

Get inspired by science.

MDP in Biosciences

Webinar 19 November 2024

Jon Brommer
Professor in
Evolutionary Biology

Mirka Salonen
Education Coordinator
Faculty of Science



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Topics of today

- Introduction of key people and places
- Structure of the MDP in Biosciences
- Academic culture and studies at UTU
- Themes and courses in each track
- Questions?



Who are we?



Prof. Jon Brommer
Evolutionary Biology
jon.brommer@utu.fi



Prof. Paula Mulo
Molecular Systems Biology
pmulo@utu.fi



Mirka Salonen
Programme Coordinator
infoscitech@utu.fi

Where are we?

Turku, 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.





City centre

(one of the) areas with student housing

Evolutionary Biology/
Coordinator/ Study
secretariate:
University hill
Natura building

Molecular Systems
Biology:
Biocity/Pharmacy
buildings

See also <https://helpopas.fi/map/kaikki-kohteet> for campus map


The Turku campus is located near the city centre and Aura River. It is close to other higher education institutions, businesses at Science Park, and the University Hospital. **Services are near and you can easily get from one place to another by foot or by bike.**




**Compact
campus in the
city centre**

Why choose UTU?

 One of the most **international** universities in Finland.


 Programmes based on our strengths in **top level research**.

 **Excellent facilities** and learning environments, e.g. libraries and IT facilities.

 **Versatile teaching methods** that challenge students to learn.

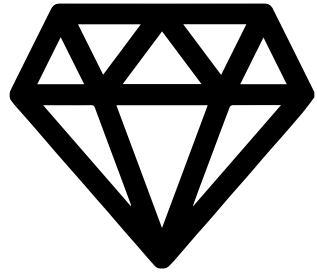
 Freedom to choose **elective courses** from other faculties and also other Finnish universities.

 **Small groups** and close professor-student relations.

 **Personal support** and student services throughout your studies.

> [10 best reasons to choose UTU](#)





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

QS World University Rankings 2022,
<https://www.utu.fi/en/university/international-university-rankings>



➤ Several Finnish presidents are UTU alumnis, including president Sauli Niinistö.

We are a vibrant international academic community of 25,000 students and employees from over 100 different countries.

Teaching schedules and semesters



An academic year spans from 1 August to 31 July, with two semesters divided by winter and summer breaks:

- **Autumn semester** courses run from **September to December**, with course schedules published in June;
- **Spring semester** courses run from **January to May**, and these schedules are published in the previous November.

Credits and Grading at UTU



We use the European Credit Transfer System (ECTS)

- 1 ECTS equals 27 hours of work
 - ✓ includes contact hours and independent studying
- 60 ECTS represent the workload of one year of full-time studies
 - ✓ the two-year MSc Degree requires 120 ECTS

Grading scale is usually 0—5, OR in some cases PASS/FAIL

- ✓ 0 = Fail and 5 = Excellent

Planning your Master's studies



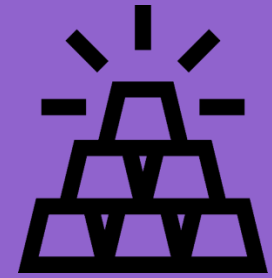
The curriculum holds **compulsory** and **optional** courses

- Clear structure with personal guidance for optional segments
 - Course collaboration with other faculties and universities
 - Planning ahead easy as the curriculum is set for 2024-2027:
- Evolutionary Biology track, led and tutored by Jon Brommer;
 - Molecular Systems Biology track by Paula Mulo



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Structure of the Master's degree



Molecular Systems Biology 120 ECTS in modules

Essential Data and
Career Skills 20 ECTS

Molecular Systems
Biology 30 ECTS

Master's Thesis in Molecular Systems Biology 50 ECTS

Other Studies 20 ECTS



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Structure of the Master's degree



Evolutionary Biology 120 ECTS in modules

Career Skills 20 ECTS

Evolutionary Biology 20 ECTS

Data Science and
Bioinformatics 20 ECTS

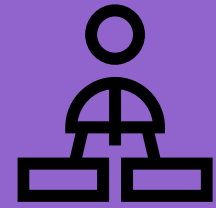
Master of Science thesis
40 ECTS

Other Studies 20 ECTS



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Evolutionary Biology track



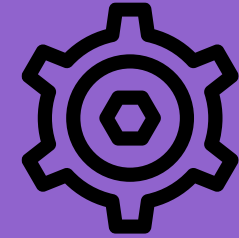
- See course catalogue in UTU **Study Guide 2024-2027**

Through this track in Evolutionary Biology students will acquire an explicit evolutionary biological perspective in the study of nature, thereby increasing capacity for understanding patterns and processes. The emphasis is on bioinformatics with applications in evolutionary biology (e.g. population genetics, molecular ecology, bacterial evolution, macroevolution, ...)



