

Workshop Time Table and Program:

Monday 16.2.2004: Benno Pütz (MPI), Markus Panhuysen (MPI)

A: Overview:

- microarray technology
- problems in gene expression analysis

B: Preprocessing, Calibration, Normalization:

- loess normalization (Dudoit et al.)
- variance stabilisation (Huber et al.)
- SMA and quantile normalization (Speed et al.)

Tutorial: Introduction to R, exercises for normalization (K. Strimmer, K. Schliep).

Tuesday 17.2.2004: Bertram Müller-Myhsok (MPI), Benno Pütz (MPI)

C: Differential Expression:

- t-test and other related tests
- volcano plots
- multiple testing (FDR)

Tutorial: Identification of differentially expressed genes, impact of normalization (B. Pütz, S. Seaman).

Wednesday 18.2.2004: Alexander Yassouridis (MPI), Klaus Hechenbichler (MPI/LMU)

D: Multivariate Techniques

- experimental design (MANOVA)
- non-hierarchical clustering (K-Means, SOMs, model-based clustering)
- hierarchical clustering (distance-based methods)
- classification methods (nearest-neighbor, CART)

Tutorial: Clustering of genes and conditions, identification of coregulated genes, impact of distance measures, classification of tumor samples (K. Schliep, K. Hechenbichler).

Thursday 19.2.2004: Korbinian Strimmer (LMU), Juliane Schäfer (LMU)

E: Special Topics:

- analysis of gene expression cell cycle data
- estimation of interaction structures
- graphical models for inferring genetic networks

Tutorial: Identification of periodically expressed genes, inference of a genetic network (J. Schäfer, A.-L. Boulesteix).