

# Report on research collaborations and investments in the Netherlands

# Impact

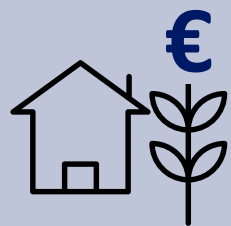


# Executive summary

## Novo Holdings



Between 2018 and 2022, Novo Holdings invested in 4 companies based in the Netherlands.



In 2022, the Novo Holdings portfolio included 3 companies with approximately 100 full-time employees.

## Novo Nordisk Foundation



Between 2018 and 2022, the Novo Nordisk Foundation (NNF) financed 12 projects with Dutch applicants, totaling EUR 29 million.



**55** young Dutch researchers have been awarded a grant to attend the Copenhagen Bioscience Conferences.

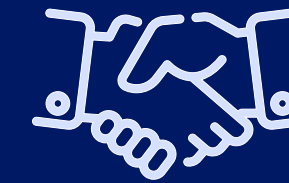


In 2022 the Novo Nordisk Foundation funded 9 senior researchers and 44 young researchers, PhDs and Postdocs, in projects involving Dutch applicants.

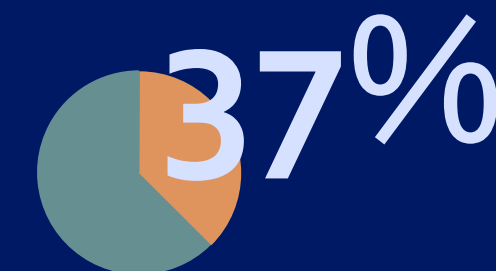
## Grant recipients

**36**

The Foundation's grant recipients collaborates with many international project's partners, including 36 Dutch based universities and university hospitals.



Between 2018 and 2022, the Dutch grant recipients collaborated with 23 Dutch companies. 10 are in the biotechnology sector, and 11 of the companies have less than 50 employees.



Between 2018 and 2022, Dutch grant recipients have published 915 journal articles. 37% of these are among the top 10% most cited in their field.

**10/10**

10 out of 10 top Dutch 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 Netherlands.
- An overview of Novo Holdings' investments in the Netherlands.

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

Through figures and case studies, it demonstrates the different kinds of relationships and activities between NNF grant recipients and Dutch academic and industry partners. Data in the presentation are based on activities between 2018 and 2022 (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 2022 the **Novo Nordisk Foundation** awarded 695 grants with a total amount of EUR 1.0 billion.

For more information, please see the [Impact Report 2021](#)

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



# Facts about the Novo Nordisk Foundation

3

The world's  
third largest  
measured in grants

1

The world's  
largest  
measured in assets:  
EUR 86 billion\*

## 2022 in numbers

Awarded DKK  
**7.5** billion  
EUR 1.0 billion

Paid out DKK  
**5.2** billion  
EUR 693 million

**695**  
Grants awarded

**3,070**  
Applications  
received

**18%**  
Success rate for  
research applications  
among open calls

Investment result 2022  
**3.1** DKK billion  
EUR 413 million

\*Preliminary numbers year-end 2022

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

Improving the lives of people by progress research and innovation in prevention and treatment of cardiometabolic and infectious diseases



