27 August 2021

Meeting with Robert Bosch Stiftung

Dr. Thomas Alslev Christensen
Senior Vice President
Impact

novo nordisk fonden

The purpose of impact assessment and management

To support the development of effective funding strategy and that activities are always focused on the goals of the strategy

To promote responsible impact management of the funds of the Novo Nordisk Foundation

To demonstrate and communicate the benefits of science to society

To answer questions about ‘what works’! Make improvements, learn from failure and scale success

Our nine principles for societal impact (NNF Strategy)

Fostering the development of research talent

Investing in infrastructure

Supporting research collaboration

Promoting excellent research

Developing innovative products and solutions

Creating jobs and growth

Developing healthcare and new medicine

Developing world-class education

Empowering vulnerable groups in society

The logic model for societal impact

We collect data and analyse chains of **Critical Success Factors and KPIs** from **inputs** via **output** to **impacts**

Biomedical and health research: Logical Model

LOGICAL MODEL: Chain of Critical Success Factors from inputs to impacts that link the grants, step-by-step, to the long-term goals

Inputs: We facilitate research within four key themes of our strategy

- **HEALTH-RELATED DATA SCIENCE**
- **INNOVATIVE THERAPIES**
- **COHERENCE IN HEALTH CARE**
- **BREADTH IN BIOMEDICAL RESEARCH**

The **activities** that our grant recipients carry out

- Creating high-class research environments and conducting research
- Developing research talent
- Establishing national and international research collaborations
- Developing cutting-edge research infrastructure

and the **outputs** that they generate

- Creating knowledge
- Delivering research-based education

to achieve the desired **outcomes**

- Use of knowledge within the research environment
- Use of knowledge within the health care sector
- Creating the basis for innovation and new products

and create the **impact** that we ultimately seek, which is to

- Create cohesive health care and a more efficient use of resources in the health care sector
- Accelerate the translation of new discoveries into new therapies
- Develop patient-centred care and world class clinical treatment
- Create scientific breakthrough within the breadth of biomedical research

in order to fulfil our **long-term objective**

Enable people to live healthier and better lives by facilitating research that advances knowledge of human health and disease, solves health challenges and develops the health care system

Example: CO_2 Research Centre for Climate Change Mitigation

Chain of Critical Success Factors from inputs to impacts that link the grants, step-by-step, to the long-term goal

Inputs: We facilitate basic research and applied research within four **key themes** of our strategy

- **CO_2 CAPTURE**
- **CHEMICAL CO_2 CONVERSIONS**
- **LIFE SCIENCES CO_2 CONVERSIONS**
- **MODELLING**

The **activities** that our grant recipients carry out

Creating research such as,

- integrated microbial electrosynthesis & H2, CO, CO2 fermentations,
- integrated transition-metal catalysis
- amine- and carbonic anhydrase-based CO2 capture,
- homogeneous and

via an interdisciplinary hub and industry.

and the **outputs** that they generate

- Creating and disseminating knowledge and outreach
- Delivering research-based education
- Conducting pilot scaling projects with industry

to achieve the desired **outcomes**

- Discovering innovative technologies for carbon capture, sequestration and utilisation
- Translating knowledge and new solutions into practice in industry
- Translating knowledge into policy and educate the general public

to create the **impact** that we ultimately seek, which is to

- Ground-breaking, interdisciplinary research to generate and advance new science and sustainable solutions for big climate challenges.
- Deliver and use innovative solutions for CO2 capture and conversion for biological and chemical transformation of industrial relevance

and fulfil our **long-term objective**

Mitigate and decelerate the rate of global climate change through reducing emissions and increasing capture of greenhouse gas.

Biomedical and health research: Key indicators/success criteria

Key Performance Indicators linked to the inputs, activities, outputs and outcomes of our grant recipients

Critical Success Factors	Key Performance Indicators
Resources used to establish activities	→ # of grants, amount awarded and payouts (by key themes in strategy) → # of grants in collaboration with other GGAs
Creating high-class research environments and conducting research	→ # of people fully or partly supported by the Foundation
Developing research talent	→ # of PhDs and postdocs fully or partly supported by the Foundation
Establishing national and international research collaborations	→ # of self-reported collaborations → % of articles with co-authorship (international, industry, or other national research institutions)
Building cutting-edge infrastructure	→ # of users of infrastructure supported by the Foundation → # of papers acknowledging the infrastructure or resulting from using the infrastructure
Creating knowledge	→ # of journal articles published → Median (and 90th percentile) Impact Factor of journals in which articles are published
Delivering research-based education	→ # of students participating in a course or activity organized by the grant recipients at BSc, MSc and PhD level (including number of courses with course responsibility or contribution)
Use of knowledge within the research environment	→ % of publications that belong to the top 10% most frequently cited worldwide → Novelty score of how frequent referenced journals in an article are paired historically
Use of knowledge within the health care sector	→ # of guideline documents that cite Foundation-funded journal articles
Creating the basis for innovation and new products	→ # clinical trials → # products and medical interventions → # of patent documents → # of spinouts (including additional investments in spinouts)

