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Biological Processes & Petri Nets

6th International Workshop BioPPN 2015
Brussels, 22 June 2015
Proceedings

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BibTeX entry:

```
@proceedings{bioppn2015,
  editor    = {Monika Heiner, Annegret K. Wagler},
  title     = {Proceedings of the 6th International Workshop on
               Biological Processes \& Petri Nets (BioPPN 2015),
               satellite event of Petri Nets 2015, Brussels, Belgium, June 22, 2015},
  booktitle = {Biological Processes \& Petri Nets},
  location  = {Brussels, Belgium},
  publisher = {CEUR-WS.org},
  series    = {CEUR Workshop Proceedings},
  volume    = {Vol-1373},
  year      = {2015},
  url       = {http://CEUR-WS.org/Vol-1373/}
}
```

Preface

This volume contains the peer-reviewed papers presented at BioPPN 2015 – the 6th International Workshop on *Biological Processes & Petri Nets* held on June 22, 2015 in Brussels as satellite event of PETRI NETS 2015 and ACSD 2015.

The workshop had been organised to provide a platform for researchers aiming at fundamental research and real life applications of Petri nets and other concurrency models in Systems and Synthetic Biology. Systems and Synthetic Biology are full of challenges and open issues, with adequate modelling and analysis techniques being one of them. The need for appropriate mathematical and computational modelling tools is widely acknowledged.

Petri nets offer a family of related models, which can be used as a kind of umbrella formalism – models may share the network structure, but vary in their kinetic details (quantitative information). This undoubtedly contributes to bridging the gap between different formalisms, and helps to unify diversity. Thus, Petri nets have proved their usefulness for the modelling, analysis, and simulation of a diversity of biological networks, covering qualitative, stochastic, continuous and hybrid models. The deployment of Petri nets to study biological applications has not only generated original models, but has also motivated research of formal foundations.

In this context, the invited talk on *A compact modeling approach for deterministic biological systems* given by Luis M. Torres from Centro de Modelización Matemática (ModeMat)/Escuela Politécnica Nacional Quito, Ecuador, addressed the problem of extending Petri nets in such a way to obtain a compact model for the dynamics of certain discrete deterministic systems.

In addition, there is a position paper presented by Hugues Bersini on *State-transition diagrams for biological modelling: A few cases* to initiate a discussion on advantages and drawbacks of different modeling frameworks (Petri nets versus state-transition diagrams) for biological modelling.

Each submission was reviewed by five to six program committee members assisted by one external reviewer. The list of reviewers comprises 18 professionals of the field coming from 11 different countries and writing in total 28 reviews, most of them of substantial length. The programme committees decided finally to accept five papers, involving 14 authors coming from four different countries.

In summary, the workshop proceedings enclose theoretical contributions and biological applications, demonstrating the interdisciplinary nature of the topic.

For more details see the workshop's website
http://www-dssz.informatik.tu- cottbus.de/BME/BioPPN2015.

We acknowledge substantial support by the EasyChair management system, see http://www.easychair.org, during the reviewing process and the production of these proceedings.

June 16, 2015   Monika Heiner
Cottbus   Annegret K. Wagler

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