Theme 1: Preventing cardiometabolic disease



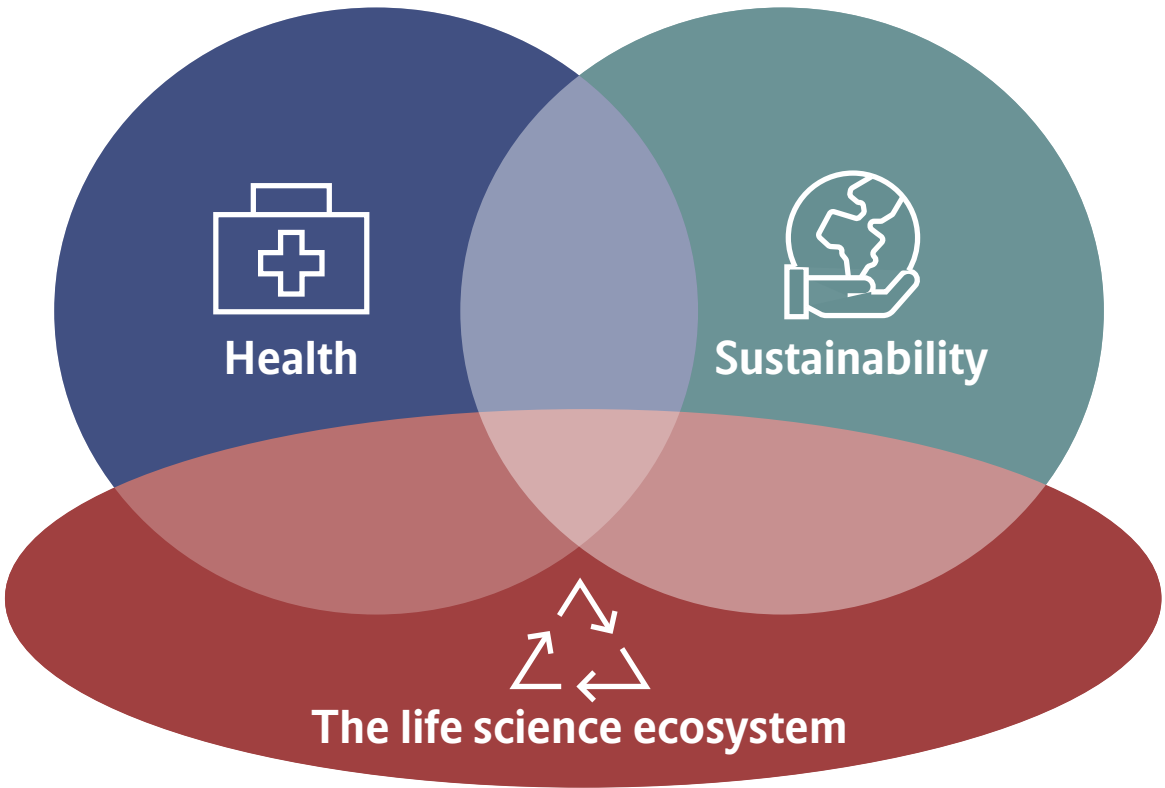
Theme 2: Understanding and managing cardiometabolic disease



Theme 3: Fighting inequity in health



Theme 4: Strengthening epidemic preparedness



Improving the sustainability of society by advance knowledge and solutions to support the green transition in society



Theme 1: Sustainable and high-yield agriculture



Theme 2: Sustainable food for healthy diets



Theme 3: High-impact climate change mitigation technologies



Theme 4: Supporting society in the green transition

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



Theme 1: Fundamental research



Theme 2: Enabling research infrastructures and technologies



Theme 3: Translational capacity and societal impact



Theme 4: Education and science capital





Dutch academic and  
industry collaborations  
involving NNF grant  
recipients 2018-2022

