Industrial doctorates and academic – company collaborations

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Changes in academia-industry collaborations

- Once there was a clear dividing line between fundamental academic research and industrial drug discovery and development, with companies simply acquiring or licensing the results of independent public sector research.

- But the problems in successfully translating laboratory discoveries into new commercial drugs have led to this line becoming increasingly blurred as industry and academia realise the benefits of closer collaboration.
- industry needs to be active at the cutting edge of both basic and applied science for reaping the 'first mover' benefits in competitive global markets (either in terms of knowledge about new targets, acquiring patent licenses, or launching innovative products and processes).


We stand stronger together
When university researchers publish findings about diabetes in collaboration with Novo Nordisk researchers, they are cited significantly more often than when the parties publish separately. There is a further slight increase in effectiveness when researchers from foreign universities are part of the team contributing to the publication.
The effectiveness is measured by how often Novo Nordisk is quoted in scientific publications compared to the OECD average in the same field of research. It provides an index, where the average for the OECD countries is 1.
Novo Nordisk
1.87
Danish universities
1.85
Cooperation between Novo Nordisk and Danish universities
2.45

Analysis of the Industrial PhD Programme

Published by :

The Danish Agency for Science, Technology and Innovation

This analysis considers app. 430 individuals and 270 companies which have participated in the Industrial PhD programme.
The results were summarized as follows:
Industrial PD earn app. 7-10 percent higher wages than both regular PhDs and university graduates.
Companies which host Industrial PhD projects see on average increasing patent activity in association with hosting the projects. They are characterised by high growth in gross profit and employment.

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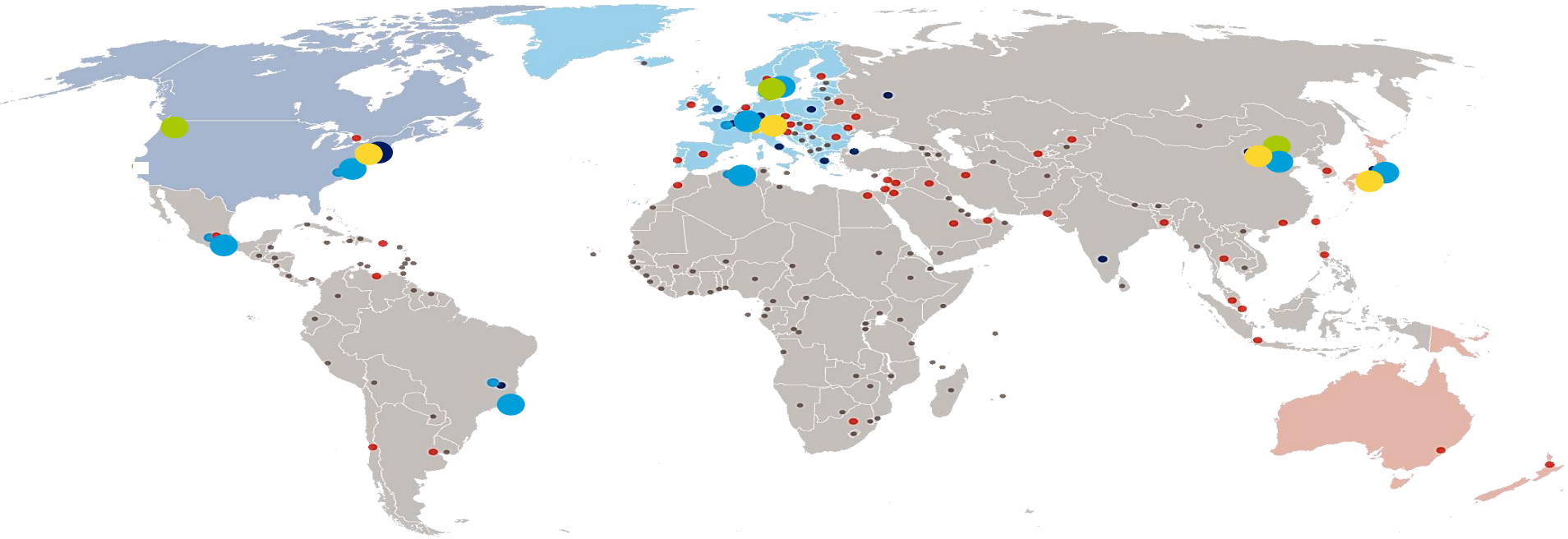
Novo Nordisk Worldwide: > 33,000 employees



