminary numbers year-end 2021

Our vision to improve people's health and the sustainability of society and the planet is pursued through a three-pronged mission

Progress research and innovation in prevention and treatment of cardiometabolic and infectious diseases



Advance knowledge and solutions to support the green transition in society

Invest in scientific research, education and innovation to enable a world class life science ecosystem



US academic and industry collaborations involving NNF grant recipients 2017-2021

19 projects funded by NNF include US researchers as applicants

The Novo Nordisk Foundation has in the last five years (2017-2021) funded 19 projects that have had 9 main applicant and 11 co-applicants from United States. Co-applicants are members of the international group applying for a NNF grant. The total funding allocated to these projects is US\$ 86 million.

The funded projects span research areas including Biomedicine, Biotechnology and Nat-Tech. 13 projects were awarded in open competition, while 6 were awarded as standalone grants.

- **University of Copenhagen** and **University of Kentucky** have received funding for a project within single molecule spectroscopy.
- **Aarhus University Hospital** and **Yale University** have received funding for a project investigating novel principles in virus infection pathogenesis.
- **Odense University Hospital** and **University of California, San Francisco** among others have received funding for a project investigating The role of circulating and bone tissue microRNAs in the pathogenesis of type 2 diabetic bone fragility.



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

“An opportunity that facilitate high level training for PhD students and postdocs”

NNF applicant, 2015

NNF Grant recipients' project collaborations with US partners

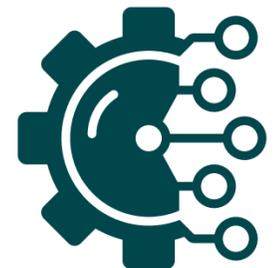
Between 2017 & 2021...



The Foundation's grant recipients have collaborated with many international project's partners on projects, including **780** collaborations between Danish and US partners.



257 of those partners are universities and university hospitals.



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

Case stories

A 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.

Burst into song: A systems approach to accurate predictions of voice motor control