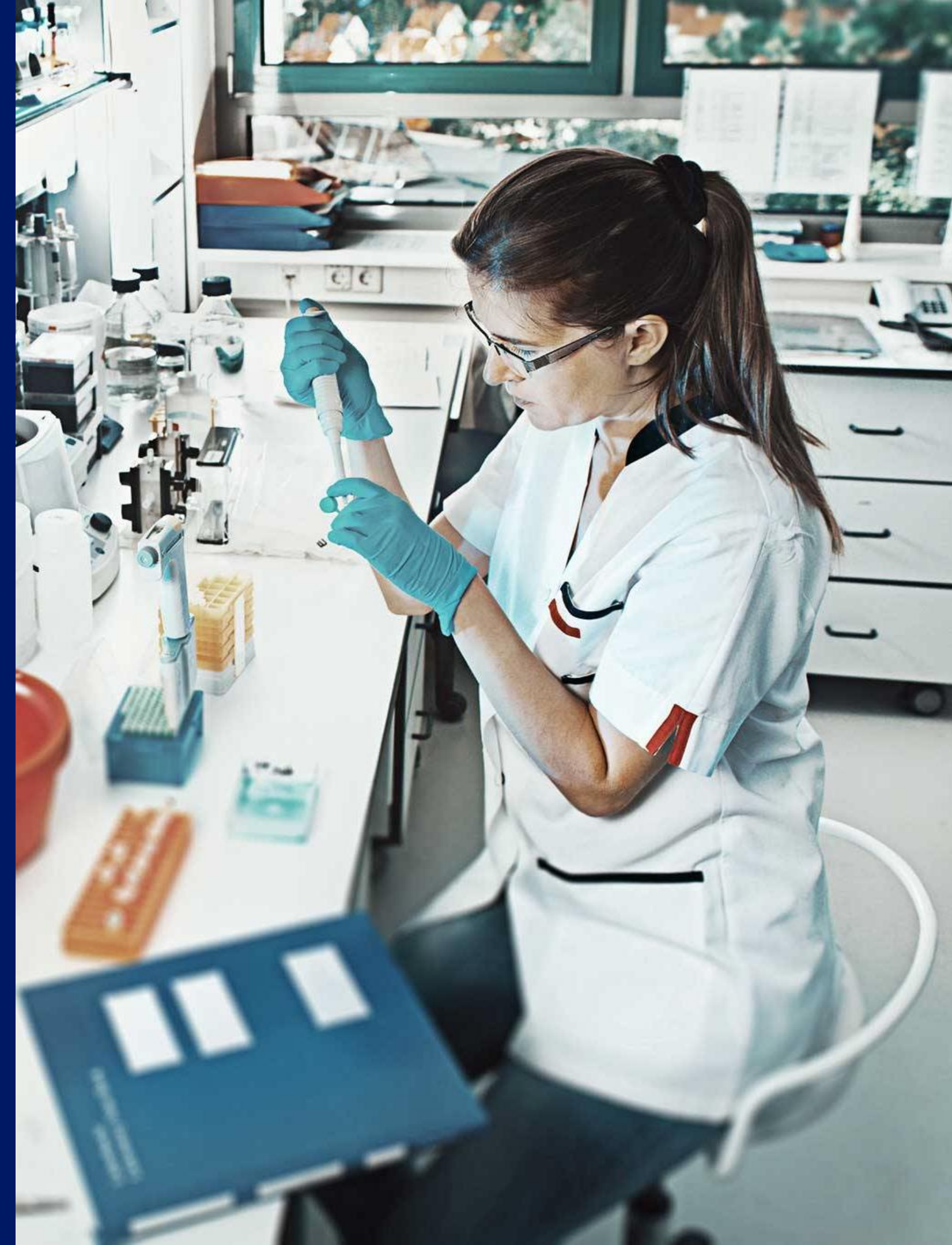


# 12 projects funded by NNF include Dutch researchers as applicants

The Novo Nordisk Foundation has in the last five years (2018-2022) funded 12 projects that have had 1 main applicant and 11 co-applicants from the Netherlands. Co-applicants are members of the international group applying for a NNF grant. The total funding allocated to these projects is EUR 29 million.

The funded projects span research areas including Innovation, Biomedicine, Biotechnology and Nat-Tech. 11 projects were awarded in open competition, while 1 were awarded as a standalone grant.

- **Aarhus University, Aalborg University and Delft University of Technology** have received funding for a project within wastewater treatment.
- **Aarhus University Hospital and Maastricht University** have received funding for a project within detection and treatment of diabetic bone disease





# Fostering the development of research talent at all levels

In 2022 the Novo Nordisk foundation supported 9 researchers, 21 PhDs and 23 Postdoc positions at Dutch based research institutions through projects involving Dutch applicants.

