

RESEARCH CONFERENCES

ESF-COST High-Level Research Conference

**Systems Chemistry II:
Evolution and Systems**

Anna Grand Hotel • Balatonfüred, Lake Balaton • Hungary
18 - 23 October 2009

Chair: **Eörs Szathmáry**, Collegium Budapest, HU

Vice-Chair: **Dieter Schinzer**, University of Magdeburg, DE

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Final Programme

Sunday 18 October

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| Late afternoon/ early evening | Registration at the COST-ESF desk |
| 19:00-19:30 | Eörs Szathmáry Collegium Budapest, HU Dieter Schinzer University of Magdeburg, DE <i>Welcome Note from Chair and Vice-Chair</i> |
| 19:30-21:00 | Dinner |
| 21:00 | Welcome Drinks |

Monday 19 October

Session 1

Chair: **Mauro Santos**, Autonomous University of Barcelona, ES

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| 09:00-9:50 | William Martin Heinrich-Heine University Düsseldorf, DE <i>Hydrothermal Vents and the Origin of Life</i> |
| 09:50-10:40 | Günter von Kiedrowski Ruhr University Bochum, DE <i>TBD (Replicator and Systems Chemistry)</i> |
| 10:40-11:10 | Coffee break |
| 11:10-12:00 | Pier Luigi Luisi University of Rome, IT <i>Chemical Aspects of Synthetic Biology</i> |

Short Talks

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| 12:00-12:15 | James Cleaves Carnegie Institution of Washington, US <i>What Were the Building Blocks Available for Proto-Life? The Prebiotic Small Molecule Inventory</i> |
| 12:15-12:30 | Sijbren Otto University of Cambridge, UK <i>Shaken, not Stirred: Spontaneous Emergence of Competing Synthetic Self-Replicators from Dynamic Molecular Networks determined by Mechanical Energy.</i> |
| 12:30-14:30 | Lunch |

Session 2

Chair: **Chrisantha Fernando**, University of Sussex, UK

- 14:30-15:20 **Michael Yarus**
University of Colorado, US
Empirical Study of Inaccessibly Ancient Events: The Genetic Code
- 15:20-16:10 **Sergei Rodin**
The Beckman Research Institute, US
Frozen Complementarity of the Genetic Code: Relics of Primordial Mirror Symmetry in tRNAs and Aminoacyl-tRNA Synthetases
- 16.10-16:30 Coffee break

Short Talks

- 16:30-16:45 **Josep Ribo**
University of Barcelona, ES
Frank Model and Spontaneous Emergence of Chirality in Closed Systems
- 16:45-17:00 **Addy Pross**
Ben Gurion University, IL
Seeking the Chemical Roots of Darwinism: Bridging between Chemistry and Biology
- 17:00-17:15 **Christoph Kuhn**
University Hospital Zürich, CH
On an Early Theory of Life's Emergence in the Light of Future Artificial Chemical Life
- 17:15-17:30 **Kepa Ruiz-Mirazo**
University of the Basque Country, ES
On the 'Lipid-peptide Minimal Cell' Scenario.
- 17:30-17:45 **Peter Strazewski**
Université Claude Bernard Lyon 1, FR
Of the Darwinian Advantage to be Neither too Soluble, nor too Insoluble, Neither too Solid, nor Completely Liquid

Evening Lecture

- 18:00-19:00 **Frigyes Károlyházy**
Eötvös University, HU
The Spell of the Quantum World
- 19.00 Dinner

Tuesday 20 October

Session 3

Chair: **Kepa Ruiz Mirazo**, University of San Sebastian, ES

- 09.00-9:50 **Mauro Santos**
Autonomous University of Barcelona, ES
TBD (Evolvability and Network Models)
- 09:50-10:40 **Doron Lancet**
Weizmann Institute of Science, IL
Evolving Simulated Chemical Networks
- 10:40-11:10 Coffee break

11:10-12:00 Niles Lehman
Portland State University, US
A Self-constructing and Autocatalytic Set of RNAs

Short Talks

12:00-12:15 Leroy Cronin
University of Glasgow, UK
TBA (Nanostructures)

12:15-12:30 Alina Ion
Politehnica of Bucharest, RO
Carbon Nanostructures as Sorbents for Contaminants from the Environment

12:30-14:30 Lunch

Session 4

Pier Luisi Luigi, University of Rome, IT

14:30-15:20 Peter Schuster
University of Vienna, AT
Evolution at the Molecular Level – 150 Years after Darwin's Origin of Species

15:20-16:10 Dan Tawfik
Weizmann Institute of Science, IL
The Evolution of New Protein Functions and Structures - a Reconstructive Approach

16:10-16:30 Coffee break

16:30-18:00 *Poster session*

Evening Lecture

18:00-19:00 Stuart Kauffman
University of Calgary, CA
Collectively Autocatalytic Sets Plus Agency

19:00 Dinner

Wednesday 21 October

Session 5

Chair: Luc Steels, SONY Lab, Paris

09:00-9:50 Ferenc Darvas
ThalesNano, HU
TBD

09:50-10:40 Balázs Papp
Biological Research Center Szeged, HU
Systems biology of genetic interactions in yeast metabolism

10:40-11:10 Coffee break

11:10-12:00 Günter Wagner
Yale University, US
TBD (Evolvability)

Short Talks

- 12:00-12:15 **Gonen Ashkenasy**
Ben Gurion University of the Negev, IL
Kinetics and Mechanism of β -Sheet Peptide Replication
- 12:15-12:30 **Pierre-Alain Monnard**
University of Southern Denmark, DK
Biopolymerization in self-assembled, structured media
- 12:30 Lunch
- Afternoon Half-day excursion
- 19.00 Dinner

Thursday 22 October

Session 6

Chair: John Odling-Smee, University of Oxford, UK

- 09.00-9:50 **Robert Aunger**
London School of Hygiene and Tropical Medicine, UK
TBD
- 09:50-10:40 **Chrisantha Fernando**
University of Sussex, UK
The Neuronal Replicator Hypothesis
- 10:40-11:10 Coffee break
- 11:10-12:00 **Luc Steels**
Free University of Brussels, BE
TBD

Short Talks

- 12:00-12:15 **Bjørn Østman**
Keck Graduate Institute, US
Impact of Epistasis on Evolutionary Adaptation
- 12:15-12:30 **Goran Goranovic**
University of Southern Denmark, DK
Systems Chemistry: Coupled Electron Transfer from a Nucleobase to a Lipid via a Photocatalyst
- 12:30-14:30 Lunch

Session 7

Chair: Bob Aunger, London School of Hygiene and Tropical Medicine, UK

- 14:30-15:20 **John Odling-Smee**
University of Oxford, UK
Niche Construction
- 15:20-16:10 **György Kampis**
Eötvös University, HU
TBD (Self-modifying systems?)
- 16.10-16:40 Coffee break

Evening Lecture

16:40-17:40

Herbert Gintis

Central European University Budapest, HU

Five Principles for the Unification of the Behavioral Sciences

Forward Look Plenary Discussion

Chair: György Kampis, Eötvös University Budapest, HU

17.40-17.43

Günter von Kiedrowski

Ruhr University Bochum, DE

17.43-17.46

Mauro Santos

Organisation, Country Code

17.46-17.49

Bob Aunger

London School of Hygiene and Tropical Medicine, UK

17.49-17.52

Luc Steels

Free University of Brussels, BE

17.52-18.10

Audience Discussion

20.00

Get-together & Conference Dinner

Friday 23 October

Breakfast & Departure