Topics and literature for the LMU seminar (summer term 2004):

Stochastic Models of Complex Biological Systems

Korbinian Strimmer and Leonhard Held

Date:	Topic and References:	Speaker:
22 April	Introduction and overview	**K. Strimmer/L. Held**
29 April	Structural equations models [M. Xiong, J. Li and X. Fang. 2004. Identification of genetic networks. Genetics 166:1037-1052]	**A.-L. Boulesteix**
6 May	Bayesian networks [N. Friedman. 2004. Inferring cellular networks using probabilistic graphical models. Science 303:799-805]	**J. Schäfer**
27 May	State space models [C. Rangel et al. 2004. Modelling T-cell activation using gene expression profiling and state space models. Bioinformatics *in press* (available as advance access preprint)]	**L. Fahrmeir**
3 June	Large-scale graphical models [A. Dobra et al., M. West. 2004. Sparse graphical models for exploring gene expression data. J. Multiv. Analysis. *in press* (preprint available from http://www.samsi.info/TR/tr2003-07.pdf)]	**C. Best**
17 June	Network statistics [A.-L. Barabasi. 2004. Network biology: understanding the cell's functional organization. Nature Reviews Genetics 5:101-113 R. Albert and A.L. Barabas. 2002. Statistical mechanics of complex networks. Rev. Mod. Phys. 74:47-97]	**R. Opgen-Rhein**
24 June	Evolutionary game theory in biochemical networks [T. Pfeiffer et al. 2001. Cooperation and competition in the evolution of ATP-producing pathways. Science 292:504-507 T. Frick and S. Schuster. 2003. An example of the prisoner's dilemma in biochemistry.Naturwissenschaften 90:327-331]	**B. Hellriegel**
1 July	Constraint-based modeling of bacterial networks [M.W. Covert et al. 2004. Integrating high-throughput and computational data elucidates bacterial networks. Nature 429:92-96 J. Reed and B. 0. Palsson. 2003. Thirteen yeers of building constraint-based in silico models of Escherichia coli. J. Bact. 185:2692-2699]	**E. Mendoza**
8 July	Biochemical systems theory [D.J. Wilkinson. 2004. Stochastic systems biology (lecture notes). http://www.staff.ncl.ac.uk/d.j.wilkinson/teaching/csc859/notes.pdf P.J.E. Goss and J. Peccoud. 2000. Quantitative modeling of stochastic system in molecular biology by using stochastic Petri nets. PNAS 95:6750-6755]	**M. Höhle**
15 July	Reaction network inference [X.-J. Feng and H. Rabitz. 2004. Optimal identification of reaction networks. Biophys. J. 86:1270-1281]	**K. Thierfelder**
22 July	Evolution of protein networks [G. D. Amoutzias et al. 2004. Convergent evolution of gene networks by single-gene duplications in higher eukaryotes. EMBO Reports 5:274-279 A. Wagner. 2003. How the global structure of protein interaction networks evolves. Proc. R. Soc. Lond B 270:457-466]	**G. Jobb**