



# OPPORTUNITIES OF DIVERSE COLLABORATION

Maija Tenkanen

Kansallinen tohtorikoulutuspäivä, Vaasa, 12.10.2023

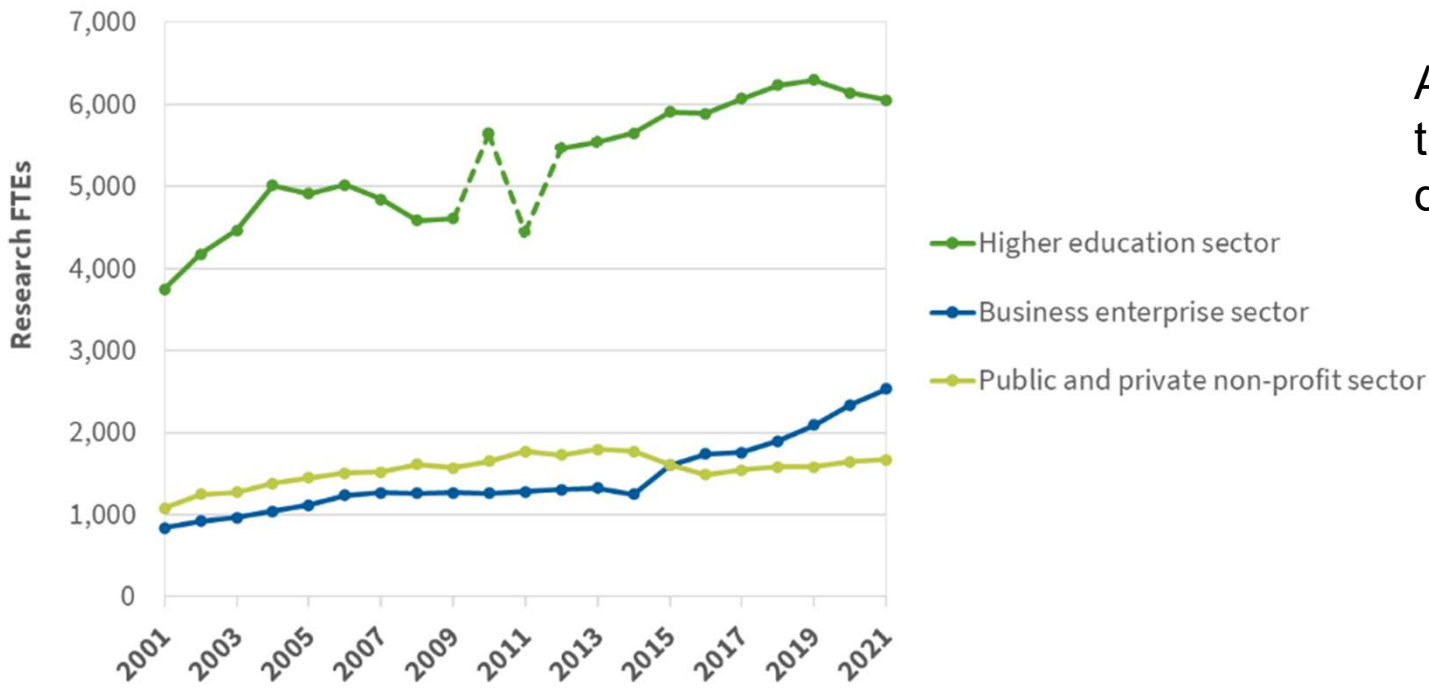


# THE STATE OF SCIENTIFIC RESEARCH IN FINLAND 2023 REPORT



## PhDs' research FTEs by sector

Sectors as defined in Statistics Finland's R&D statistics.



27% of employed PhDs worked in companies in 2019.

After universities, companies are the largest employer of doctoral degree holders.

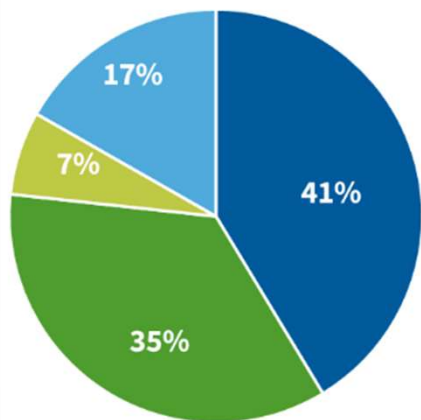


# THE STATE OF SCIENTIFIC RESEARCH IN FINLAND 2023 REPORT

## Educational level of R&D personnel by sector in 2021

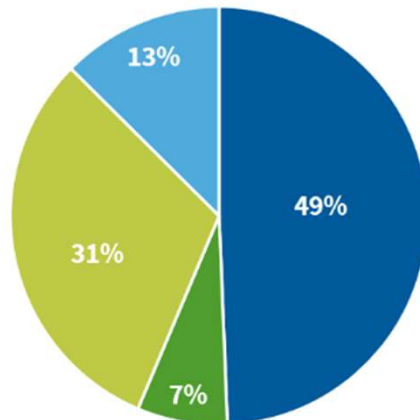
The graph shows the share of each educational level in total R&D personnel and total number of R&D personnel by sector.