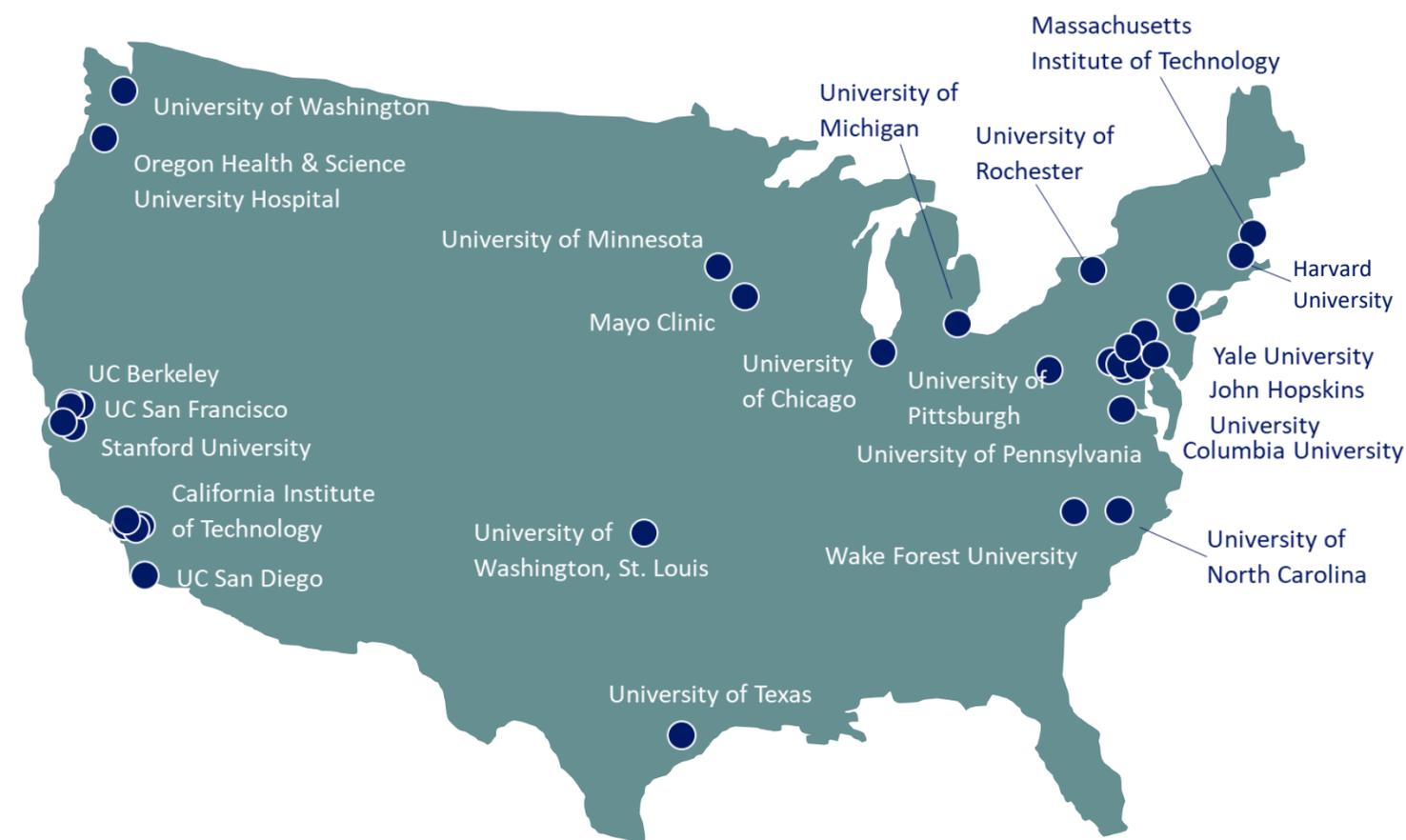


Lack of insight into how sound is produced is one factor preventing treatment of voice disorders and associated diseases. In this interdisciplinary project, researchers from the University of Southern Denmark and the **University of Maine** and **Emory University** in the United States will combine knowledge and methods from physics, neuroscience and biomechanics to transform the understanding of voice motor control among both healthy and sick people.

NNF Grant recipients' collaboration with top US universities

10 out of 10 top US universities collaborate with NNF grant recipients

	Project collaborations	Publication collaborations	
1	Rockefeller University	0	25
2	Massachusetts Institute of Technology	2	68
3	Princeton University	0	9
4	California Institute of Technology	0	6
5	Stanford University	1	202
6	Harvard University	3	388
7	University of California, Berkeley	0	123
8	University of California, San Francisco	0	72
9	University of Chicago	0	40
10	Yale University	1	48



Source: Novo Nordisk Foundation, CWTS Leiden Ranking 2022

Publication collaborations between NNF grant recipients and US partners



Between 2017 and 2021, NNF grant recipients have co-authored **2309** publications with US-located researchers.



The highest number of US partners come from Harvard University (388 publications) followed by University of California, San Diego (213 publications) and Stanford University (198 publications).

