

# Master's Degree Programme in Biomedical Sciences

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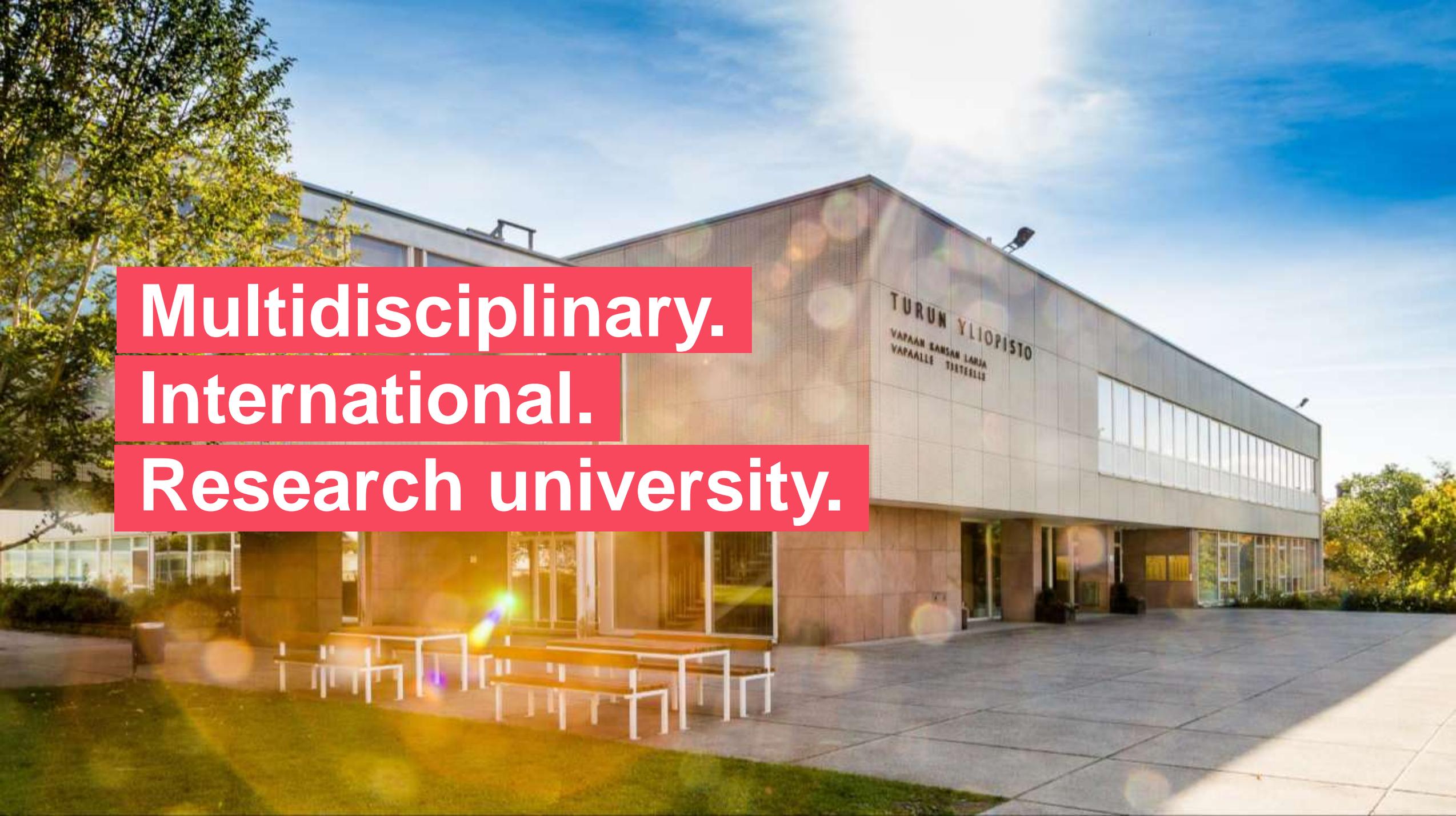
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UNIVERSITY  
OF TURKU



**Multidisciplinary.**

**International.**

**Research university.**

**The University of Turku is an active academic community of 25,000 students and employees which conducts groundbreaking and inter-disciplinary research. We engage in the development of Finnish and international education and innovations paving the way for a brighter future.**

> [utu.fi](https://utu.fi)



