TISSUE ANALYSIS COURSE, HBS-DP, 2026

https://www.oulu.fi/en/education-search/tissue-analysis-course-0

Time: 13.3. – 20.3.2026

Organizers: Health and Biosciences Doctoral Programme, Biocenter Oulu, Biobank Borealis of Northern Finland, Faculty of Medicine Laboratory Unit together with Research Units of Translational Medicine and Clinical Medicine

Target group: Doctoral students in the fields of Health and Biosciences, **lectures open for all**

Credits: 3 ECTS (participation in all lectures, demonstrations and exercises, providing feedback)/1 ECTS (participation in all lectures*, providing feedback)

Course enrolment: Registration via Peppi 1.12.2025-20.2.2026, course code: *DP00AL85-3005*

Evaluation criteria: Passed/failed according to participation in lectures and demonstrations, carrying out practical work and exercises, providing feedback (3ECTS)

Passed/failed according to participation in lectures and providing feedback (1 ECTS)

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PROGRAMME

Friday 13th March, 2026, Theme – Mouse sample collection

Computer class 286A/286B, lecture*

9:00-9:15	**Introduction to the course** Anne Heikkinen, BCO TTP Core
9:15-10:00	**Mouse as a model for human diseases** Anniina Hiltunen, BCO TTP Core
10:00-10:15	*Coffee break*
10:15-11:15	**From tissue to biomedical sample** Emmi Kapiainen, BCO TTP Core
11:15-11:45	**Introduction to mouse necropsy** Miia Salo, BCO TTP Core

Histology Lab 479B, practical work

11:45-12:00	**Printing of tissue cassettes** BCO TTP Core personnel
12:00-13:00	*Lunch break, after which gathering in the Kieppi lobby*

Oulu Laboratory Animal Centre, demonstration and practical work

13:00-16:00	**Mouse necropsy** Miia Salo, Anniina Hiltunen and Anne Heikkinen, BCO TTP Core

Monday 16th March, 2026, Theme – Microscopic anatomy

Histology Lab 479B, practical work

9:00-9:45 **Paraffin embedding**
Objective slide printing
TTP Core personnel

9:45-10:00 *Coffee break*

Computer class 286A/286B, lecture*

10:00-11:00 **Basic histological structures**
Sanna Palosaari, RU of Translational Medicine

11:00-12:00 **Primary pathological processes**
Sanna Palosaari, RU of Translational Medicine

12:00-13:00 *Lunch break*

13:00-14:30 **Ultrastructural phenotyping by electron microscopy**
Ilkka Miinalainen, BCO EM Core

Tuesday 17th March, 2026, Theme – Biological sample preparation

Histology Lab 479B, practical work

9:00-16:00 **Paraffin block sectioning**
Cryo sectioning
Manual HE staining of cryo sections
Whole mount sample preparation
BCO TTP Core personnel

Wednesday 18th March, 2026, Theme – Sample Visualization

Histology Lab 479B, demonstration

9:00-9:15 **Automated HE staining**
BCO TTP Core personnel

Lecture hall F202, lecture*

9:15-10:15 **Common histological staining methods and artefacts**
Markus Mäkinen, RU of Translational Medicine

10:15-10:30 *Coffee break*

10:30-11:30 **Introduction to the collection of digital images on human pathologies**
Markus Mäkinen, RU of Translational Medicine

Histology Lab 479B, demonstration

11:30-11:45 **Automated slide cover slipping**
TTP Core personnel

11:45-12:45 *Lunch break*

Computer class 286A/286B, lecture*

12:45-13:45 **Principles of IHC and *In situ* hybridization methods**
Katja Porvari, Faculty of Medicine Laboratory Unit

13:45-14:15 **Possibilities in utilizing Biobank samples in research**
Raisa Serpi, Biobank Borealis of Northern Finland

14:15-14:30 *Coffee break, after which gathering in the Kieppi lobby*

Pathology Laboratory of the RU of Translational Medicine and OYS, demonstration

14:30-15:30 **Tour through Pathology Laboratories**
Demonstration on automated IHC and *In situ* hybridization
Markus Mäkinen, RU of Translational Medicine and Katja Porvari, Faculty of Medicine Laboratory Unit

Thursday 19th March, 2026, Theme – Preparing for image analysis

Computer class 286A/286B, independent work

9:00-10:15 **Viewing of HE-stained slides**
TTP Core personnel

10:15-10:30 *Coffee break*

Histology Lab 479B, demonstration

10:30-11:30 **Microscopy and imaging of histological slides**
Veli-Pekka Ronkainen, BCO LM Core
Automated slide scanning and introduction to the NDP.view2 software
TTP Core personnel

11:30-12:30 *Lunch break*

Computer class 286A/286B, lecture*

12:30-13:30 **Basics in image analysis**
Veli-Pekka Ronkainen, BCO LM Core

13:30-14:30 **Prospects of the open-access QuPath image analysis tool**
Juha Väyrynen, RU of Translational Medicine

14:30-14:45 *Coffee break*

Computer class 286A/286B, Instructions for full course participants

14:45-15:15 **Introduction to QuPath image analysis exercises**
Juha Väyrynen and Sanna Palosaari, RU of Translational Medicine

Computer class 286A/286B, Independent work

15:15-16:00 Independent preparing for QuPath image analysis exercises

Friday 20th March, 2026, Theme – Image analysis

Computer class 286A/286B, independent work

9:00-12:00 Independent preparing for QuPath image analysis exercises

Computer class 286A/286B, lecture*

12:00-13:00 **The Visiopharm image analysis software features**
Anne Heikkinen, BCO TTP Core

Computer class 286A/286B and Histology Lab 479B, Exercises/demonstrations (including a coffee break)

13:00-16:00 **Review of QuPath image analysis exercises**
Juha Väyrynen and Sanna Palosaari, RU of Translational Medicine

Demonstration on the Visiopharm software working principles
Anne Heikkinen and Miia Salo, BCO TTP Core