

## ESF-EMBO Symposium on Probing the Molecular Basis of Protein Function through Chemistry Scope of Chemical Protein Synthesis

Sant Feliu de Guixols, Spain, 29 October – 3 November 2005

Chair: **Martin Engelhard** (Max Planck Institute for Molecular Physiology, Dortmund, DE)

Vice-Chair: **Donald Hilvert** (Swiss Federal Institute of Technology, Zürich, CH)

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### Final Programme

On line at: <http://www.esf.org/conferences/lc05195>

#### Saturday 29 October

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Late afternoon / early evening	Registration at the hotel reception and ESF desk
19.30	Welcome drink
20.00	Dinner

#### Sunday 30 October

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##### Session 1: Recognition of Peptides and Proteins (Chair: H. Bayley)

08.30	Conference Opening
09.00	<b>Ernest Giralt</b> (University of Barcelona, ES) <i>Protein-surface recognition</i>
09.45	Discussion

- 10.00 **Peter Seeberger** (Swiss Federal Institute of Technology, Zürich, CH)  
*Chemical glycomics to elucidate fundamental mechanisms of Malaria and create a Malaria vaccine*
- 10.45 Discussion
- 11.00 Coffee break
- 11.30 **Roger Goody** (Max-Planck-Institute for Molecular Physiology, Dortmund, DE)  
*Chemical approaches to study vesicular transport*
- 12.15 Discussion
- 13.00 Lunch

## Session 2: Catalysis and Function (Chair: E. Giralt)

- 14.30 **Nicolas Winssinger** (Université Louis Pasteur, Strasbourg, FR)  
*Towards measuring and modulating protein function with small molecules*
- 15.15 Discussion
- 15.30 **Dan Tawfik** (Weizmann Institute of Science, Rehovot, IL)  
*Evolution of new enzyme functions: lessons from in vitro evolution*
- 16.15 Discussion
- 16.30 Coffee break
- 17.00 **Benjamin Cravatt** (The Scripps Research Institute, La Jolla, US)  
*Profiling enzyme activities in human cancer*
- 17.45 Discussion
- 18.00 **Donald Hilvert** (Swiss Federal Institute of Technology, Zürich, CH)  
*Molecular diversity and catalysis*
- 18.45 Discussion
- 19.30 Dinner
- 21.00 Poster session

## Monday 31 October

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## Session 3: Protein Chemistry (Chair: N. Winssinger)

- 09.00 **Ronald Raines** (University of Wisconsin, Madison, US)  
*Towards synthetic collagen*
- 09.45 Discussion
- 10.00 **Stephen B.H. Kent**, (The University of Chicago, US)  
*Exploring the molecular basis of protein function through chemistry*
- 10.45 Discussion
- 11.00 Coffee break
- 11.30 **Luis Moroder** (Max-Planck-Institute of Biochemistry, Martinsried, DE)  
*Azobenzol as conformational switch in model peptides*

- 12.15 Discussion  
13.00 Lunch

#### Session 4: Short Oral Presentations (Chair: D. Hilvert)

- 14.30 **Henning Mootz** (Philipps University, Marburg, DE)  
*Creation of a semi-synthetic split intein for the ligation of synthetic probes to the N-terminus of recombinant proteins*
- 14:55 **Christian Becker** (Max Planck Institute for Molecular Physiology, Dortmund, DE)  
*Semisynthesis of lipid-modified Prion protein and its in vivo application*
- 15.20 **Jutta Eichler** (German Research Center for Biotechnology, Braunschweig, DE)  
*Exploring protein-ligand interactions through synthetic mimicry of protein binding sites*
- 15:45 **Kerstin Riesselmann** (Technical University Berlin, DE)  
*Design of photoswitchable cyclic phosphopeptides for the modulation of cell signaling pathways by light*
- 16.10 **Robin J. Leatherbarrow** (Imperial College London, UK)  
*Structure/activity relationships of the 3C protease from Foot and Mouth Disease Virus*
- 16:35 Coffee break