**The University  
of Turku is  
among the top  
1% in the world**

QS World University Rankings 2021

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# 100

**Years in 2020**

**Founded in 1920  
by the initiative of  
the Finnish people  
with the support of  
22,040 donors.**

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# 1<sup>st</sup>

**Finnish-  
language  
university**

**“From a free people  
to free science”**



**Academic  
heritage in  
Turku since  
1640**

**The first university in  
Finland, the Royal  
Academy of Turku,  
operated in the city  
1640–1828.**

**8**

**Faculties**



**Faculty of Education**  
**Faculty of Humanities**  
**Faculty of Law**  
**Faculty of Medicine**  
**Faculty of Science**  
**Faculty of Social Sciences**  
**Faculty of Technology**  
**Turku School of Economics**

A man and three children are using augmented reality (AR) glasses in a park. The man is standing and holding a large, glowing digital globe. The children are sitting on the grass, interacting with various digital elements like a DNA helix and a bar chart. The background shows a city skyline and trees.

# Effective research

**We study digital learning environments and develop new ways of learning and teaching by utilising gamification and other novel methods.**

We conduct research and work towards a better future and well-being. We promote free, effective and open science. **Our research is multidisciplinary and international aiming towards new, interdisciplinary initiatives.**

> [utu.fi/research](https://utu.fi/research)



**6,200**

**Scientific  
publications  
annually**

**Our research  
is profiled  
through six  
thematic areas**



**Biodiversity and sustainability**

**Future technologies and digital society**

**Cultural memory and societal change**

**Children, young people and learning**

**Health, diagnostics and drug  
development**

**Sea and maritime studies**

Turku, located in the Southwest Finland and founded in 1229, is the oldest city in Finland. Turku is compact in size, perfect for exploring the exciting mixture of old and new.

Turku offers the best quality of life with reasonable living costs, many housing options, active academic community, vivid cultural life, and a variety of outdoor activities.

- > [turku.fi/en/study-turku](https://turku.fi/en/study-turku)
- > [visitturku.fi/en](https://visitturku.fi/en)

# 40,000

Students in higher education



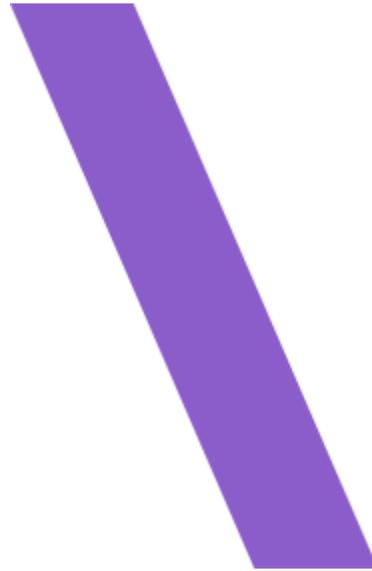


A photograph of two women sitting on a black metal bench outdoors. The woman on the left has short white hair and is wearing a black vest over a teal top. The woman on the right has long red hair and is wearing a grey t-shirt and purple pants with colorful patches. They are both smiling and looking towards the camera. In the background, there is a yellow bus, a stone wall, and a river. The scene is set in an urban environment.

# Compact campus in the city centre

The Turku campus is located near the city centre and Aura River and close to other higher education institutions, businesses at Science Park, and the University Hospital. Also at Pori and Rauma, the campus is situated in the city centre.

# **International Master's Degree Programme in Biomedical Sciences**



**Biomedical Imaging**

**Drug Discovery and  
Development**

**Molecular Biotechnology  
and Diagnostics**

# Major structure of Master's Degree Programme in Biomedical Sciences (120 ECTS)

|   |                                |
|---|--------------------------------|
| Major subject studies, mandatory courses<br>36 - 62 ECTS  |                                |
| Master's Thesis 40 - 45 ECTS<br>Thesis plan, seminar and practical laboratory part (20 - 25 ECTS)<br>Written Thesis (20 ECTS) |                                |
| Elective studies<br>> 5 ECTS  | Language studies<br>5 - 8 ECTS |

Possible Supplementary studies:

- 0 - 18 ECTS, not part of the Degree credits

\* Number of credits in each category varies between the tracks

# Biomedical Imaging

- The interdisciplinary curriculum provides you with a broad spectrum of state-of-the-art knowledge in biomedical imaging related to many different areas in **cell biology, biophysics and biomedicine**.
- You will learn about different imaging modalities and modern imaging technologies
- Research facilities include a wide array of **state-of-the-art imaging technologies** ranging from atomic level molecular and cellular imaging to whole animal imaging, clinical imaging (e.g. PET) and **image analysis**.



