Norsk Regnesentral
NORWEGIAN COMPUTING CENTER

Norwegian Computing Center offers a course in

Statistics and Bioinformatics

Wednesday March 9 and Thursday March 10, 2005,
9.00-16.00
Norwegian Computing Center, Gaustadalléen 23, Blindern, Oslo

The course is designed/intended for researchers in **biology**, **biochemistry** and/or **medicine**, within the area of **genetics/bioinformatics**. Others who find the course useful are of course also welcome.

The course will give an introduction to **statistics**, the statistical program **R**, the package **SAM** (used from Excel) and the BioConductor package **Limma** (used from R). BioConductor contains a collection of many useful bioinformatics packages implemented in and run from R. The packages SAM and Limma are used for finding differentially expressed genes from microarray experiments.

The course will consist of lectures with some theory, explanation of concepts and many examples. Several examples will also be demonstrated interactively. Code will be distributed to the participants such that they may try it out themselves after the course. We will give the participants the opportunity to ask us questions about R, SAM or Limma when they start to use these packages in practice on their own data sets after the course.

Prerequisites: None, but some experience with microarray data will be an advantage.

Registration: Before **February 16**, 2005.
For registration or more information about the content of the course, contact Marit Holden (email: Marit.Holden@nr.no, tel: 22852677) or Anders Løland (email: Anders.Loland@nr.no). The course material, including the PowerPoint presentations will be in English. Please inform us if you prefer also the lectures to be given in English.

Course fee: kr 2000,- (students: kr 1000,-). Lunches, coffee breaks and course material are included in the course fee. The course material consists of the note "A short course in statistics and R", handouts of the PowerPoint presentations used during the course, and a Web page with example code in R.

Payment: To account 8200.01.48888 before **February 16**, 2005.

Norsk Regnesentral (Norwegian Computing Center, NR) is a private, independent, non-profit research foundation. NR carries out applied research within statistics and information and communication technology. Within the fields of Statistical-Mathematical Analysis, Modeling and Image Analysis, NR has nearly 40 researchers with a broad foundation of methods. This makes NR one of Europe's strongest institutes within applied statistics, covering a variety of interesting, modern methods and applications. Statistical Methods in Bioinformatics is one of our areas of applied research.

Course agenda

Day 1

Introduction: Overview of the course	09.00 - 09.15
Introduction to statistics • What is statistics? • Descriptive measures of data • What is probability? • The normal distribution	09.15 - 10.30
Coffee break	10.30 - 10.45
Introduction to R	10.45 - 12.00
Lunch	12.00 - 13.00
Probability distributions, estimation and uncertainty • Other distributions than the normal • Multivariate distributions • How to choose the right distribution? • Confidence intervals • Maximum likelihood estimation	13.00 - 14.00
Coffee break	14.00 - 14.15
Introduction to R continued	14.15 - 15.30
Why is statistics fundamental for genomic data analysis?	15.30 - 16.00

Day 2

Hypothesis testing	09.00 - 10.00
Coffee break	10.00 - 10.15
SAM	10.15 - 12.00
Lunch	12.00 - 13.00
Regression. Bayesian statistics	13.00 - 14.00
Coffee break	14.00 - 14.15
Limma	14.15 - 16.00

Sponsors:
EMBIO Styringsgruppen for forskning innen molekylærbiologi, bioteknologi og bioinformatikk ved UiO
Norges forskningsråd
FUGE Funksjonell genomforskning