Advanced Omics for Life Sciences

Cancer, Stem cells & Developmental biology
The Master's & The PhD Programme

May 1-5, 2017

Organizers: Edwin Cuppen, Berend Snel, Jeroen de Ridder, Joep de Ligt
Venue: Stratenum
Level: Master/PhD

Prerequisite courses:
The course builds on programming skills acquired in the introduction courses (R, Python or Perl). Completion of one of these, or an equivalent course, is a prerequisite for attending this course. It is strongly recommended to follow the "Introduction to Bioinformatics for Molecular Biologists" prior to this course.

Course content:
Many researchers use omics data, in this course we will teach and discuss advanced data analysis and integration methods used in four different fields of omics research; Genomics, Transcriptomics, Proteomics and Metabolomics.

During this course the morning is started with a lecture by a researcher active in the respective field. The presenter will introduce a biological question and illustrate the techniques used in their research. They will focus on their data mining strategies and the data integration issues they face. Lectures are followed by an in-depth overview of the tools and databases used in the analysis of the data and a description of an experimental set-up the student will work with later that day.

The afternoon is spent on the analysis of a dataset introduced by the researcher in the morning session. Students will work in pairs and work towards answering a research question using the provided tools and resources.

Participants will:
- Gain a detailed overview of the tools involved in the different Omics fields
- Gain a overview of available on-line resources
- Gain insights into the challenges of data integration
- Perform advanced omics analysis
- Work out biologically relevant questions

Examination:
Daily course work and attendance are mandatory and constitutes 40% of the grade. On the last course day the afternoon is reserved for an exam that consists of a theoretical (30%) and a practical part (30%).