#### Session 4: Short Oral Presentations (Chair: C. Schiene-Fischer)

- 17.00 **Sheref Mansy** (Harvard Medical School, Boston, US)  
*Solution structure of an in vitro evolved ATP-binding Protein*
- 17:25 **Victor Bolanos-Garcia** (University of Cambridge, UK)  
*Dissection of the interaction motifs of BUB1/BUBR1 proteins, a family of key regulators of the mitotic checkpoint control*
- 17:50 **Carlo Unverzagt** (University of Bayreuth, DE)  
*Sugars, peptides and molecular biology - paving a way to single form glycoproteins.*
- 18:15 **Raphaël Lévy** (The University of Liverpool, UK)  
*Protein-like gold nanoparticles*
- 19.30 Dinner
- 21.00 Poster session

### Tuesday 1 November

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#### Session 5: Membrane Proteins (Chair: D. Tawfik)

- 09.00 **Dennis Dougherty** (California Institute of Technology, Pasadena, US)  
*Chemical-scale studies of ion channels and neuroreceptors*
- 09.45 Discussion

10.00	<b>Hagan Bayley</b> (University of Oxford, UK) <i>Engineered transmembrane protein pores</i>
10.45	Discussion
11.00	Coffee break
11.30	<b>Martin Engelhard</b> (Max Planck Institute for Molecular Physiology, Dortmund, DE) <i>Transmembrane signal transduction</i>
12.15	Discussion
13.00	Lunch
14.00	Half-day excursion
20.00	Get-together-drinks and Conference Dinner

### Wednesday 2 November

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#### Session 6: Protein Folding (Chair: M. Webb)

09.00	<b>Cordelia Schiene-Fischer</b> (Max Planck Research Unit for Enzymology of Protein Folding, Halle, DE) <i>The role of catalyzed bond rotations in the biological function of Hsp70 chaperones</i>
09.45	Discussion
10.00	<b>Thomas Kiefhaber</b> (Biocenter, University of Basel, CH) <i>Using non-natural amino acids to probe protein dynamics</i>
10.45	Discussion
11.00	Coffee break
11.30	<b>Jeff Kelly</b> (The Scripps Research Institute, La Jolla, US) <i>Context dependent contributions of H-bonds to protein folding energetics</i>
12.15	Discussion
13.00	Lunch

#### Session 7: Chemistry in Cells (Chair: E. Giralt)

14.30	<b>Kai Johnsson</b> (Swiss Federal Institute of Technology, Lausanne, CH) <i>Protein chemistry in living cells</i>
15.15	Discussion
15.30	<b>Tom Muir</b> (The Rockefeller University, New York, US) <i>Chemical probes and triggers of protein function</i>
16.15	Discussion
16.30	Coffee break
17.00	<b>Horst Vogel</b> (University of Lausanne, CH) <i>Probing the function of neuroreceptors by fluorescence techniques</i>
17.45	Discussion

- 18.00            **Ulo Langel** (Stockholm University, Stockholm, SE)  
*Cell-penetrating peptides and applications in gene therapy*
- 18.45            Discussion
- 19.30            Dinner
- 21.00            Special discussion about the future of the conference series

## **Thursday 3 November**

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### **Session 8: Protein Ligand Interaction (Chair: H. Vogel)**

- 09.00            **Martin Webb** (National Institute of Medical Research, London, UK)  
*Design of protein-based sensors for fluorescence measurement of small molecules and their application to DNA helicases*
- 09.45            Discussion
- 10.00            **Mudi Sheves** (Weizmann Institute of Science, Rehovot, IL)  
*Molecular mechanism for retinal proteins activation and function*
- 10.45            Discussion
- 11.00            Coffee break
- 11.30            **Huib de Groot** (University of Leiden, NL)  
*Ligand-protein interaction*
- 12.15            Discussion
- 13.00            Lunch and departure