

IET Systems Biology Call for Papers



SPECIAL ISSUE ON: Modelling noise in biochemical reaction networks

It is now well appreciated that noise pervades the dynamics of intracellular reaction kinetics. Intrinsic noise is typical inside cells because of the inherent low copy number of several types of molecules. Equally important though much less studied are extrinsic sources of noise such as temporal variability in the ribosome number per cell and in the concentration of macromolecular crowding agents in the cytoplasm. Modelling is an important tool to study how the interplay of these various noise sources impacts the dynamics on cellular and multi-cellular scales.

However currently we do not have a clear overall picture of how the underlying mechanisms of life deal with noise. Some of the major problems that are hindering progress are the lack of studies which combine experimental single cell data with cutting-edge modelling, a wide variety of modelling methodologies with differing predictions and a lack of modelling methods which deal with large-scale networks in non-dilute, spatial conditions. In this special issue we seek contributions which seek to address the aforementioned type of problems; a broader encompassing list of suitable topics include but are not limited to:

- Acquisition of single cell kinetic data and its modeling
- Functional and structural robustness in the presence of noise
- Interplay of intrinsic and extrinsic noise on dynamics
- Improved simulation methods for chemical master equations
- Relationship between various stochastic modeling methodologies
- Mechanisms which suppress or use noise to enhance function
- The effect of spatial fluctuations on the dynamics of biological networks
- Methods for the estimation of intrinsic and extrinsic noise from experimental data
- Theoretical and computational approaches for the study of large scale stochastic reaction networks
- Coupling of single cell noise to multicellular dynamics

All papers must be submitted through the journal's ScholarOne Manuscripts™ system:
<http://mc.manuscriptcentral.com/iet-syb>

Proposed publication schedule:

Deadline for submission of papers: 3rd of June 2011
Authors to receive a 1st decision: 2nd September 2011
Final notification of acceptance: 2nd December 2011
On-line and print publication: Spring 2012

Special Issue guest editors:

Dr Jongrae Kim
University of Glasgow
E: jongrae.kim@glasgow.ac.uk

Dr Ramon Grima
University of Edinburgh
E: ramon.grima@ed.ac.uk

IET Publishing Dept. contact:

Miss Sapna Shah
IET Systems Biology
Editorial Assistant
E: sshah@theiet.org