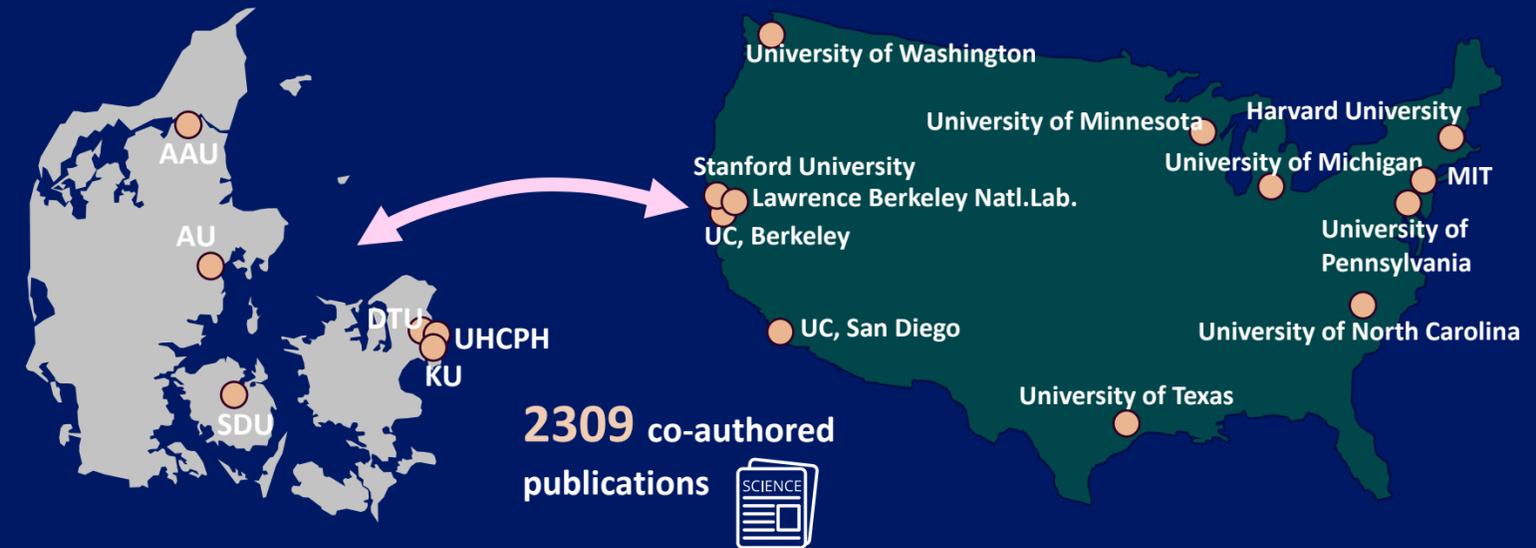


57% of the co-authored publications are within the research areas *Medicine and Biochemistry, Genetics & Molecular Biology*.



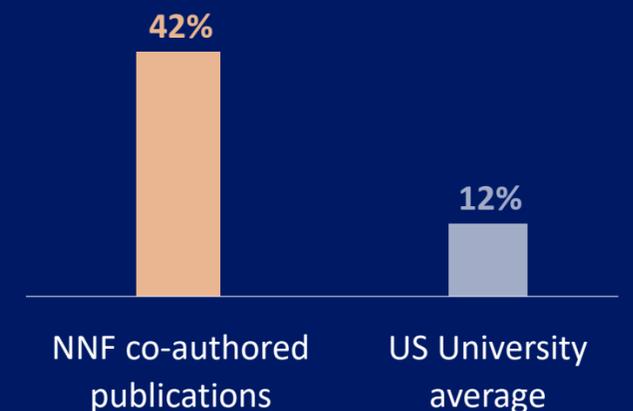
42% of the co-authored publications are within the top 10% most cited publications in their research field. The national average among the top US universities is 12%.

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

In total 205 US companies collaborate with NNF grant recipients

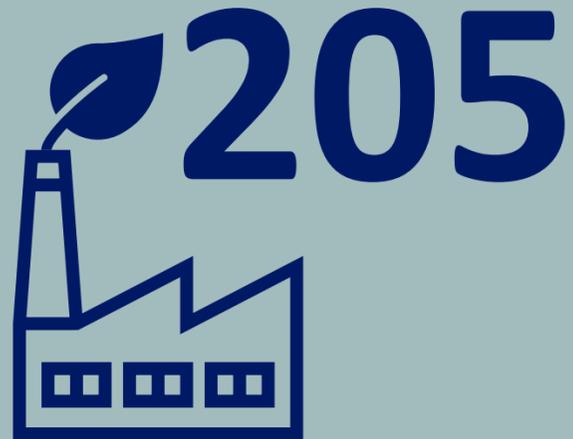
110 have less than 250 employees

72 have less than 50 employees.

117 companies are in the biotechnology sector

26 are categorised as pharmaceutical companies

42 are in the Medical Device, Consultancy, IT or Hospital & Health Care sector.