Higher education sector



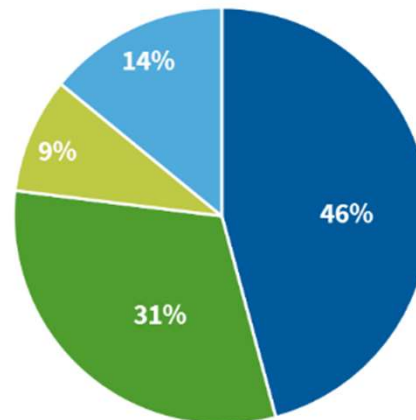
R&D personnel number:  
33,788

Business enterprise sector



R&D personnel number:  
46,115

Public and non-profit sector



R&D personnel number:  
7,461

- University degree
- University of applied sciences degree
- Doctoral degree
- Other education

Source: Statistics Finland, Research and development.

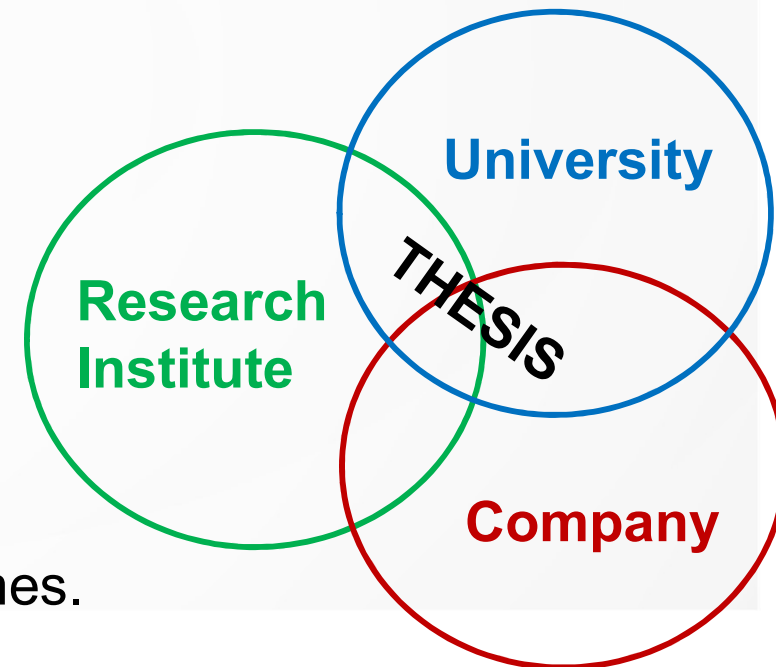
in 2021, PhDs in the business sector accounted for only 7% of the research work in businesses.

Source: Research Council of Finland 3



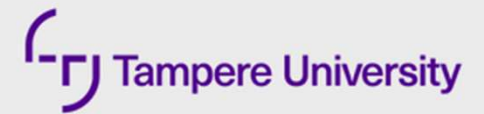
# DOCTORAL TRAINING AND TKI – HAS ALWAYS BEEN PRESENT

- Doctoral training has been done in cooperation with companies and research institutions for a long time.
- There are multiple forms of collaboration in doctoral training and supervision.
- Joint national and international research projects are one natural forum of collaboration.
- Joint training programmes, such as Marie Skłodowska-Curie Actions (MSCA) Doctoral Networks and Doctoral Programmes.





# DOCTORAL WORK IN COLLABORATION WITH INDUSTRY



**DSII** Doctoral School  
of Industry Innovations

**WHERE INDUSTRY  
MEETS SCIENCE.**



A doctoral school working with industry to solve meaningful real-life problems. Research topics come from companies and doctoral students do their dissertations in close collaboration with industry partners.

#### FOR DOCTORAL STUDENTS

- ✓ Research and work combined
- ✓ Four-year contract
- ✓ Position in an expert community formed by companies and TAU
- ✓ Learning new business skills and innovation methods

#### FOR THE COMPANY

- ✓ Channel for recruitment and education
- ✓ Source of the freshest knowledge and findings
- ✓ Posing and solving key research questions



The universities of Helsinki and Tampere, together with the Technology Industries of Finland Centennial Foundation and participating companies, run a joint [DSII Scale-up Pilot project](#), which offers positions for doctoral researchers working in close cooperation with industry.

Source: Tampere University pages



# KASVIPOHJAINEN JOGURTTI MIELLYTTÄÄ MONIA, MUTTA MIKSEI KAIKKIA?

Helsingin yliopiston väitöstutkimuksessa vertailtiin kasvipohjaisten jogurttien eli gurttien ja maitopohjaisten jogurttien rakennetta ja suutuntumaa. Osa gurteista koettiin yhtä miellyttäväksi kuin jogurtit, ja erityisesti nuoret pitivät kasvipohjaisista tuotteista juuri niiden ominaispiirteiden vuoksi.

