Worksheet: INTRODUCTION (24. April 2012)
Lecture "Computational Systems Biology", Dr. Jürgen Pahle

1) Discuss the statement by G.E.P. Box

"All models are wrong but some are useful"

Box, G.E.P. (1979) "Robustness in the strategy of
scientific model building" in Robustness in Statistics
(R.L. Launer and G.N. Wilkinson, Eds.), Academic Press

What do you think of it? Does it give any helpful advice for modelling?

2) Get, read and work through the following overview article by one of the pioneers of systems biology:

H. Kitano (2002) Computational Systems Biology. *Nature* **420**:206-210

Note: the same issue also contains a series of other interesting systems biology articles

3) Compare computational modelling in systems biology with other types of models, such as crash test dummies, train models, weather forecasting models, mouse (animal) models.

What are the differences and similarities?

4) One can illustrate emergent phenomena by the traditional zen koan:

"Two hands clap and there is a sound. What is the sound of one hand?"

Try to find and think about emergent phenomena in biology. Why do they require a systemic approach for their study?