In-depth evaluations of the long-term societal impact of our grant giving

Enable people to live healthier and better lives	→ Degree to which people and patients live healthier and better lives as a result of products or interventions that are based on Foundation-funded research → Extent to which Foundation-funded publications are cited in patents that benefit people

Data collection essential: Reporting in Researchfish®/Foundgood

IT-platforms help us collect data on the output and outcome

Questions

- Publications
- Collaborations & Partnerships
- Further Funding
- Next Destination
- Engagement Activities
- Influence on Policy, Practice, Patients & the Public
- Research Tools & Methods
- Research Databases & Models
- Intellectual Property & Licensing
- Medical Products, Interventions & Clinical Trials
- Artistic & Creative Products
- Software & Technical Products
- Spin Outs
- Awards & Recognition
- Other Outputs & Knowledge/Future Steps
- Use of Facilities & Resources

Questions

- Education and Professional Training
- Research-Team Information
- Supervisor and Mentor Activities
- Project Summary and Reflection
- Invention Disclosure & Ownership

Four areas to drive Next Generation Impact

	Key findings	Action points
Impact management	Need for a **clear theory-of-change**, and '**impact markers**' for initiatives.	• Pre-specification of success criteria and KPIs in initiatives. • *Develop theory-of-change for initiatives before BoD decision*
Reporting optimization	Need for improvements of impact reporting from grantees to **better monitor and show impact .**	• Clearer reporting requirements in grant agreements, including KPIs, success criteria, and impact markers. • Automatization of reporting, of data management, of monitorisation, and of visualisation
Quality of initiatives targeted at people	A large number of people have been reached by interventions, but almost nothing is **known of the quality**.	• Application of new methods that can measure the quality of initiatives. • Identification of people's quality of life and sustainability of society.
Impact on Diversity	Need for more information about how **NNF's funding instruments affect diversity.**	• An overall analyses of the impact on different dimensions of diversity (e.g. gender, age and internationalisation).

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Thank you!

Selected results within our nine principles for societal impact

Fostering the development of research talent

Investing in infrastructure

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Creating jobs and growth

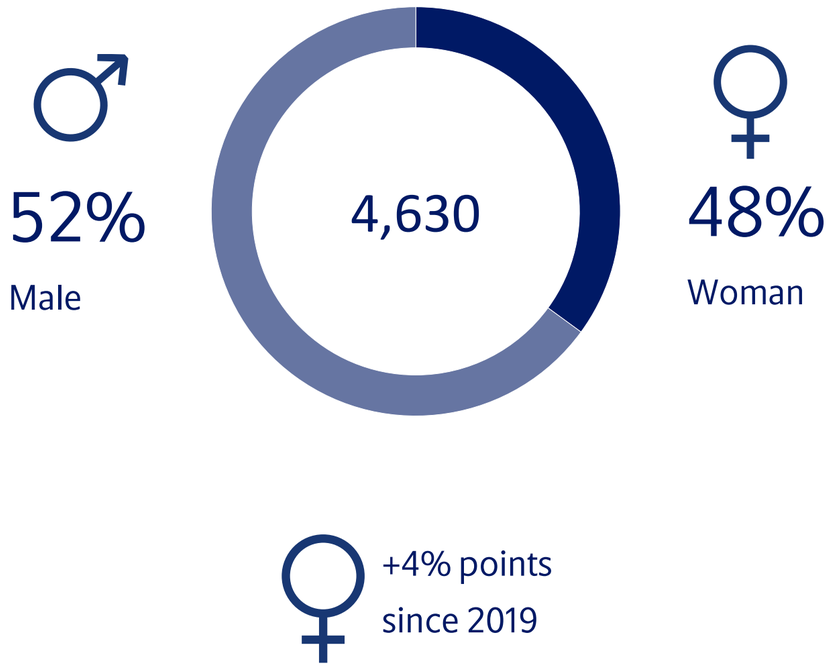
Developing healthcare and new medicine

Developing world-class education

Empowering vulnerable groups in society

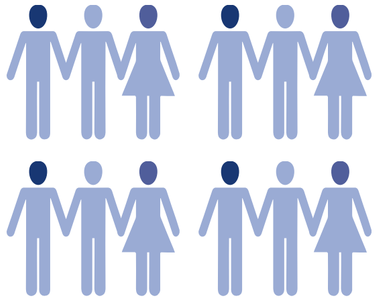
22% increase in number of people fully or partly supported by the Foundation in 2020

