Preface

The third international workshop on *Computational Models for Cell Processes* (CompMod 2011) took place on September 10, 2011 at the University of Aachen, Germany, in conjunction with *CONCUR 2011*. The first edition of the workshop (2008) took place in Turku, Finland, in conjunction with *Formal Methods 2008* and the second edition (2009) took place in Eindhoven, the Netherlands, as well in conjunction with *Formal Methods 2009*. This volume contains the final versions of all contributions accepted for presentation at the workshop.

The goal of the CompMod workshop series is to bring together researchers in Computer Science (especially in Formal Methods) and Mathematics (both discrete and continuous), interested in the opportunities and the challenges of Systems Biology. CompMod 2011 has received 8 submissions, authored by 28 different authors from 6 different countries. All papers were of high scientific level and the Program Committee selected 7 papers for presentation at the workshop. We thank the PC members for their excellent work in making this selection. The CompMod 2011 Program Committee consisted of:

- Ralph-Johan Back (Åbo Akademi University, Finland)
- Vincent Danos (University of Edinburgh, UK)
- François Fages (INRIA Paris-Rocquencourt, France)
- Russ Harmer (University of Paris 7, France)
- Monika Heiner (Brandenburg University of Technology Cottbus, Germany)
- Jane Hillston (University of Edinburgh, UK)
- Ina Koch (Goethe-University Frankfurt am Main, Germany)
- Giancarlo Mauri (Università degli Studi di Milano-Bicocca, Italy)
- Emanuela Merelli (University of Camerino, Italy)
- Ion Petre (Åbo Akademi University, Finland) Co-Chair
- Alberto Policriti (Università di Udine, Italy)
- Corrado Priami (Microsoft Research – University of Trento, Centre for Computational and Systems Biology, Italy)

- Angelo Troina (Università degli Studi di Torino, Italy)
- Adelinde Uhrmacher (University of Rostock, Germany)
- Erik de Vink (TU Eindhoven, the Netherlands) Co-Chair

The scientific program of the workshop spans an interesting mix of approaches to systems biology, ranging from quantitative to qualitative techniques, from continuous to discrete mathematics, and from deterministic to stochastic methods. We thank our invited speakers

- Verena Wolf (Saarland University Saarbrücken, Germany)
- Adelinde Uhrmacher (University of Rostock, Germany)

for accepting our invitation and for presenting some of their recent results at CompMod 2011 on inference algorithms for data extraction and subsequent model adaptation, and on modeling and simulation of inter-compartment and cross-membrane phenomena using rule-based languages. The technical contributions address process algebraic treatment of plant-fungus symbiosis using explicit spatial labeling in the Calculus of Wrapped Compartments, comparison of therapy strategies for prostate cancer growth using the stochastic modeling language sCCP augmented with events and random updates, a notion of semi-quantitative equivalence in the context of biological modeling with fast and slow reactions for the Bio-PEPA language, a core rewrite calculus bringing object-oriented concepts to biological ontologies, a probabilistic analysis of the PDGF signaling pathway using the PRISM model checker the interpretation of osteoporosis as a defective bone remodeling dynamics and related diagnostic estimators, and a resolution dependent approximation of continuous dynamical systems for reachability analysis in systems biology.

Similarly as for the past two editions of CompMod, a special issue of the *LNBI Transactions on Computational Systems Biology* (Springer) will be based on CompMod 2011. The forthcoming special issue will have a separate, open call for papers following the workshop in Aachen and all submissions will be subject to a separate review process.

We would also like to thank the editorial board of the *Electronic Proceedings in Theoretical Computer Science* (EPTCS) for accepting to publish these proceedings in their series.

Ion Petre, Erik de Vink
Turku, Finland and Eindhoven, the Netherlands, August 2011
Workshop organizers and PC co-chairs