

# Workshop Time Table and Program

## Tuesday 23.11.2004

### Morning session (11:00-13:00)

*A: Overview (K. Strimmer)*

- cDNA and affymetrix technology
- problems in gene expression analysis

*B: Preprocessing, calibration, normalization (B. Pütz)*

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

### Afternoon session (15:00-18:00)

*Tutorial and practical exercises*

- introduction to R (*R. Opgen-Rhein*)
- excercises for normalization (*B.Pütz, K. Strimmer*)

## Wednesday 24.11.2004

### Morning session (11:00-13:00)

*A: Searching for biological markers (A. Yassouridis)*

- experimental designs
- multivariate and multifactorial association analyses

*B: Differential expression (B. Müller-Myhsok & D. Salyakina)*

- vulcano plots
- multiple testing (FDR)

*C: Further statistical techniques (S. Seaman)*

- t-test and other related tests

### Afternoon session (15:00-18:00)

*Tutorial and practical exercises*

- identification of differentially expressed genes (*B.Pütz, D. Salyakina, S. Seaman*)
- impact of normalization (*J. Schäfer*)

## **Thursday 25.11.2004**

### **Morning session (11:00-13:00)**

*A: Multivariate techniques (K. Hechenbichler)*

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

*B: Special topics (K. Strimmer)*

- time series and networks
- graphical models for inferring genetic networks
- analysis of gene expression cell cycle data

### **Afternoon session (15:00-18:00)**

*Tutorial and practical exercises*

- clustering of genes, identification of coregulated genes, impact of distance measures, classification of tumor samples (**K. Hechenbichler**)
- identification of periodically expressed genes, inference of a genetic network (**J. Schäfer, R. Opgen-Rhein**)