

TISSUE ANALYSIS COURSE, HBS-DP, 2024

<https://www.oulu.fi/en/tissue-analysis-course>

Time: 15.3. – 21.3.2024

Organizers: Health and Bioscience Doctoral Programme, Biocenter Oulu, Biobank Borealis of Northern Finland, Faculty of Medicine Laboratory Unit and 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 24.1.-23.2. 2024, course code: DP00AL85-3003

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 15th March, 2024, Theme - Mouse sample collection

Computer class 286A/B, lecture*

8:30-9:00	Introduction to the course
9:00-10:00	Mouse as a model for human diseases Anniina Hiltunen, BCO TTP Core and RU of Clinical Medicine
10:00-10:15	<i>Coffee break</i>
10:15-11:15	From tissue to biomedical sample Anne Heikkinen, BCO TTP Core
11:15-11:45	Introduction to mouse necropsy Mia Salo, BCO TTP Core

Histology Lab 479B, practical work

11:45-12:15	Printing of tissue cassettes TTP Core personnel
12:15-13:00	<i>Lunch break, after which gathering in the Kieppi lobby</i>

Oulu Laboratory Animal Centre, demonstration and practical work

13:00-16:00	Mouse necropsy Mia Salo and Anne Heikkinen, BCO TTP Core
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Monday 18th March, 2024, 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/B, lecture*

10:00-11:30 **Sample preparation for electron microscopy**
Introduction to the Electron Microscopy Image Library
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 19th March, 2024, Theme - Sample Visualization

Histology Lab 479B, demonstration

8:30-9:00 **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 **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/B, 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, demonstration

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

Wednesday 20th March, 2024, Theme - Preparing for image analysis

Histology Lab 479B, demonstration

9:00-10:00 **Microscopy of histological slides**
Veli-Pekka Ronkainen, BCO LM Core
Automated slide scanning and introduction to the NDPview software
TTP Core personnel

10:00-10:15 *Coffee break*

Computer class 286A/B, lecture*

10:15-11:15 **Basics in image analysis**
Veli-Pekka Ronkainen, BCO LM Core
11:15-12:15 **Prospects of the open-access QuPath image analysis tool**
Juha Väyrynen, RU of Translational Medicine

12:15-13:00 *Lunch break*

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

13:00-13:30 **Introduction to QuPath image analysis exercises**
Juha Väyrynen and Sanna Palosaari, RU of Translational Medicine

Computer class 286B, Independent work

13:30-16:00 Independent preparing for QuPath image analysis exercises

Thursday 21st March, 2024, Theme - Image analysis

Computer class 286B, independent work

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

Computer class 286A/B, lecture*

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

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

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