



The Abdus Salam
International Centre
for Theoretical Physics
50th Anniversary 1964 - 2014

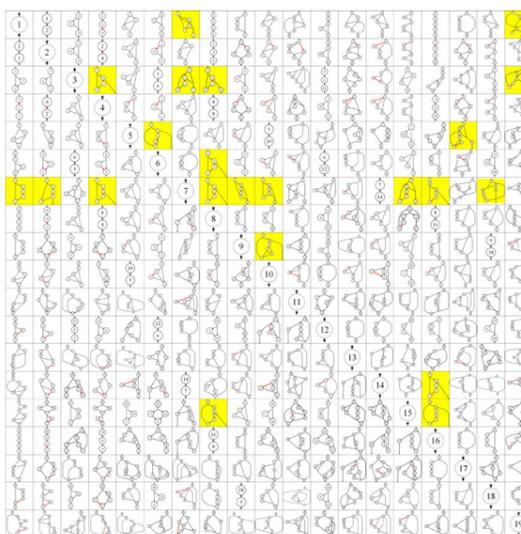


Workshop on the Economy of a Cell: Resource Allocation, Trade- Offs and Efficiency in Living Systems

23 - 27 June 2014
Miramare - Trieste

The Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy) is organizing the above workshop to take place at the ICTP from 23 to 27 June 2014.

In recent years the dynamics of biological systems has been increasingly described using concepts and terminology borrowed from economics: cells face trade-offs between different strategies for survival; the generation of proteins from DNA displays multiple levels of subtle, optimal efficiency; metabolism can be viewed as a resource allocation problem; biomolecules can be associated with a "value" within the free energy "market" of the cell. These concepts indicate the emergence of a new way of thinking about problems in biology. We envisage that innovation in several important areas of biology can ensue from exploring in more depth and in a more coherent way this connection between cellular dynamics and concepts traditionally used in economics. The purpose of this workshop is to bring together systems biologists and physicists whose research has brought them to an economy-inspired view of the cell. Scientists from different backgrounds will discuss biological questions that can be addressed using concepts of resource allocation, efficiency and optimality.



The following topics will be covered:

(1) Genome-scale cellular metabolism and the global molecular budget of a cell; (2) The economy of gene expression and protein synthesis: the cellular adaptations to translational efficiency; (3) Benefits and costs in cellular fitness; (4) Trade-offs and Pareto-optimality in biological systems; (5) Game theory in cellular and multicellular biology; and (6) Economics of cognitive-like processes at the cellular level.

PARTICIPATION: *Scientists and Ph.D. students from all countries that are members of the UN, UNESCO or IAEA can attend the Workshop. Although the main purpose of the Centre is to help researchers from developing countries through a programme of training activities within a framework of international co-operation, a limited number of strongly motivated graduate student and post-doctoral scientists from developed countries are also welcome to attend. Limited funds are available for some applicants from developing countries, to be selected by the organizers. Such financial support is available only to those who attend the entire workshop. Every effort should be made by candidates to secure support for their fares (or at least half-fare) from their home country. **There is no registration fee for attending the Workshop.***

The online application form for this Workshop is available at:
http://cadsagenda5.ictp.trieste.it/full_display.php?smr=0&ida=a13204

Applicants are encouraged to submit abstracts for contributed talks and poster presentations at the workshop along with their application for participation.

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INVITED SPEAKERS INCLUDE:

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PING AO
Shanghai Center for Systems Biomedicine,
CHINA

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La Sapienza, Rome, ITALY

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DEADLINE

11 March 2014

ICTP Home page: <http://www.ictp.it/>