

### **Comparative Reproductive Endocrinology 1.5 ECTS**

**Time:** June 10-14, 2019

**Venue:** Waldenströmsalen, Rudbeck Laboratory, Uppsala University. Dag Hammarskjölds väg 20.

Organized by CRU together with the PhD-administration at the Department of Women's and Children's Health, at the Disciplinary Domain of Medicine and Pharmacy, Uppsala University.

Course leader: Theodora Kunovac Kallak

Course organizers: Anneli Stavreus Evers, Elisabeth Persson, Cecilia Berg, Ylva Sjunnesson, Malin Hagberg Gustavsson.

Participant: 13 students and 21 lecturers.



The course covered reproductive endocrinology in various species, both sexes, different developmental stages, and gestation. The also included hormones and hormone receptors, endocrine disruptors, and methodologies (including mass spectrometry and immunological assays). Comparative aspects of reproductive endocrinology in humans and animals were an important part of the course. The course included two student activating workshops, one about hormone analysis and one about comparative aspects on female reproductive cyclicity. The participants used one day to construct a fictive research project in groups within the topic of Comparative Reproductive Endocrinology.

The course received good evaluation by the students with a mean score of 4.6 (5 being the highest score) and 88% would recommend the course to other colleagues.

The course schedule and syllabus can be found further down in this document.

## Schedule

### Monday

- 09.00 – 09.25 **Registration.**
- 09.25 – 09.30 **Welcome and introduction of CRU.** Theodora Kunovac Kallak CRU and Uppsala University.
- 09.30 – 10.20 **Basic female comparative reproduction.** Renée Båge, Swedish University of Agricultural Sciences.
- 10.20 – 10.35 **Coffee break**
- 10.35 – 11.25 **The menstrual cycle.** Inger Sundström Poromaa, Uppsala University
- 11.30 – 12.00 **Workshop: Comparative aspects on the female reproductive cyclicity.**  
Theodora Kunovac Kallak, Uppsala University
- 12.00 – 13.00 **Lunch**
- 13.00 – 13.50 **Male reproduction and spermatogenesis in domestic mammals.** Jane Morrell, Swedish University of Agricultural Sciences.
- 13.55 – 14.45 **Male reproduction and spermatogenesis in humans.** Stefan Arver, Karolinska Institutet.
- 14.45 – 15.00 **Coffee break**
- 15.00 – 15.45 **Pregnancy, implantation, and maternal recognition of pregnancy in domestic animals.** Anne-Marie Dalin, Swedish University of Agricultural Sciences.

### Tuesday

- 09.00 – 09.45 **Pregnancy, implantation, and maternal recognition of pregnancy in humans and rodents.** Anneli Stavreus Evers, Uppsala University.
- 09.45 – 10.00 **Coffee break**
- 10.00 – 10.45 **Sex steroid hormones and their receptors.** Maria Norlin, Uppsala University.
- 10.45 – 12.00 **Non-invasive measures of reproduction in mammals.** Katarina Jewgenow, Leibniz-Institute for Zoo- and Wildlife Research.
- 12.00 – 13.00 **Lunch**
- 13.00 – 13.45 **Immunological methods in reproductive endocrinology.** Anders Larsson, Uppsala University.

- 13.50 – 14.30 **Mass spectrometry in reproductive endocrinology.** Jonas Bergquist, Uppsala University.
- 14.30 – 14.45 **Coffee break**
- 14.45 – 15.30 **Morphologic in situ hybridization, immunohistochemical technique.** Anneli Stavreus Evers, Uppsala University.
- 15.30 – 16.15 **Workshop: Hormone analysis, benefits and pitfalls with different methods.** Theodora Kunovac Kallak, Uppsala University

## **Tuesday evening**

- 17.30 – 18.30 **Social event: tour of the Upplandsmuseet, the county museum for Uppsala county.** S:t Eriks torg 10.
- 19.00 **Course dinner** Kitchen & Table Uppsala by Marcus Samuelsson  
Dragarbrunnsgatan 23 SE-753 20 Uppsala

## **Wednesday**

- 09.00 – 09.45 **Reproductive endocrinology in fish.** Monika Schmitz, Uppsala University
- 09.45 – 10.00 **Coffee break**
- 10.15 – 11.00 **Reproductive endocrinology in birds.** Lena Holm, Swedish University of Agricultural Sciences.
- 11.05 – 12.00 **Reproductive endocrinology in amphibians.** Werner Kloas, Leibniz-Institute of Freshwater Ecology and Inland Fisheries.
- 12.00 – 13.00 **Lunch**
- 13.00 – 13.30 **Introduction to endocrine disruption.** Cecilia Berg, Uppsala University.
- 13.30 – 14.15 **Effects of endocrine disrupters on reproductive system development in male and female mammals.** Julie Boberg, National Food Institute.
- 14.15 – 14.30 **Coffee break**
- 14.30 – 15.20 **Endocrine disruption in amphibians.** Werner Kloas, Leibniz-Institute of Freshwater Ecology and Inland Fisheries
- 15.25 – 16.20

**Thursday                      New aspects**

09.00 – 09.45    **Anti-Mullerian hormone.** Bodil Ström-Holst, Swedish University of Agricultural Sciences.

