MODELING AND SIMULATION METHODS FOR SYSTEMS BIOLOGY AND SYSTEMS MEDICINE

Aim and scope

Systems Biology deals with the analysis of natural systems at different scales of complexity, by means of proper modeling frameworks and computational methods. Given that Systems Biology approaches are becoming well established, the challenge is now to apply the developed techniques towards the definition of personalized models in order to identify individually tailored drugs and treatments; i.e. to realize the Personalized Medicine paradigm. The scope of this special session is to bring together researchers involved in the development of methods applied to the fields of Systems Biology and Systems Medicine.

Topics of interest include, but are not limited to:

- analysis of robustness of cellular networks
- biomedical model parameterization
- cancer progression models
- clinical image analysis
- emergent properties in complex biological systems
- flux balance analysis
- metabolic engineering
- metabolic pathway analysis
- model verification and refinement methods
- models of neural activity
- multiscale modelling and simulation of biological systems
- parameter estimation methods
- personalized models
- reverse engineering of reaction networks
- software tools for systems biology
- spatiotemporal modelling and simulation of biological systems

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