4 in formalised projects

202 is co-authoring scientific publications

“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



Novo Holdings A/S in the United States

Our mission

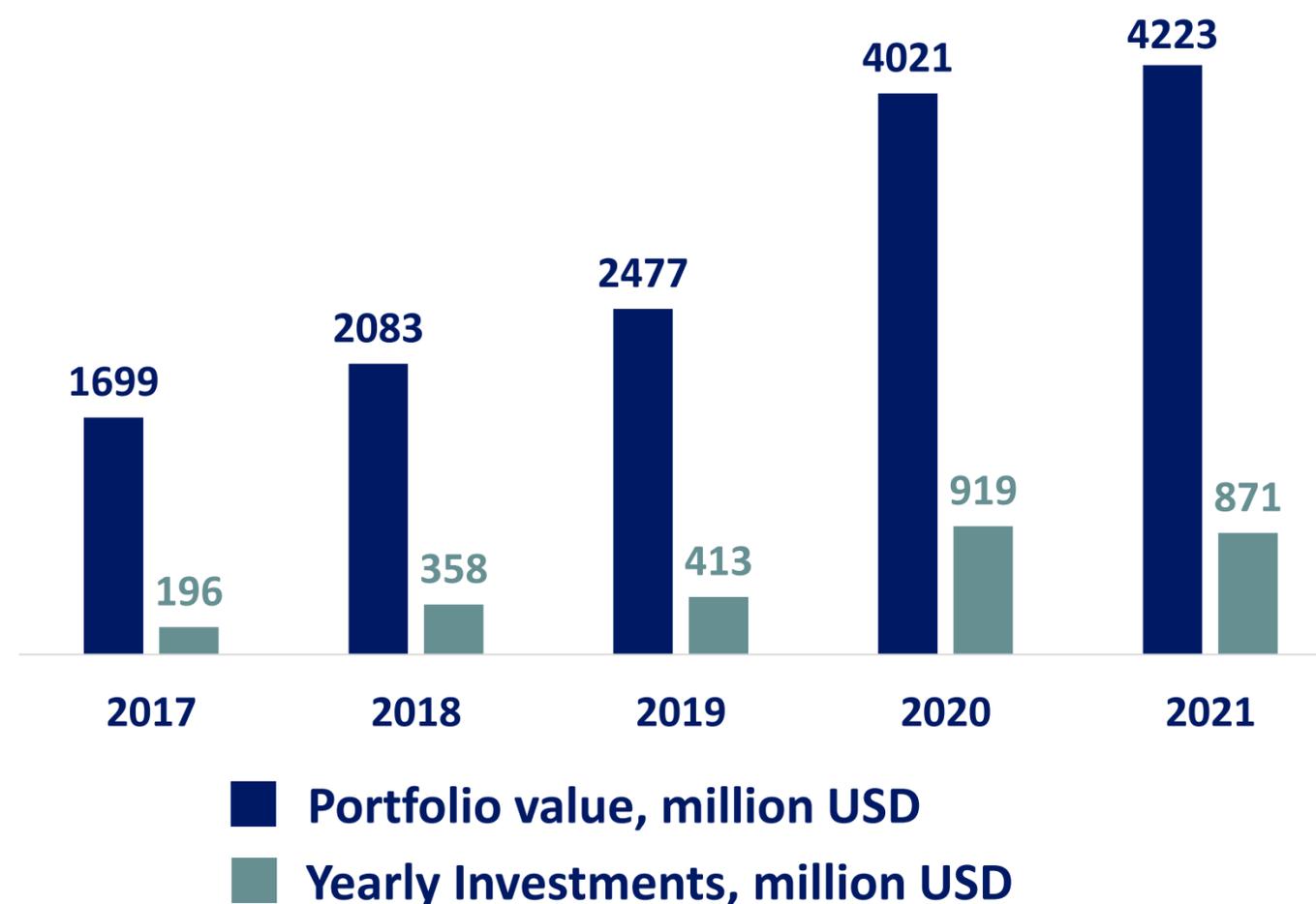
Novo Holdings is to be a supportive owner of the Novo Group companies and to make a growing and positive impact on health, science and society by generating attractive long-term returns on the assets of the Novo Nordisk Foundation.

Novo Holdings A/S Investments in United States

Novo Holdings A/S has in the period 2017-2021 invested **US\$ 2.8 billion in 110 US companies**. In 2021, the portfolio included 68 companies with an overall value of US\$ 4.2 billion.

43% of the life science investments made worldwide by Novo Holdings A/S are in US companies.

Companies in the current portfolio



Novo Holdings A/S Investments in Eastern USA

Vestaron, a company dedicated to improving the safety, efficacy and sustainability of crop protection through its development of peptide-based biopesticides, announces USD 18 million in Series B-1 financing, led by Northpond Ventures. Northpond and additional new investor, Cavallo Ventures join continuing investors Novo Holdings, Syngenta Ventures, CGC Ventures and Anterra Capital in this round.

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 Series A financing round of the company.