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Modules in Evolutionary Biology track



Career Skills 20 ECTS

- Let's Start! Introduction to Finnish Studies
- Finnish 1
- Professional Development
- English Seminar Skills: Natural Sciences
- Research Seminar in Biology
- Basics of Statistics
- Job seeking in Finland



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Evolutionary Biology 20 ECTS

- Advanced Evolutionary Biology
- Experimental Evolution
- Population Genetics
- Reconstructing Evolutionary Histories from Molecular Data OR
- Human Evolution



Data Science and Bioinformatics 20 ECTS

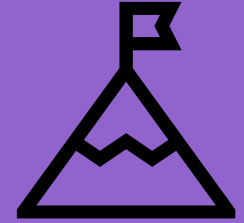
- Getting to work in R
- Applied Bioinformatics
- Next Generation Sequencing (NGS) and its Applications
- ArcGIS e-Learning Course



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MSc Thesis 40 ECTS

- Essential Skills for MSc Thesis in Evolutionary Biology
- Introduction to MSc Thesis in Evolutionary Biology
- Presentation of MSc Thesis in Evolutionary Biology
- MSc Thesis in Evolutionary Biology



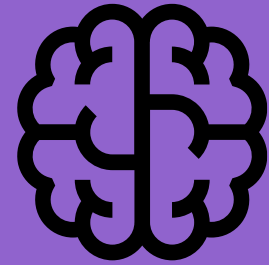
+ Other Studies 20 ECTS

Optional courses allowing you to specialize, for example:
Cell signalling, Machine learning, ArcGIS, Ecology, Research project, Training at the natural history museum etc.



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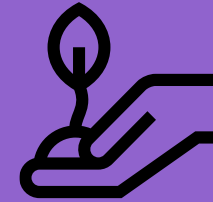
Examples of fields for MSc thesis topics in Evolutionary Biology



- Evolution of resistance to glyphosate
- Do old Asian elephants lack a menstrual cycle?
- Phylogeny of Amazonian ferns
- Plant-herbivore interactions: resistance of Arctic plant
- Genetic insertions in phages for biomedical applications
- Metal pollution effects on the avian microbiome



Molecular Systems Biology



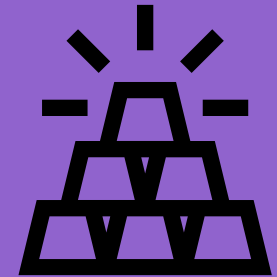
See course catalogue in UTU ***Study Guide 2024-2027***

Molecular Systems Biology track offers extensive training in modern molecular biology and education focused on systems biology (genomics, transcriptomics, proteomics, gene/protein structure-function relationships) with a special focus on practical laboratory skills and molecular interaction networks.



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Modules in Molecular Systems Biology

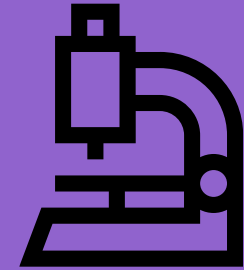


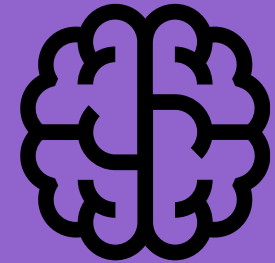
Essential Data and Career Skills 20 ECTS

- Literature in Biosciences
- Scientific Presentation Skills, Molecular Plant Biology
- Basics of Statistics
- Introduction to Programming
- Let's Start! Introduction to Finnish Studies
- Finnish 1

Molecular Systems Biology 30 ECTS

- Applied Bioinformatics
- Molecular Biology, Part 1
- Molecular Biology, Part 2
- Molecular Biology, Part 3
- Transcriptomics - Practice
- Proteomics - Practice
- Systems Biology
- Microbial Metabolic Engineering I
- Microbial Metabolic Engineering II





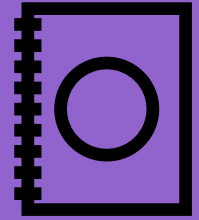
Master's Thesis Module 50 ECTS

- Introduction to Master's Thesis
- Laboratory Project for Master's Thesis in MSB
- Master's Thesis in Molecular Systems Biology (30 ECTS)
- Master's Thesis Seminar, Molecular Systems Biology

