TISSUE ANALYSIS COURSE, HBS-DP, 2025

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

Time: 14.3. – 20.3.2025

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 to all lectures, demonstrations and exercises, providing feedback)/1 ECTS (participation to all lectures*, providing feedback)

Course enrolment: Registration via Peppi 28.1.-21.2. 2025, course code: *DP00AL85-3004*

Acceptance: 12 participants selected on account of a motivation letter

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

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PROGRAMME

Friday 14th March, 2025, Theme - Mouse sample collection

Computer class 286A/286B, lecture*

8:30-9:00	**Introduction to the course** Anne Heikkinen, BCO TTP Core
9:00-10:00	**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** Anne Heikkinen, BCO TTP Core
11:15-11:45	**Introduction to mouse necropsy** Miia Salo, BCO TTP Core

Histology Lab 479B, practical work

11:45-12:15	**Printing of tissue cassettes** TTP Core personnel
12:15-13:00	*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 17th March, 2025, Theme - Biological sample preparation

Histology Lab 479B, practical work

8:30-9:45 **Paraffin embedding**
Objective slide printing
TTP Core personnel

9:45-10:00 *Coffee break*

Computer class 286A/286B, lecture*

10:00-11:30 **Ultrastructural phenotyping by electron microscopy**
Ilkka Miinalainen, BCO EM Core

11:30-12:15 *Lunch break*

Histology Lab 479B, practical work

12:15-16:15 **Paraffin block sectioning**
Cryo sectioning
Manual HE staining of cryo sections
Whole mount sample preparation
BCO TTP Core personnel

Tuesday 18th March, 2025, Theme - Sample Visualization

Histology Lab 479B, demonstration

8:30-9:00 **Automated HE staining**
BCO TTP Core personnel

Computer class 286A/286B, 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 **Histological structures and pathological findings**
Markus Mäkinen, RU of Translational Medicine

Histology Lab 479B, demonstration

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

11:45-12:30 *Lunch break*

Computer class 286A/286B, lecture*

12:30-13:30 **Principles of IHC and *In situ* hybridization methods**
Katja Porvari, Faculty of Medicine Laboratory Unit

13:30-14:00 **Possibilities in utilizing Biobank samples in research**
Raisa Serpi, Biobank Borealis of Northern Finland

14:00-14:15 *Coffee break, after which gathering in the Kieppi lobby*

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

14:15-15:30 **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

Wednesday 19th March, 2025, Theme - Preparing for image analysis

Computer class 286A/286B, independent work

9:00-10:00 **Viewing of HE-stained slides**
Miia Salo, Anniina Hiltunen and Anne Heikkinen, BCO TTP Core

10:00-10:15 *Coffee break*

Histology Lab 479B, demonstration

10:15-11:30 **Microscopy and imaging of histological slides**
Veli-Pekka Ronkainen, BCO LM Core
Automated slide scanning and introduction to the NDPview software
TTP Core personnel

11:30-12:15 *Lunch break*

Computer class 286A/286B, lecture*

12:15-13:15 **Basics in image analysis**
Veli-Pekka Ronkainen, BCO LM Core

13:15-14:15 **Prospects of the open-access QuPath image analysis tool**
Juha Väyrynen, RU of Translational Medicine

14:15-14:30 *Coffee break*

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

14:30-15:00 **Introduction to QuPath image analysis exercises**
Juha Väyrynen and Sanna Palosaari, RU of Translational Medicine

Computer class 286A/286B, Independent work

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

Thursday 20th March, 2025, 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