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.*

***Tempus** is bringing the power of artificial intelligence to healthcare by building the world's largest library of molecular and clinical data and a platform to make that data accessible and useful. Novo Holdings completed a USD 200 million Series F investment in the company.*

Novo Holdings A/S investments in USA

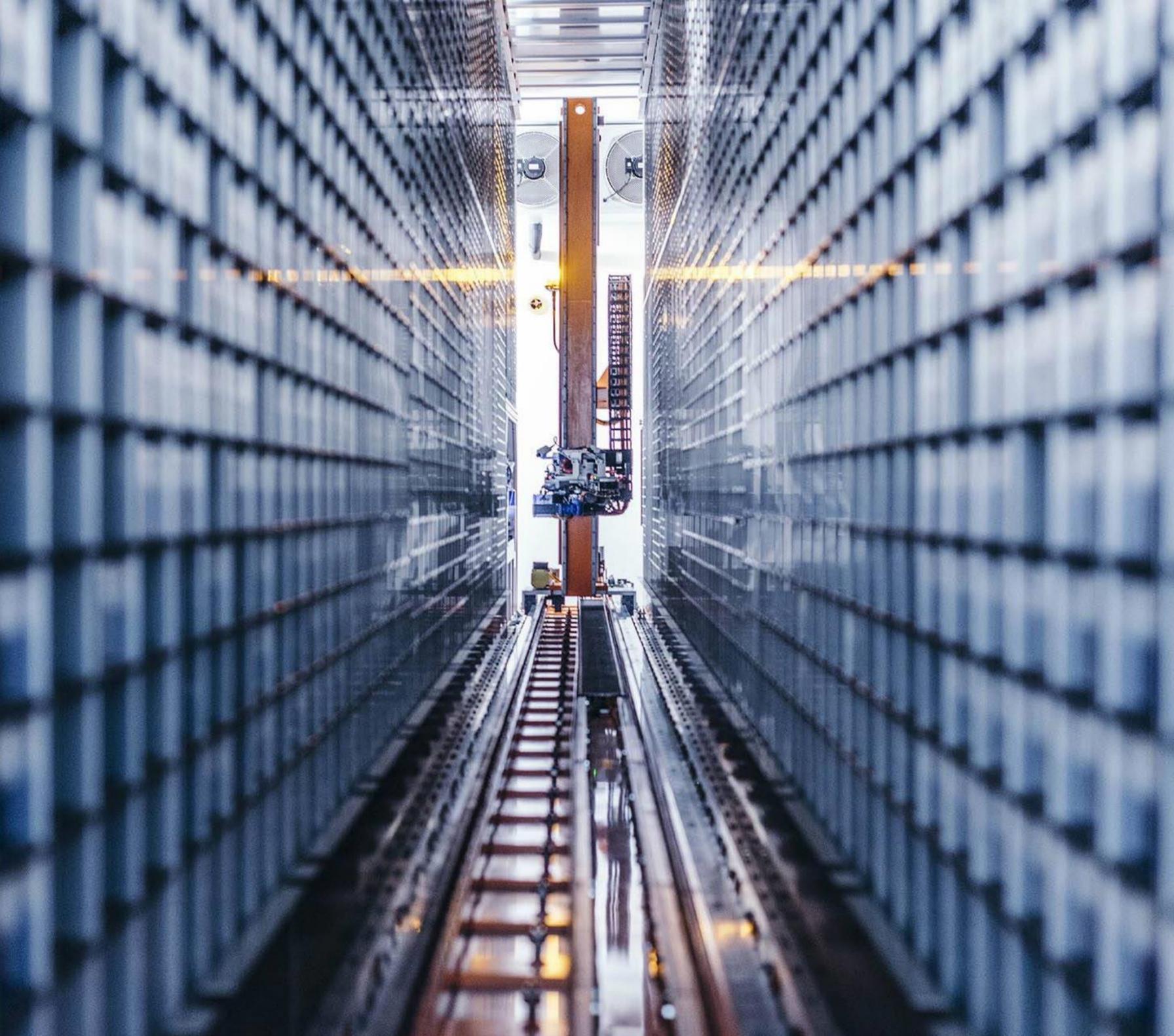
Between 2017 – 2021, Novo Holdings A/S invested in IPOs alone US\$ 782 million in 102 US listed companies.

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

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.





Appendix and additional slides

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 2017-2021, 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 Netherlands
- 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
- Novo Holdings A/S investments in the United States were defined as investments in companies with their headquarter located in the United States

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 2022
 - University rankings
 - Publication impact data
- Novo Holdings A/S
 - Investment data