- R&D facilities
- Clinical development centres
- Production sites
- Affiliates
- Representative offices
- Regional and business area offices

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Global R&D

>3800 staff today, 5000 staff in 2020







Seattle

Princeton

Denmark

Beijing

Bangalore

R&D locations

- Copenhagen, Denmark
- Beijing, China
- Seattle, WA, USA
- Princeton, NJ, USA
- Bangalore, India

Clinical Development centres

- Zürich, Switzerland
- Beijing, China
- Princeton, NJ, USA
- Tokyo, Japan

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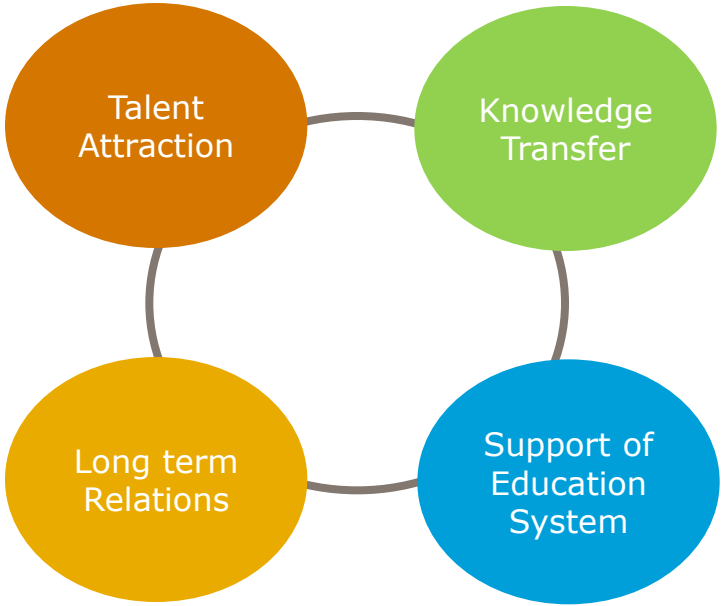
Our core beliefs

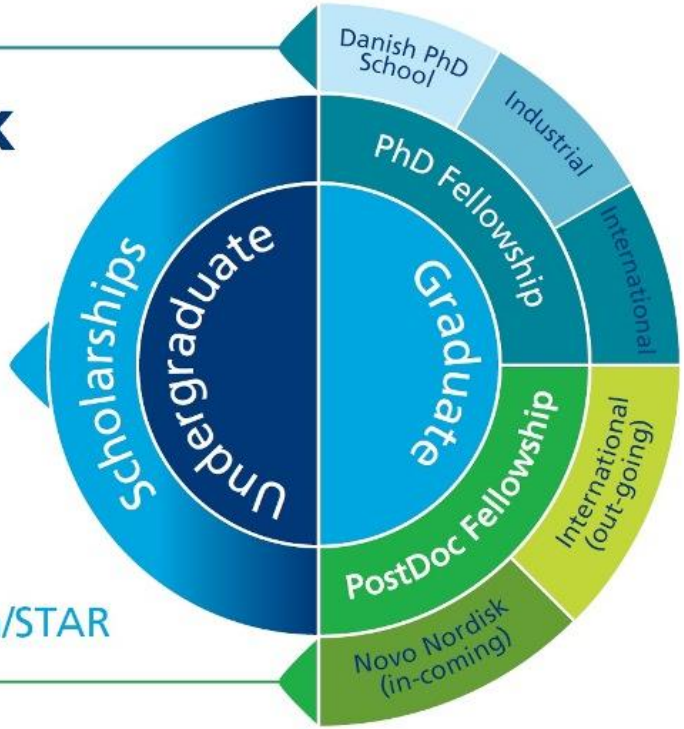
Fellowship Programmes



novo nordisk STAR programme

To learn more about STAR please visit:

www.novonordisk.com/STAR



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Three main categories of Novo Nordisk employed STAR fellows