# Biomedical Imaging

## Master's thesis topics

- *Effects of nanomaterial delivered protein kinase A on human breast cancer stem cells*
- *Polyacrylamide stiffness-gradients hydrogels: A 2D culture system to study cell mechanoresponsiveness to substrate stiffness*
- *3D Bioprinting of nanoparticle incorporated cell-laden bioink for muscle tissue engineering*

[Learn more about Biomedical Imaging](#)



# Biomedical Imaging

- Highly interdisciplinary and international programme
  - Jointly organized with [Åbo Akademi University](#)
- The graduates have the possibility to continue their studies as doctoral candidates in order to pursue a career as a **scientist**, in industry or science **administration**, and in an **imaging core facility** or a hospital **research laboratory**.



# Did you know?

- Winner of the [2014 Nobel Prize](#) in Chemistry [Stefan Hell](#) did his original discoveries on STED microscopy at the University of Turku
- Finland hosts the Statutory Seat and coordinates from Turku the [Euro-BioImaging](#) infrastructure network which provides imaging services for European researchers



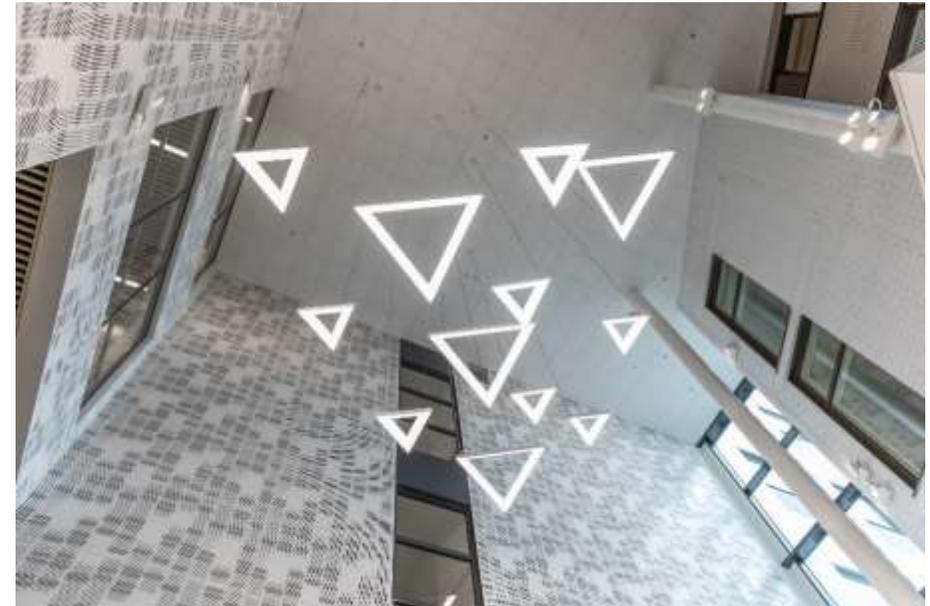
**Nobel  
Stefan Hell**

Nobel prize 2014



# Drug Discovery and Development

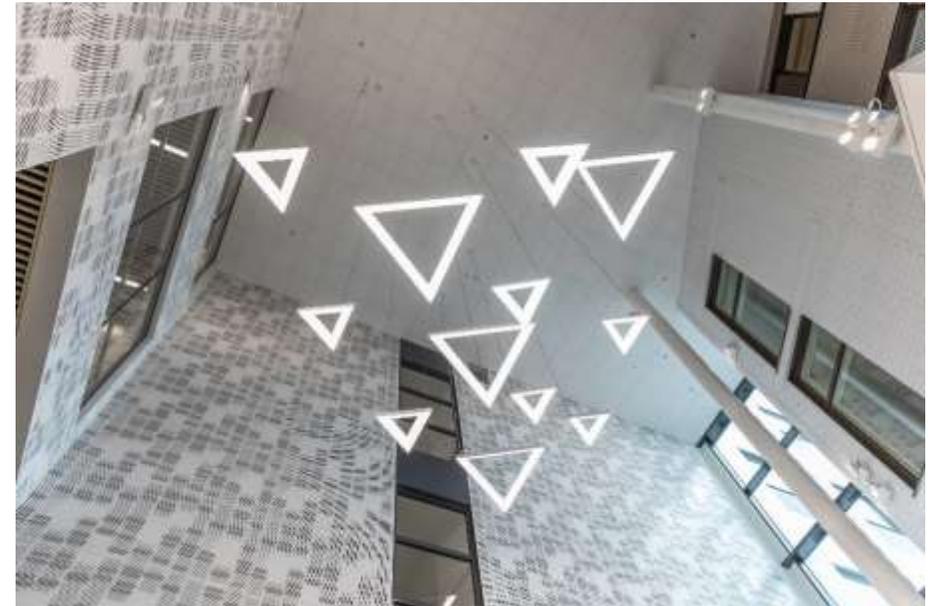
- You will get a deep understanding of up-to-date methods applied to **identify and validate new drug targets** as well as screening novel molecules.
- Studies provide knowledge of technological **innovations** as well as methods of **clinical drug research** and development phases, clinical trial design, **study planning** and **biostatistics**.
- You will learn about **drug regulatory science** and pharmacovigilance.