People supported in science



+4% points
since 2019

2,200



PhD students &
postdoctoral fellows

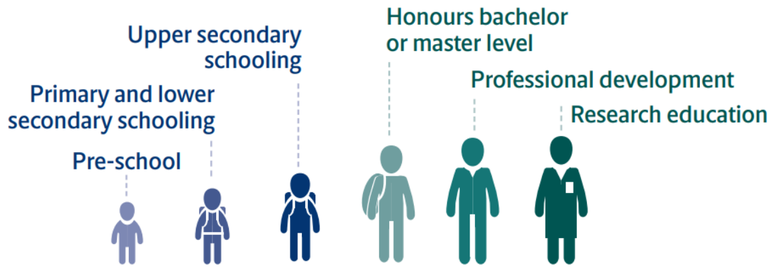
24% of PhDs in Denmark within health sciences is funded by NNF

Novo Nordisk Foundation has awarded EUR 2.5 billion to infrastructure initiatives

Fostering
the development
of research talent

Investing
in infrastructure

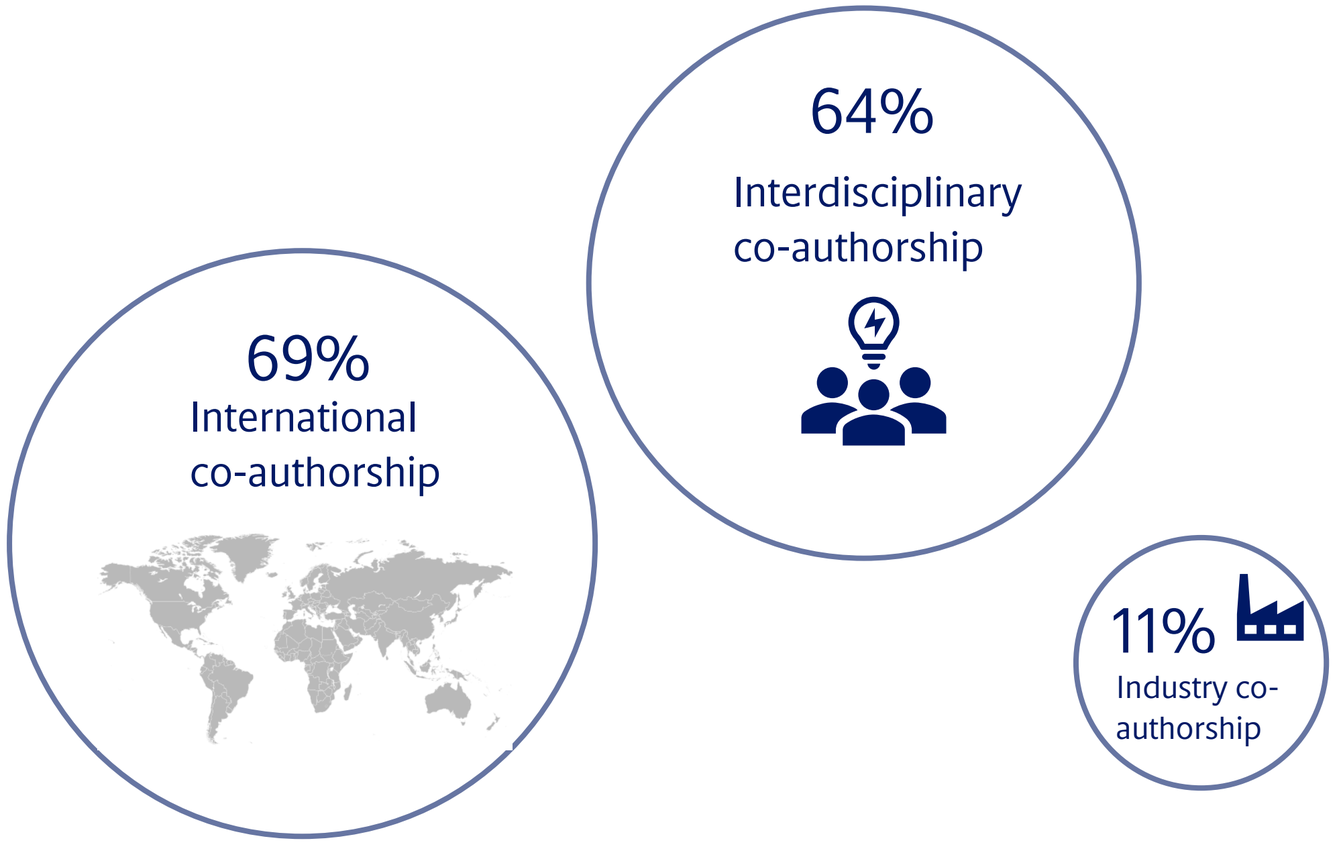
In **education** we support initiatives at all levels