**The Copenhagen Bioscience Conferences** are a series of scientific conferences within biomedicine and biotechnology. They bring together some of the world's top researchers and young talent to discuss the latest scientific results and topics within their field. The purpose of the conferences is to enable participants to build an international network and to exchange knowledge and ideas.



Since 2014, **55** young Dutch 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 Dutch partners

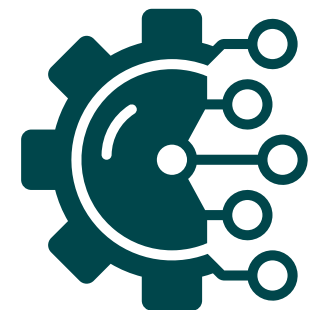
## Between 2018 & 2022...



The Foundation's grant recipients have collaborated with many international project's partners on projects, including **115** collaborations between Danish and Dutch partners.



**36** of those partners are universities and university hospitals.



**22** Dutch companies co-authored at least one scientific article with grant recipients from the Novo Nordisk Foundation.



# Case stories

## A university collaboration



In 2022, NNF funded an international research collaboration between **Aarhus University, Aalborg University** and **Delft University of Technology**. The purpose of the collaboration is to bring together leading scientists from Denmark and the Netherlands to demonstrate a roadmap for turning waste activated sludge into high-value sustainable biomaterials.

## Improved detection and treatment of diabetic bone disease



In 2022, NNF funded an international research collaboration between **Aarhus University Hospital**, and **Maastricht University**. The purpose of this project is to improve detection of fracture risk and prevention of fractures in patients with diabetes. This will be sought by combining epidemiologic and clinical research.

# NNF Grant recipients' collaboration with top Dutch universities

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

		Project collaborations	Publication collaborations
1	Utrecht University	0	31
2	University of Amsterdam	1	92
3	Wageningen University & Research	0	17
4	Vrije Universiteit Amsterdam	0	98
5	Erasmus University Rotterdam	0	31
6	Leiden University	4	118
7	Eindhoven University of Technology	0	17
8	Radboud University	0	71
9	Delft University of Technology	0	10
10	University of Groningen	1	59

Source: Novo Nordisk Foundation, CWTS Leiden Ranking 2022





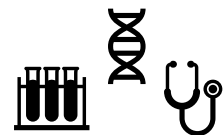
# Publication collaborations between NNF grant recipients and Dutch partners



Between 2018 and 2022, NNF grant recipients have co-authored **915** publications with researchers located in the Netherlands.



The highest number of Dutch partners come from Leiden University Medical Center (104 publications) followed by the University Medical Center Utrecht (100 publications) and Vrije Universiteit Amsterdam (98 publications).



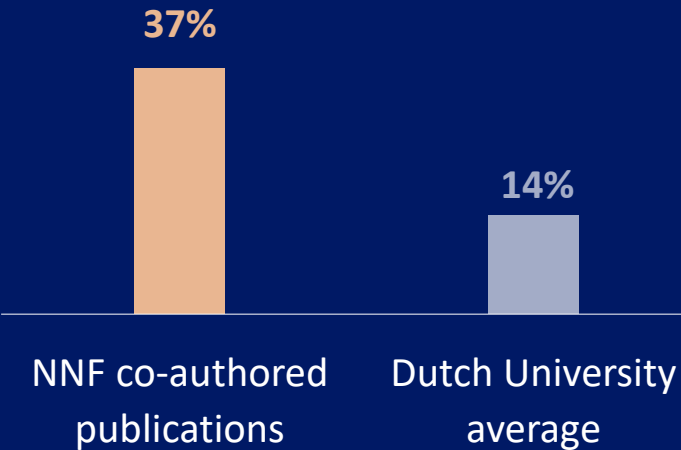
**62.3%** of the co-authored publications are within the research areas *Medicine* and *Biochemistry, Genetics & Molecular Biology*.