STAR PostDoc
in-coming
1-2 years temp. employment

Support non-local PostDocs to work on a Novo Nordisk project at any of the Novo Nordisk R&D facilities

Salary and pension are funded by R&D Academic Relations

STAR PostDoc
out-going
1-2 years temp. employment

Support PostDocs to work on projects which include stationing at international centres of excellence

Salary, pension and some mobility costs are funded by R&D Academic Relations

STAR PhD
Industrial
3 years temp. employment

Collaborations between Novo Nordisk, a university and a PhD student

Funded by Novo Nordisk and The Danish Agency for Science, Technology and Innovation

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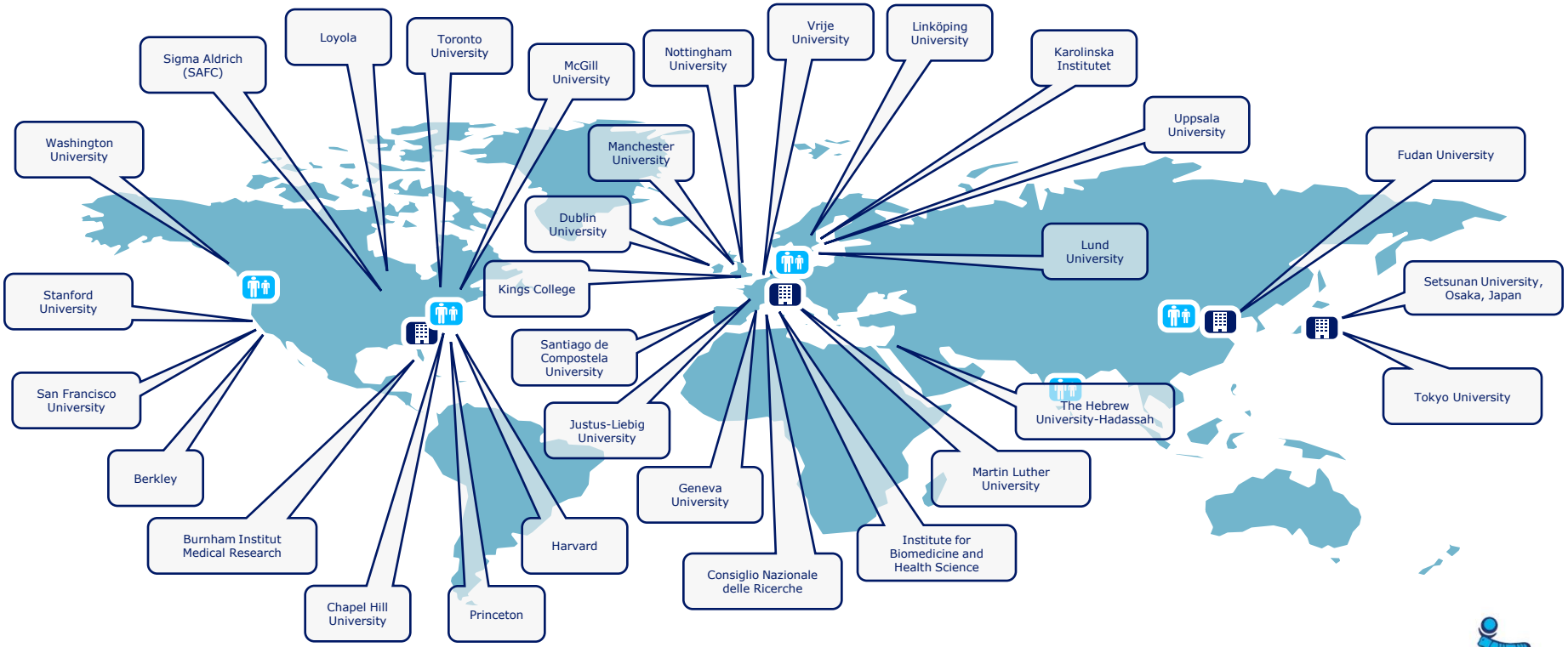
STAR Fellowships 1998-2014 as per 31 March 2014