In the **health sector** we support hospital and patient care initiatives on

Within **research and innovation**, we support NNF research centres, build new research facilities, and provide equipment for existing facilities

Research collaboration in **10,000** journal articles funded by NNF since 2016



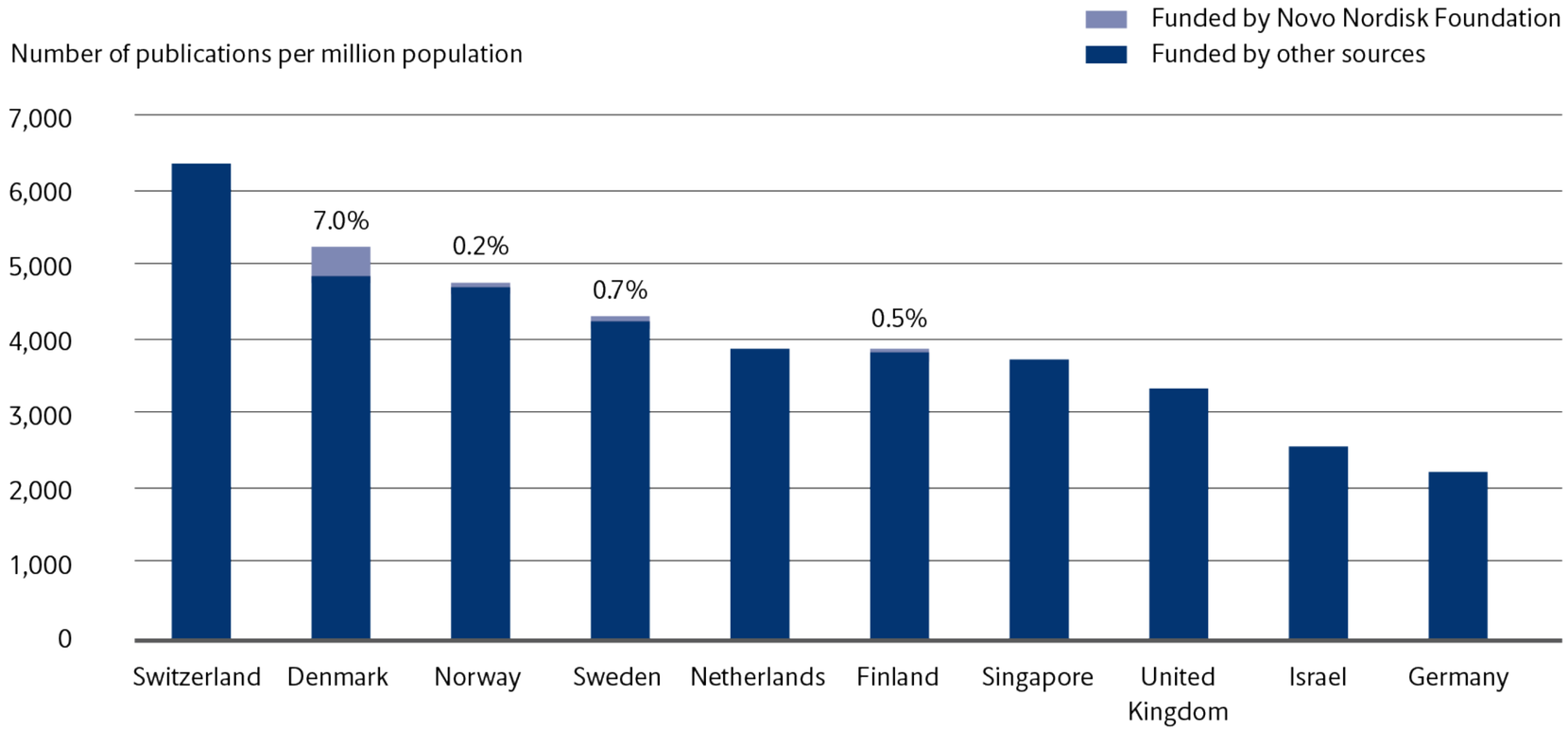
Fostering the development of research talent

Investing in infrastructure

Supporting research collaboration

7% of the journal articles in Denmark are supported by the Novo Nordisk Foundation grants