# Drug Discovery and Development

Examples on Master's thesis topics

- *MID1 inhibitors to delay disease progression in **neurodegenerative** diseases*
- *Initiation of new medication with an actionable **pharmacogenetics**-based prescribing guideline in discharged hospital patients in Finland*
- *In search of Ebola virus glycoprotein inhibitors: a **structure-based drug design** study*

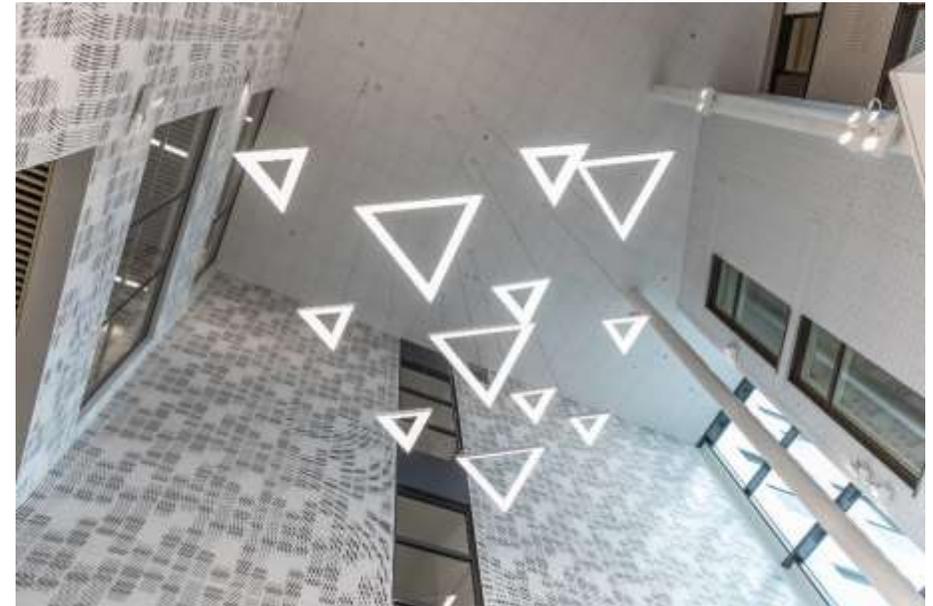


[Learn more about Drug Discovery and Development](#)

# Drug Discovery and Development

After graduation, you master drug discovery and development processes as well as procedures applied in drug regulatory science. The programme also gives a good foundation for those interested in **entrepreneurship**.

Graduates might work for example as **medical writers, regulatory consulting experts, project managers** or university researchers.



# Did you know?

- Over 50% of DDD graduates continue to **PhD** studies!
- Drug Discovery and Development track is a part of the **NordBioMed network**
  - Network has been established to develop biomedical education in Nordic countries
- Over 90% of all drugs developed in Finland **originate** from Turku
- Turku hosts the **major cluster** of pharma industry, biotechs and diagnostic companies
- Turku in a key role in the new **National Drug Development Center**



**Karolinska  
Institutet**



UNIVERSITY OF  
EASTERN FINLAND



# Molecular Biotechnology and Diagnostics

- You will learn how to combine the knowledge on **biomarkers, biotechnological methods and assay concepts** to solve demanding diagnostic problems.
- Know-how on biomolecular engineering can be applied widely in the fields of **diagnostics and drug development**.
- Studies provide you with a broad understanding of
  - *in vitro* **diagnostic technologies** and their applications in clinical chemistry and beyond
  - Modern biotechnological methods to **produce and engineer biomolecules**