Fellowships 1998-2014 (31/3-2014)	Total	Active	Employed at NN %[1)]
Industrial PhDs	124	31	50%
Other PhDs	106	10	35%
PostDocs Out-going	54	17	42%
PostDocs In-coming	20	5	86%
Industrial PostDocs	1	1	0%
Total	**305**	**64**	**45%**
Men/women %	**41% / 59%**	**38% / 63%**	**49% / 51%**

[1)] % of finished fellows employed af Novo Nordisk after their fellowship

STAR PostDoc Fellows 2013

Active and completed 1998 – 30 June 2013



Novo Nordisk STAR fellows Professional Qualifications

- Strong competences from active research environments
- International experience and networks
- Good publications (and PhD thesis) and/or patent applications
- Skills in new technologies
- High personal ambitions

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STAR fellowship postgraduate training 2013

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STAR Symposium activities

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Handling of information

- Front end research: technologies, models
  open innovation
- Core knowledge: product candidates
  closed innovation

Different company – university collaborations

Intellectual Property Rights focused collaborations → Licensing agreement

Talent Attraction & know-how focused collaborations → Fellowship agreement

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Why industrial PhDs & postdocs

- Facilitate relationship building, innovatin and knowledge transfer to Danish academic institutions
- Facilitate networking between Novo Nordisk, Danish academic institutions and Academic institutions outside Denmark (via short term research activities at foreign universities supported by the programme)
- Efficient recruitment tool
- Support of Danish education system

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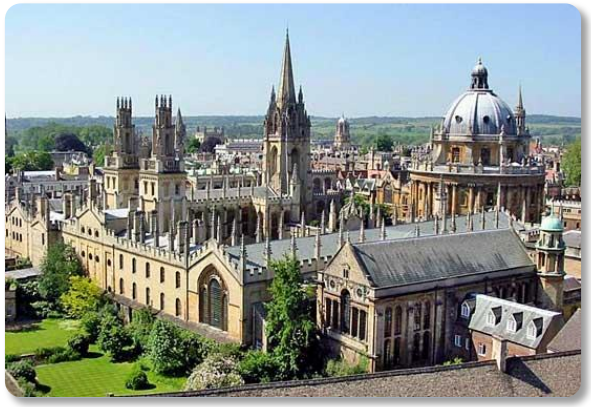
Recently: Elite Post Doc programme with Oxford University

Objectives

- A recruitment platform for international top talents within diabetes research
- An international platform for branding NN as a top-science employer
- A platform for on-campus recruitment activities
- A platform for expanding scientific collaboration between NN and UO

Scope

- 3-year fellowships fully funded by Novo Nordisk



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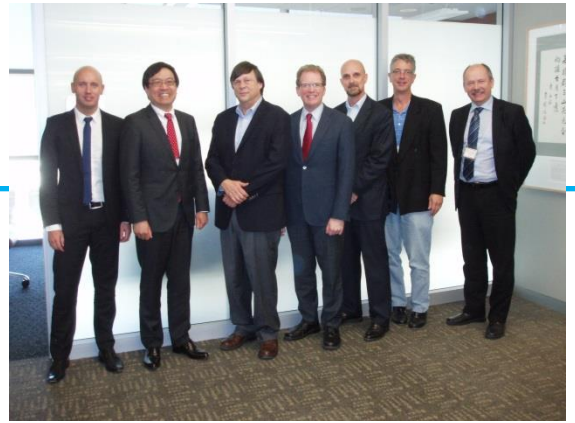
Recently: Elite Post Doc programme with Stanford University

Objectives

- A recruitment platform for international top talents within immunology research
- An international platform for branding NN as a top-science employer
- A platform for on-campus recruitment activities
- A platform for expanding scientific collaboration between NN and Stanford

Scope

- 2 to 3-year fellowships fully funded by Novo Nordisk



STANFORD SCHOOL OF MEDICINE

Institute for Immunity, Transplantion and Infection

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Evaluation of Early innovation/research

New metrics for evaluation of the innovation outcome such as:

- *networks created,*
- *access to novel technology & implementation*
- *access to important know-how & implementation*

on top of the classical metrics such as:

- *publications,*
- *patent applications filed,*
- *science citations etc.*

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