22% are among world's top 10% most frequently cited



Fostering the development of research talent

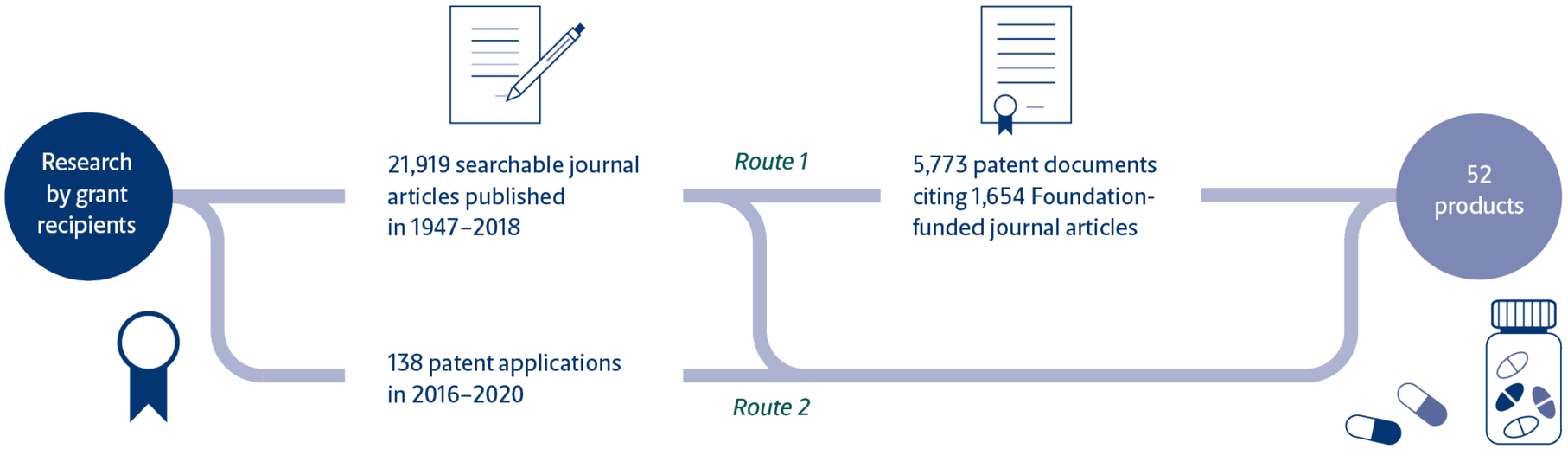
Investing in infrastructure

Supporting research collaboration

Promoting excellent research

novo nordisk fonden

Patent activity citing the Novo Nordisk Foundation grants links research to products



Fostering the development of research talent

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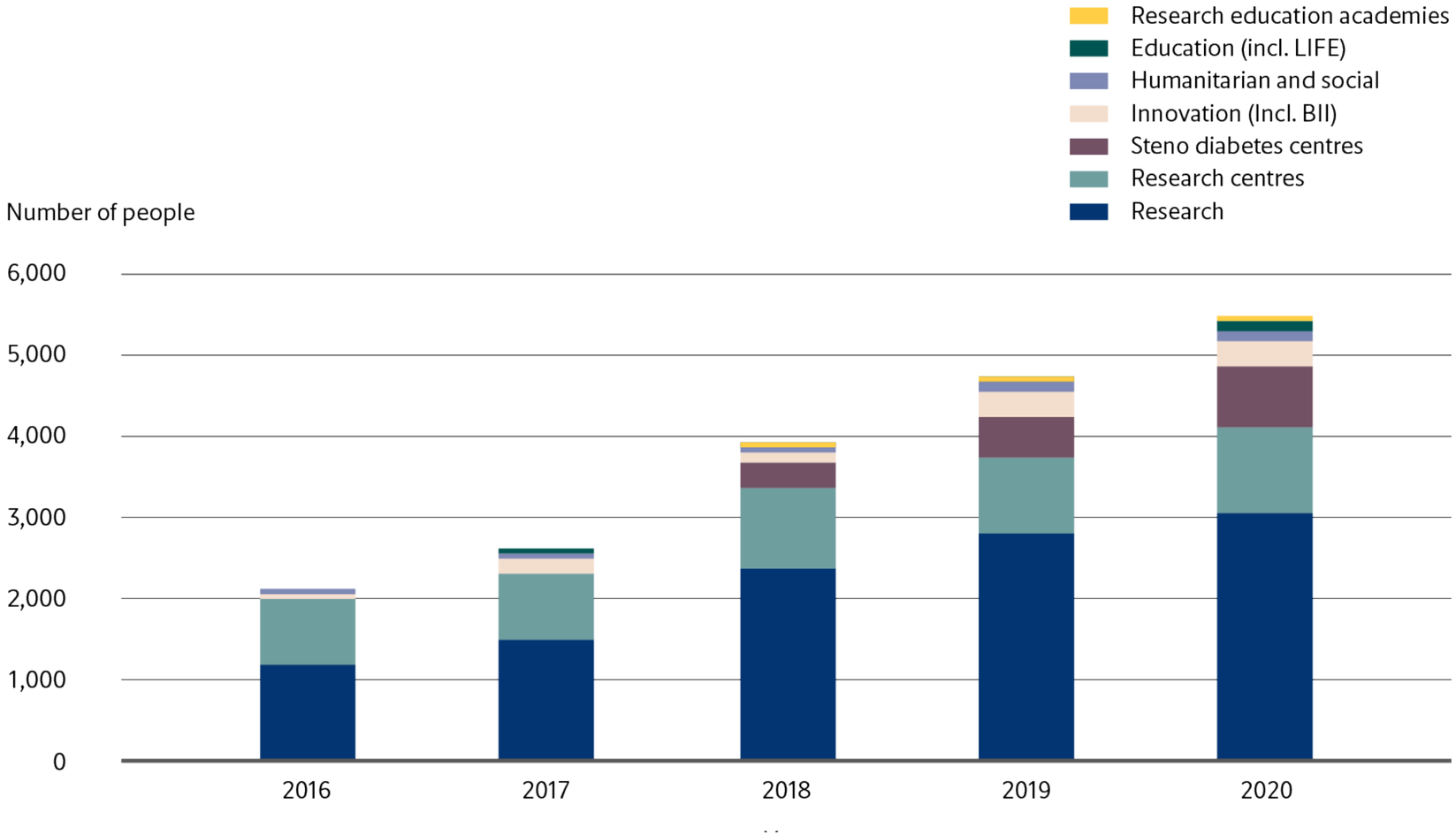
5,500 jobs in Novo Nordisk Foundation funded grant activities in 2020