Miltä kasvipohjainen jogurtti tuntuu suussa verrattuna maitopohjaiseen jogurttiin? Mitkä tekijät vaikuttavat gurttien rakenteen aistimiseen ja kuluttajien hyväksyttävyyteen? Entä voidaanko tuotetiedolla vaikuttaa kuluttajien kokemukseen?

Näitä kysymyksiä selvitti elintarviketieteiden maisteri **Maija Greis** väitöskirjatutkimuksessaan Helsingin yliopiston maatalous-metsätieteellisessä tiedekunnassa. Suomessa valmistettuja gurtti- ja jogurttinäytteitä tutkittiin aistilaboratorioympäristössä Helsingissä, Turussa ja Yhdysvalloissa University of Massachusetts Amhersin yliopistossa. Tuotteita tutkittiin mittalaitteiden avulla ja lisäksi niitä arvioivat aistinvaraisesti sekä kuluttajat että koulutetun raadin jäsenet. Tutkimus toteutettiin yhteistyössä ja yhteistutkimuksena Valion kanssa.



**COLLABORATION WITH THE UNIVERSITY OF HELSINKI SUPPORTS VALIO'S PRODUCT DEVELOPMENT – "HIGH-QUALITY RESEARCH IS HUGELY IMPORTANT"**

Source: University of Helsinki News



# YRITYSYHTEISTYÖ EI KAHLITSE, VAAN ON HYVIN TOTEUTETTUNA ARVOKAS LISÄ MUUHUN TUTKIMUKSEEN

Professori Mikko Ritalan tutkimusryhmän pitkäaikainen kumppani on ASM Microchemistry, joka tekee ohutkalvoja valmistavia laitteita teollisuudelle. Tiivis yhteistyö alkoi vuonna 2004, kun ASM muutti Chemicumiin.

Käytännössä yhteistyö tarkoittaa, että väitöskirjatutkijat kehittävät uusia prosesseja atomikerroskasvatukseen. Yritys patentoi parhaat tulokset, ja tutkijat tekevät lopuksi niistä julkaisun.

Yhteistyö antaa tutkijoille vihiä tulevaisuuden tärkeistä materiaaleista, ja saattavat samalla aueta ovet uuteen työpaikkaan. On hyvin palkitsevaa nähdä, että koulutamme ihmisiä, joille on tarvetta. Tutkijat myös tuntevat olevan varsin tyytyväisiä siihen, minkälaisiin tehtäviin he yrityksissä päätyvät.



# DOCTORAL DEGREE ALONGSIDE WORK

News

Completing a doctoral degree alongside work – the thesis opened the doors to the product and technology development of a deep-tech company

Published: 15.9.2023

Karita Kinnunen-Raudaskoski and Jani Lehmonen have both graduated as doctors of chemical engineering from Aalto University and for them, writing a doctoral thesis alongside regular work meant long hours but was also highly rewarding.



Both Kinnunen-Raudaskoski and Lehmonen welcome the fact that Aalto University's operating models for writing a doctoral thesis also apply to those who do not work as full-time doctoral researchers at the university.

'Of course, writing a doctoral thesis alongside regular hours was hard work but you achieve results if you have the motivation and the passion for what you are doing. The employer's support was also important. And, of course, the rest of the family learned to adapt to the situation when the *daddy was again busy writing the thesis*,' adds Jani Lehmonen, Technology and Product Development Manager at Fiberwood.

Source: Aalto  
University News





# MEETINGS BETWEEN DOCTORAL RESEARCHERS AND COMPANIES



## BUSINESS SPRINT

Doctoral researchers offer their expertise to a company.

Two weeks intensive programme and surprising encounters:  
KONE and University of Helsinki doctoral researchers piloted a new way to develop ideas.

Researcher-mentor pairs

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I can warmly recommend this sort of business visit for any PhD researcher, regardless of the timing of your PhD is. The outcomes from this visit were different to each participant, including KONE employees, and the experience was truly collaborative, as we did and build it together. This also ensured, that the outcomes were beneficial for all. Next, I am up to writing a conference paper in collaboration with KONE's Sanni, Merja, Hanna, and Viveka, so this was a mere start!



# DOCTORAL TRAINING AND TKI – A JOINT PRODUCTIVE ROAD AHEAD

- Collaboration between doctoral researchers and businesses is a good way to make research knowledge readily available to society.
- By working together to tackle interesting questions, doctoral researchers and the business community can generate new insights and share tacit knowledge.
- Many companies are interested in acquiring new ideas and information, even if they don't lead to the development of a new product.
- We should work together to learn a common language, academics able to describe their work to the business community.
- We must also ensure that a sufficient number of talented individuals pursue doctoral education.



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