**37%** of the co-authored publications are within the top 10% most cited publication in their research field. The national average among the top Dutch universities is 14%.

# 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



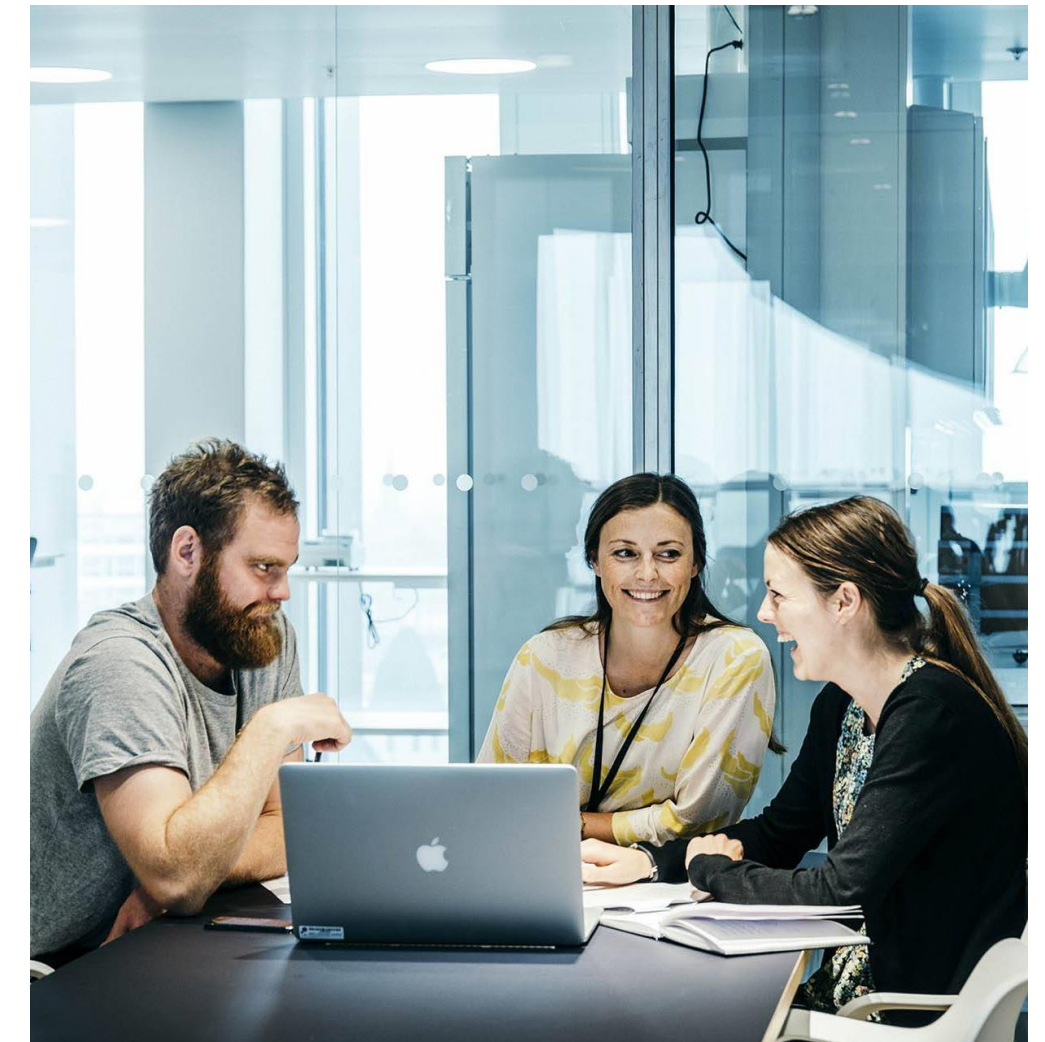
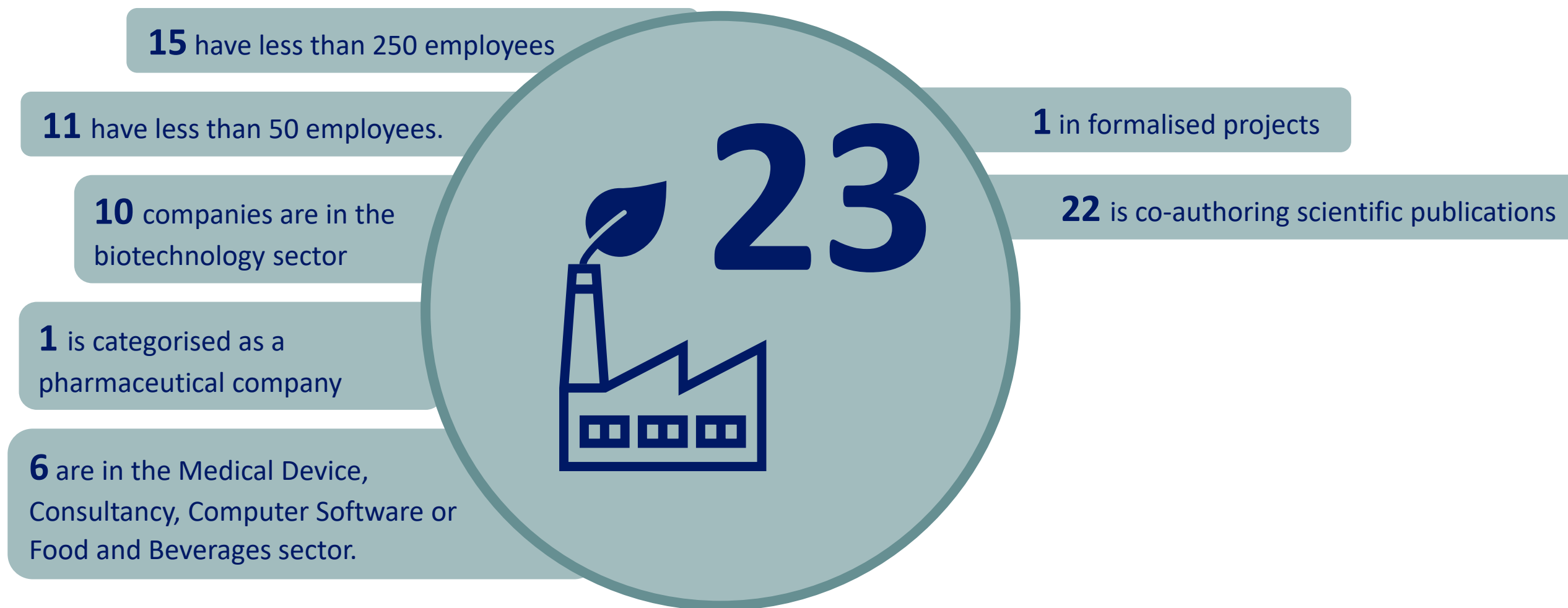
## In 2022, Mark van Loosdrecht was awarded the Novozymes Prize