Fostering the development of research talent

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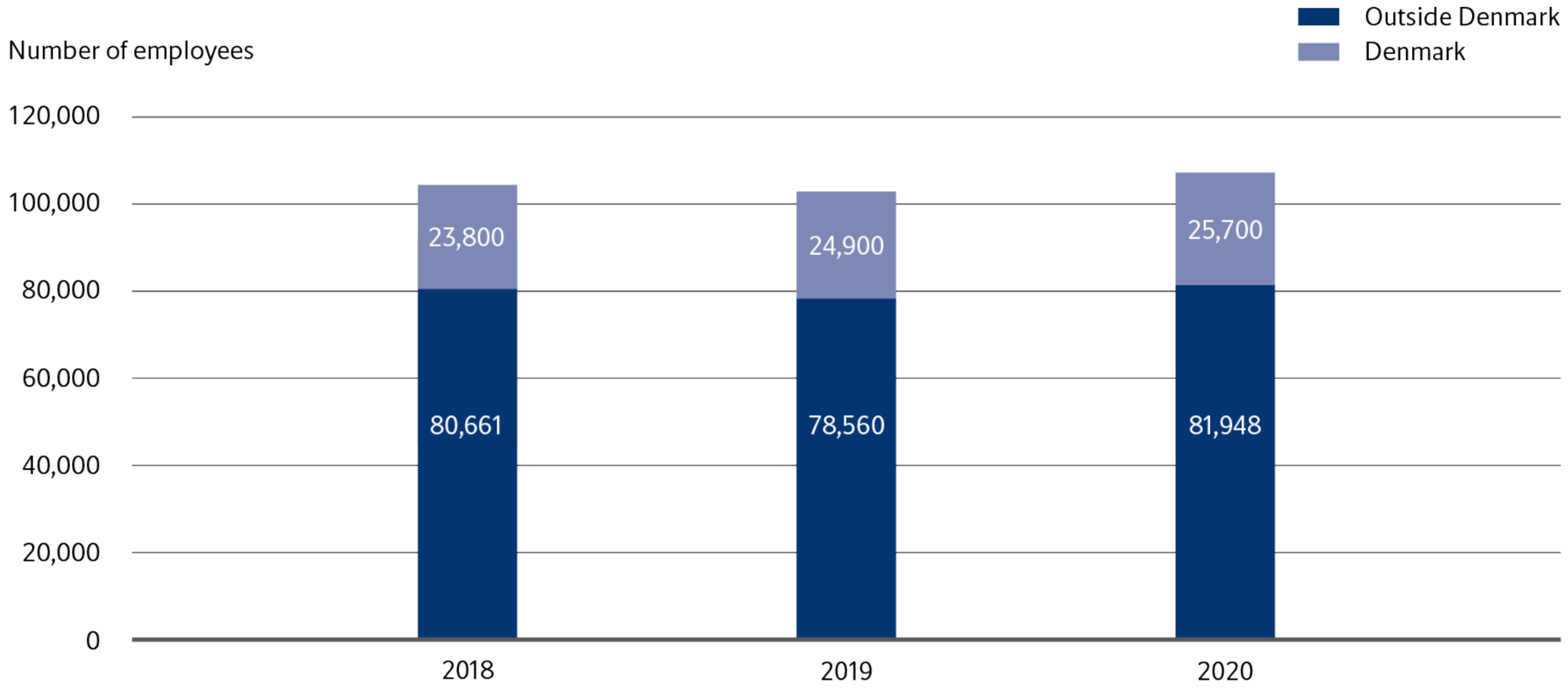
Creating jobs and growth