09.45 –10.00    **Coffee break**

10.00 – 10.45    **Polycystic ovary syndrome and endocrinology.** Inger Sundström Poromaa, Uppsala University

10.50 – 11.30    **Early embryo development, insulin, and obesity.** Denise Laskowski, Swedish University of Agricultural Sciences.

11.30 – 12.30    **Lunch**

12.30 – 13.15    **Neuroactive steroids and perinatal depression.** Lauren Osborne, Johns Hopkins University School of Medicine.

13.15 – 16.00    **Group work.** Elisabeth Persson Swedish University of Agricultural Sciences, and Theodora Kunovac Kallak, Uppsala University.

**Friday**

09.00 – 12.00    **Group work.** Elisabeth Persson Swedish University of Agricultural Sciences, and Theodora Kunovac Kallak, Uppsala University.

12.00 – 13.00    **LUNCH**

13.00 – 16.00    **Group presentations.** Bodil Ström-Holst, Swedish University of Agricultural Sciences and Theodora Kunovac Kallak, Uppsala University.

16.00 – 16.15    **Course summary, evaluation and diploma**

## Course Syllabus

The Centre for Reproductive Biology in Uppsala (CRU), together with the department of Women's and Children's Health, Uppsala University, arranges a postgraduate course in

### Comparative Reproductive Endocrinology

**Target audience:** PhD students, others that are interested.

**Time:** June 10-14, 2019.

**Place:** Rudbeck laboratory, Uppsala University.

**Number of credits:** 1.5

**Prerequisites:**

Students admitted to a post graduate program in biology, medicine, veterinary medicine, food science, nutrition, nursing, or related subjects, or to a specialist training program (e.g. resident) or equivalent within the same subjects.

**Objective:**

The aim of the course is to enhance the knowledge and understanding of reproductive endocrinology in vertebrate animals and humans

After completion of the course, the PhD-student should be able to:

*Knowledge and understanding*

Explain basic control of reproductive endocrinology

Describe basic endocrinology in female and male reproduction

Describe different types of methods for hormone analyses including advantages and disadvantages

*Skills and capacities*

Apply comparative aspects of reproductive endocrinology when planning and analyzing projects

Plan a project within reproductive endocrinology

*Evaluative capacity and approach*

Choose appropriate research methodologies and species for research projects within reproductive endocrinology.

Critically evaluate and analyze other PhD-students research project presentations.

**Examination:**

Participants will work in groups to construct and present a fictive research project related to reproductive endocrinology for evaluation by senior researchers and other course participants. The research project must combine different research methodologies, comparative aspects and consider possible confounders and pitfalls. Successful completion of the course also requires active participation and 80 % attendance.

**Content:**

The course will include lectures, workshops, and group discussions. The subjects covered will be reproductive endocrinology in various species, both sexes, different developmental stages, and gestation. The course will also include hormones and hormone receptors, endocrine disruptors, and methodologies (including mass spectrometry and immunological assays). Comparative aspects of reproductive endocrinology in humans and animals are an important part of the course.

The course gives 1.5 ECTS and corresponds to 5 working days. In addition to the 4 days of lectures, workshops, group discussions, and group presentation of fictive projects, the participants shall use 1 day to construct a fictive research project in groups.

**Workshops:**

Hormone analysis, benefits and pitfalls with different methods.

Comparative aspects of the female reproductive cyclicity, what similarities and difference are there?

**Location**

Department of Women's and Children's Health, Uppsala University (detailed schedule will be announced).

**Course leader**

Theodora Kunovac Kallak, [theodora.kunovac\\_kallak@kbh.uu.se](mailto:theodora.kunovac_kallak@kbh.uu.se)

**Course administration**

Agata Kostrzewa, [agata.kostrzewa@kbh.uu.se](mailto:agata.kostrzewa@kbh.uu.se)

**Location:**

Uppsala

**Costs:**

There is no course fee. The participants will cover their own travel and living costs.