Other Studies 20 ECTS

- Optional courses from any field

Examples of recent MSc thesis topics in MSB



- Microbial production of synthetic spider silk proteins
- MARCO expressing macrophages as a target of cancer immunotherapy
- Formation of high-light tolerant populations of *Chlamydomonas reinhardtii*
- Production and characterization of secondary metabolites in *Streptomyces* sp.
- Regulation of endoreduplication by protein phosphatase 2A in *Arabidopsis thaliana*
- Screening of novel membrane markers for adult hippocampal neurogenesis
- Vimetin modulates focal adhesion dynamics in directionally migrating cells
- Proteomics analysis of root plastids in *Arabidopsis thaliana*: effects of salt stress
- Potential of microalgae for sustainable biodiesel



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Contact information and important links

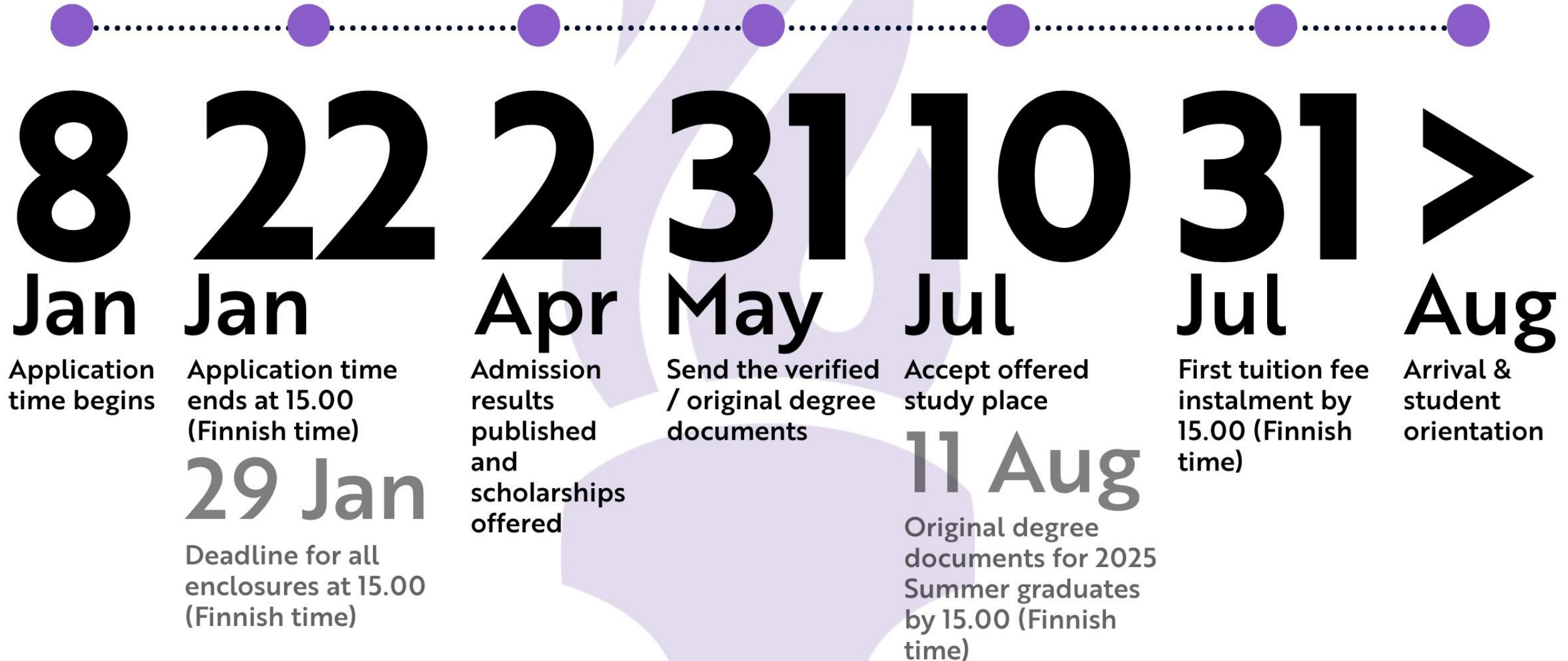


- Study at UTU: <https://www.utu.fi/en/study-at-utu>
- Get ready to apply in January at [Studyinfo.fi](https://www.studyinfo.fi)
- Information about [Scholarships and tuition fees](#) at UTU.fi
- University of Turku Admissions Office: admissions@utu.fi
- Faculty Office, e.g. Education Coordinator: infoscitech@utu.fi



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ADMISSIONS TIMELINE 2025



**Time for
questions!**



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Kiitos! Thank you!

www.utu.fi/degrees

www.utu.fi/apply

www.utu.fi/en/study-at-utu/meet-us

admissions@utu.fi

+358 29 450 5300