Professor in Environmental Biotechnology at Delft University of Technology, Mark van Loosdrecht has been awarded the 2022 Novozymes Prize. He receive the price in recognition of his 25-year dedication to creating healthier water ecosystems and a more sustainable circular economy by developing a series of wastewater treatment processes, taking advantage of nature’s own principles for wastewater treatment and resource recovery.

The Novozymes Prize is awarded to outstanding research or technology contributions that benefit the development of biotechnological science for innovative solutions.

# Researchers receiving grants from the Novo Nordisk Foundation collaborate with Dutch companies

**In total 23 companies collaborate with NNF grant recipients**







# Novo Holdings A/S in the Netherlands

## Our mission

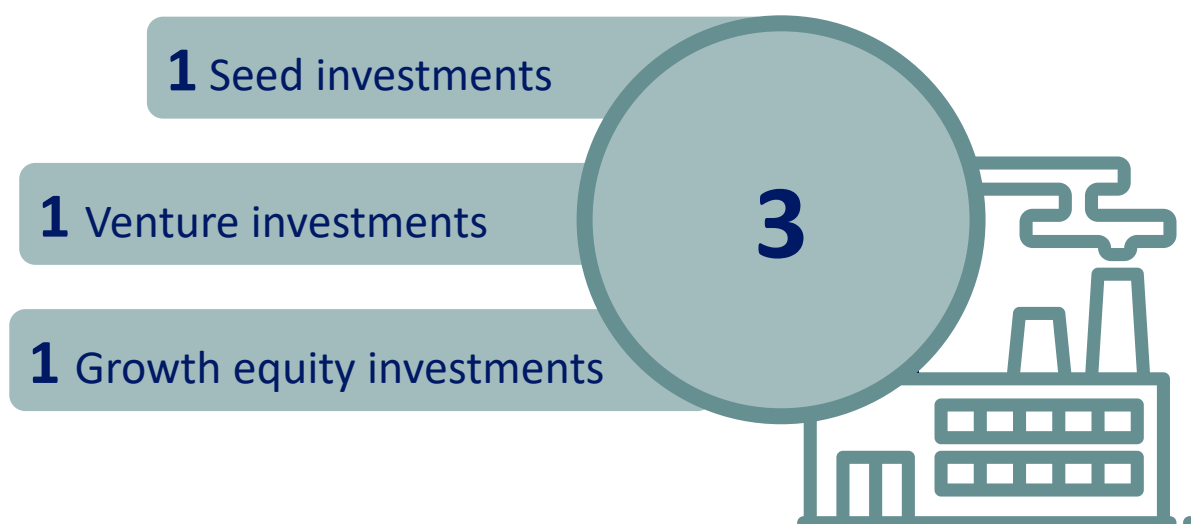
Novo Holdings is to be a supportive owner of the Novo Group companies and to make a growing and positive impact on health, science and society by generating attractive long-term returns on the assets of the Novo Nordisk Foundation.



# Novo Holdings A/S Investments in the Netherlands

Novo Holdings A/S has in the period 2018-2022 invested in **4 Dutch companies**. In 2022, the portfolio included 3 companies with approximately 100 full-time employees.

## Companies in the current portfolio





# Novo Holdings A/S Investments in the Netherlands

**LAVA Therapeutics** is a biotechnology company focused on applying its expertise in bispecific gamma-delta T cell engagers to transform cancer therapy. Novo Ventures, the ventures arm of Novo Holdings, co-leads EUR 77 million Series C financing in the company.

**NorthSea Therapeutics** is developing icosabutate a first-in-class Structurally Engineered Fatty Acid (SEFA) for Non-Alcoholic SteatoHepatitis or NASH. In addition, NorthSea is evaluating the potential of various SEFAs in other metabolic, inflammatory and fibrotic diseases. Novo Holdings provided EUR 26 million in starting capital to the company.

**The Protein Brewery**, an innovative developer of protein-rich food ingredients, replacing animals in the food chain, was founded in January 2020 as a demerger of BioscienZ BV. The company is in the process of commercializing protein products made by fermentation technologies. Novo Holdings leads EUR 22m Series A investment in the company.





# 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 Dutch collaborator/Dutch institute
- University ranking was based on the time period 2018-2022, 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 Dutch and one Danish author
- Dutch industry collaborators were defined as collaborations with companies registered in the Netherlands
- Dutch research partners were defined as successful NNF grant applications with at least one Dutch co-applicant
- The number of Dutch attendees at the Copenhagen Bioscience Conference series were defined as applicants and attendees registered to a Dutch research institute
- Novo Holdings A/S investments in the Netherlands were defined as investments in companies with their headquarter located in the Netherlands

## 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