Number of people employed in Danish based and foreign based companies controlled or invested in, 2018–2020



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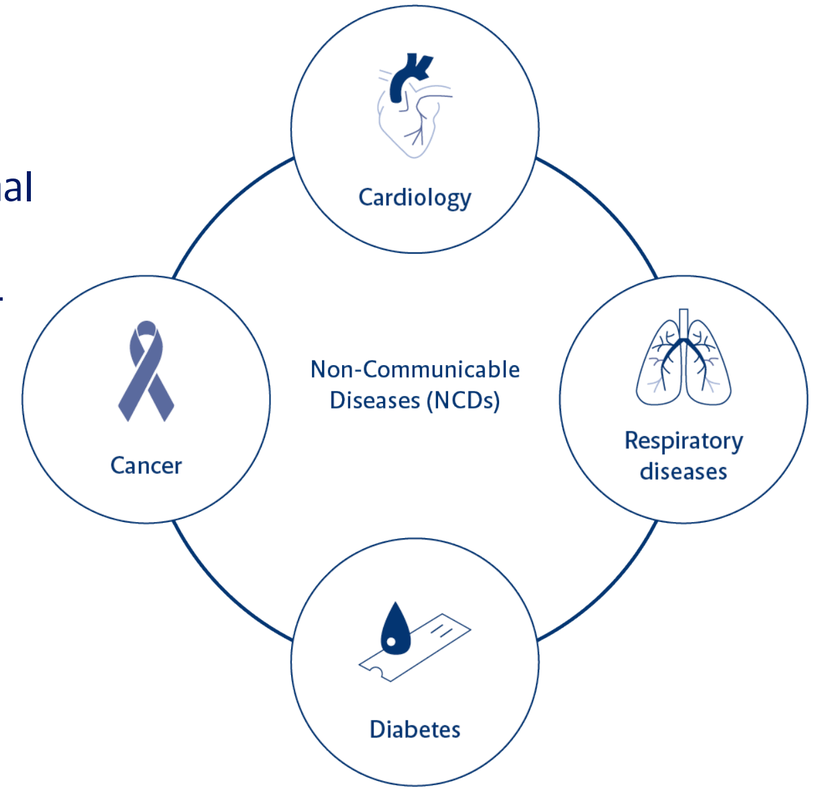
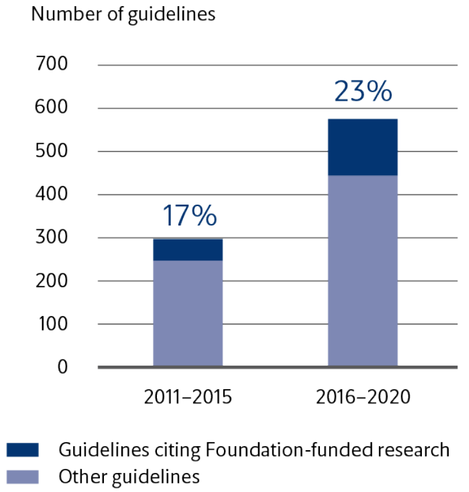
Foundation-funded journal articles contribute to the treatment of patients within the four Non-Communicable Diseases (NCDs)

21% of 870 national and international clinical guidelines and treatment recommendations cite Foundation-funded research (2011-2020)





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Developing healthcare and new medicine

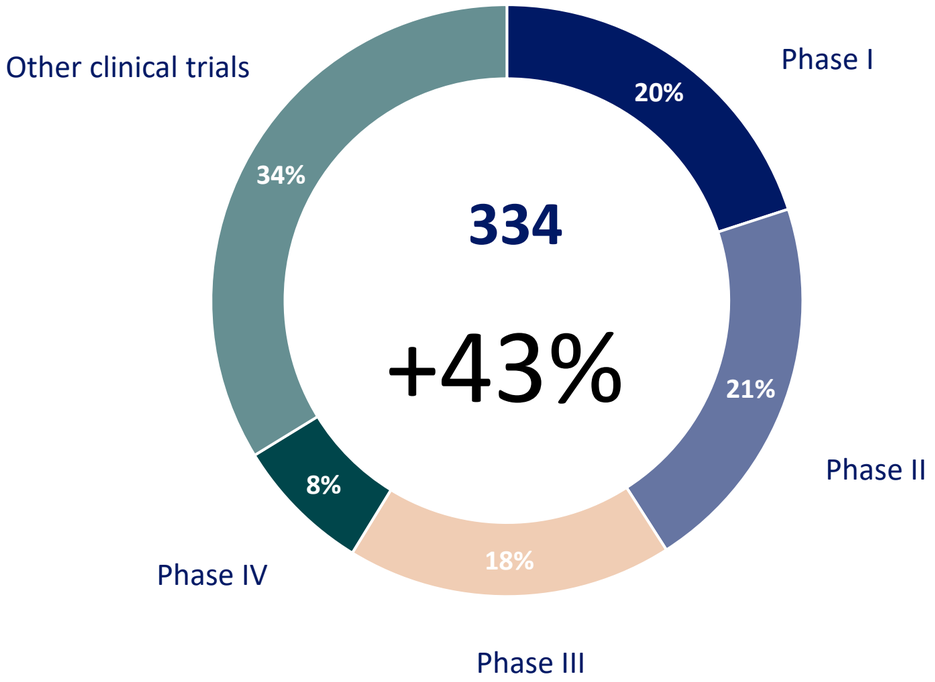
The Novo Nordisk Foundation Group contributed to translation of research to medicines through 334 clinical trials in 2020

