



Kolloquium des Max-Planck-Instituts

- Vortragender:** Prof. Friedrich Srienc
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- Vortragstitel:** From Metabolic Pathway Analysis to a Theory of
Evolution
- Termin:** Donnerstag, den 1. Juli 2010, 16:00 Uhr
- Ort:** Max-Planck-Institut Magdeburg, Sandtorstraße 1,
Seminarraum V0.05/2-3, EG

Abstract:

Complex metabolic networks can be decomposed into a set of discrete fundamental pathways or elementary modes that support cell function under the constraint of mass conservation. The identification of these modes enables the analysis of the pathway capabilities and the rational design of efficient networks. This analysis approach is of immense value in biotechnology as metabolic networks can be engineered on a completely rational basis. The analysis predictions have been confirmed in several experimental systems related to biofuels production and to the production of secondary metabolites. Moreover, the set of discrete elementary modes in a network can be interpreted with the tools of statistical thermodynamics. The usage probabilities of individual elementary modes are expected to be distributed according to Boltzmann's distribution law such that the rate of entropy production is maximized. Adaptive evolution experiments support the idea that metabolic networks evolve towards such state. Ultimately, evolution of metabolic networks appears to be driven by forces that can be quantified by the distance of the current metabolic state from the state of maximum entropy production that represents the unbiased, most probable selection of fundamental pathway choices.

If you want to know more about Prof. Srienc, please have a look at:

<http://www.cems.umn.edu/research/srienc/srienc.htm>

Der Vortrag wird in englischer Sprache gehalten.
Interessenten sind herzlich eingeladen.