# Molecular Biotechnology and Diagnostics

Master's Thesis topics:

- *Antibody Expression, Purification and Assay development for the **detection of Malaria***
- *Colorectal cancer specific CEA lectin **nanoparticle assay***
- *Lateral flow assay platform for infectious **disease diagnostics***



[Learn more about Molecular Biotechnology and Diagnostics](#)

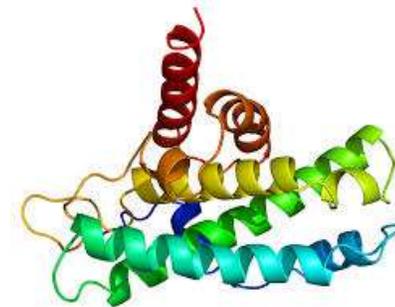
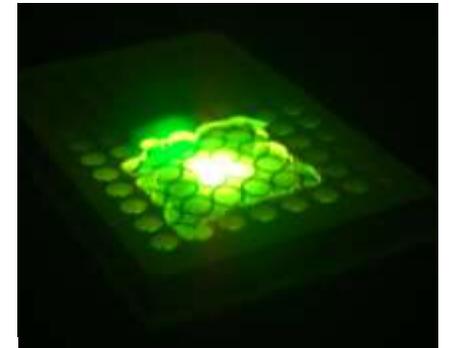
# Molecular Biotechnology and Diagnostics

- After graduation, you will be equipped with skills that enable you to join the **industry**, to pursue a career as a **scientist**, or to enter the **public sector**. In addition, the curriculum also gives a good foundation for those interested in **entrepreneurship**.



# Did you know?

- Several **spin-off companies** have been established based on the research done at the unit responsible of the track.
- There is a huge need for **rapid diagnostics tests** in medicine as well as environmental and food safety monitoring.
- **Engineered antibodies** are increasingly utilized in diagnostics as well as in therapeutic applications.





**Welcome to  
apply**

**5 – 19 January 2022**

> [utu.fi/degrees](https://utu.fi/degrees)

# Admission requirements

**A nationally recognized Bachelor's degree, corresponding to at least 180 ECTS or to three years of full-time study**

**Excellent English language skills and a certificate that proves those skills in the required level**

[See detailed instructions on language requirements](#)

**Track/programme specific admission requirements**

**The degree on basis of which you are applying to the track/programme must be in a relevant field of study**

> See the programme pages at [utu.fi/degrees](http://utu.fi/degrees)

# Admission requirements – background studies

## **Biomedical Imaging**

biochemistry  
biology  
biomedical sciences  
chemistry  
engineering  
medical sciences  
other life sciences  
physics

## **Molecular Biotechnology and Diagnostics**

biomedical sciences  
molecular biosciences  
biochemistry  
biotechnology  
other life sciences  
chemistry  
engineering

## **Drug Discovery and Development**

bioengineering  
biochemistry  
bioinformatics  
biology  
biomedical sciences  
chemistry  
medical sciences  
other life sciences  
pharmacology  
pharmacy

# Scholarship and tuition fees

- Tuition fees will be charged from citizens of a country outside the European Union (EU) and the European Economic Area (EEA) or Switzerland
- UTU offers a scholarship programme for students who are subject to the tuition fees
- Scholarship will be granted to up to 30 % of the admitted students who are subject to tuition fees and have applied for a scholarship
- Number of scholarships changes annually
- You can apply for a scholarship at the same time as applying for admission to one of our Master's degree programmes

> <https://www.utu.fi/en/study-at-utu/scholarships-and-tuition-fees>



**I appreciate having multi-functional facilities and being considered as part of the academic community without barriers between students and faculty members.”**

- Alaa Benkherouf, MDP in Biomedical Science:  
Biomedical Imaging

**#utuambassador**



> [studyinturku.fi](http://studyinturku.fi)  
> [visitturku.fi/en](http://visitturku.fi/en)

Turku, located in the Southwest Finland and founded in 1229, is the oldest city in Finland.

# Welcome to the Student City of Turku

# 40,000

STUDENTS IN  
HIGHER  
EDUCATION





**UNIVERSITY  
OF TURKU**