162,000

People enrolled in clinical trials in 2020

+14%

Active clinical trials 2020



- **Fostering** the development of research talent
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More than 26,000 patients were treated at the Steno Diabetes Centres in 2020

STENO

Type 1 diabetes patients

14,300

Type 2 diabetes patients

10,800

Other patients

1,100

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Education and school activities in 2020

Steno Diabetes Centers

6,100
people reached in 2020

School initiatives, 2020

101,000
people reached in 2020

Course based on research grants

2019	2020
>24,000	>12,500

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- **Developing** world-class education

Empowering vulnerable groups in society

Humanitarian response

874,282
people reached in 2020

Youth empowerment and learning opportunities

32,525
people reached in 2020

Humanitarian (COVID-19)

COVID-19

500,000
people reached in 2020

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Number of people using the products from the Novo Nordisk Foundation Group in 2020

Users of
MedTech products

40
million people

Users of
medicine

32.8
million people

+9%

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Our objectives

Corporate objective

- To provide a stable basis for the commercial and research activities of the Novo Group companies.*

Grant-giving objectives

- To support physiological, endocrinological, metabolic and other medical research,
- to support Danish research hospital activities within diabetes, and
- to support other scientific, humanitarian and social purposes.

* The Novo Group comprises Novo Nordisk A/S, Novozymes A/S and Novo Holdings A/S, and companies in which Novo Holdings A/S may hold a material equity interest or over which it may have material influence.

Grant awarding principles

- The Foundation pursues the **highest standard of quality** in all it does and supports
- The Foundation facilitates **connectivity across disciplines** to generate new ways to discovery
- The Foundation facilitates inclusiveness and **collaboration** to catalyze advances in national and international partnerships
- The Foundation acknowledges and **values the potential of new ideas**
- The Foundation sponsors activities that **complement and supplement** current systems
- The Foundation supports **free and independent research**
- The Foundation champions broad **dissemination** and access to scientific knowledge and results

Grant awarding policies

- Diversity policy
- Data ethics principles
- Standard for good research practice
- Code of conduct
- Impact principles
- Rules of eligibility
- Research cost policy
- Whistle-blower facility

Four grant-awarding models

UNIVERSITIES AND HOSPITALS

Grants awarded in open competition

- Fellowships
- Research programmes
- Project grants
- Symposia
- Prizes

Research centres, infrastructures and stand-alone grants

- Metabolism, stem cells, biosustainability, proteins
- Biobank, Genome Center, MicroMAX

PUBLIC-PRIVATE AND PRIVATE-PRIVATE PARTNERSHIPS

Research hospitals in Denmark within diabetes

- Steno Diabetes Centres in Denmark and Greenland

Humanitarian causes and development aid

- Red Cross
- Unicef
- World Diabetes Foundation

OWN INITIATIVES

BioInnovation Institute (BII)

LIFE
(Learn, Inspire, Fascinate, Engage)

Healthy Weight Initiative

Reactive grants → **Proactive grants // Strategic grants**

28+ Committees
150+ experts

Within these topics:

- Clinical and Translational Medicine
- Bioscience and Basic Biomedicine
- Endocrinology and Metabolism
- Nursing Research
- Research in Art and Art History
- Exploratory Pre-seed Grants
- Biotechnology-based Synthesis and Production Research
- International Research Leader Grants
- Challenge Programme
- Interdisciplinary Research
- The Novo Nordisk Prize
- The Novozymes Prize
- The Novo Nordisk Foundation Teaching Prizes
- Science Education and Outreach
- Socioeconomic Impact of Research
- Steno Research Collaboration
- EAFD Talent Program
- Social
- Humanitarian
- ReCAP