



WINTER SCHOOL ON QUANTITATIVE SYSTEMS BIOLOGY

BIOENERGETICS

Cells harness energy flows to drive biological functions. Most bio-chemical networks involved in energy transduction are nowadays well-characterized. However, the energetic costs and constraints for specific cellular processes remain largely unknown. In particular, what are the energy budgets of cells? What are the constraints and limits that energy flows impose on cellular processes? Do cells operate near these limits, and, if so, how do energetic constraints impact cellular functions? Physics has provided powerful tools to study nonequilibrium systems and to define these physical limits, but applying these tools to cell biology remains a challenge. Physical bioenergetics resides at the interface of nonequilibrium physics, energy metabolism, and cell biology. It seeks to understand how much energy cells use, how they partition this energy between different cellular processes, and the associated energetic constraints. In this School, we shall review the state of the art in physical bioenergetics with an aim to discuss and articulate open questions and future challenges.

This is the twelfth school in the series on Quantitative Systems Biology, held alternately at ICTP, Trieste and ICTS, Bangalore. The school responds to the strong need, especially at the Ph.D. and postdoc level, for providing scientists with a broad exposure to quantitative problems in the study of living systems. The audience will range from Ph.D. students to young faculty, who either work in this area or plan to do so.

04 – 15 December 2023

Ramanujan Lecture Hall, ICTS, Bengaluru, India

Application deadline 01 Aug 2023

 icts.res.in/program/qsb2023

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LECTURERS INCLUDE

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Sanjay Jain
Vijay Krishnamurthy (*Local organiser*)
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Limited travel grants are available for participants from developing countries.

The school will not have an online component.

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