

ICTP – [The Abdus Salam International Centre for Theoretical Physics](#), Trieste, Italy

## **smr1324/Programme**

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Adriatico Research Conference on  
Interaction and Assembly of Biomolecules

(27 - 31 August 2001)

Co-sponsored by:  
Forschungszentrum Jülich GmbH, Germany  
Scuola Internazionale Superiore di Studi Avanzati (SISSA) Trieste, Italy

Miramare - Trieste, Italy

Directors: P. Carloni, A.A. Kornyshev and S. Leikin

### PRELIMINARY PROGRAMME

(all lectures will be held in the Kastler Lecture Hall, Adriatico Guest House)

Monday, August 27

08:30 - 10:00

Registration  
(Adriatico Guest House - Lower Level 1)

(Rest of the morning to complete administrative formalities)

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Afternoon Session

Chair: A.A. Kornyshev

14:15 - 14:30 Opening: (P.Carloni, A.A.Kornyshev, S.Leikin)

Biomolecular Interactions in vitro and in vivo

14:30 - 15:15 V. A. Parsegian  
National Institute of Health, Bethesda, U.S.A.  
"Measurements of biomolecular interactions in vitro "

15:15 - 16:00 W.M. Gelbart  
University of California, Los Angeles, U.S.A.  
"How does DNA get in and out of viruses?"

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- 16:00 - 16:30 Coffee Break - Terrace Level
- 16:30 - 17:15 S. Leikin  
National Institute of Health, Bethesda, U.S.A.  
"Sequence recognition in biomolecular assembly reactions:  
from genetic recombination to bone formation"
- 17:15 - 18:00 C.R. Safinya  
University of California, Santa Barbara, U.S.A.  
"Ordered structures in biological systems"
- 18:30 - Welcome Reception - Terrace Level

Tuesday, August 28

Morning Session

Chair: P. Pincus

Keynote lecture:

- 09:00 - 10:00 P.-G. de Gennes  
Collège de France, Paris  
"Artificial muscles"

Physics of biopolymers

- 10:00 - 10:45 A.Y. Grosberg  
University of Minnesota, Minneapolis, U.S.A.  
"Disordered polymers"
- 10:45 - 11:15 Coffee Break - Terrace Level
- 11:15 - 12:00 E.I. Kats  
Institut Laue Langevin, Grenoble, France  
"A simple model for charge transport in DNA like molecules"
- 12:00 - 14:30 Lunch

Afternoon Session

Chair: J.F. Joanny

- 14:30 - 15:15 A.A. Kornyshev  
IWV-3, Forschungszentrum Jülich, Germany  
"Symmetry laws for the interaction between biological helices"
- 15:15 - 16:00 Y. Levin  
Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil  
"Charge renormalization and phase separation in colloidal  
suspensions"
- 16:00 - 16:30 Coffee break - Terrace Level
- 16:30 - 17:15 P. Pincus  
University of California, Santa Barbara, U.S.A.

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"Counterion Condensation on Charged Surfaces"

17:15 - 18:00 A. Liu  
University of California, Los Angeles, U.S.A.  
"Polyvalent-counterion-induced structures in biopolymer solutions"

Wednesday, August 29

Morning Session

Chair: V.A. Parsegian

Membranes

09:00 - 09:45 F. Brochard-Wyart  
Institut Curie, Paris, France  
"Transient pores in giant vesicles : transport, endocytosis, exocytosis"

09:45 - 10:30 G. Gompper  
Forschungszentrum Jülich, Germany  
"Effect of amphiphilic block copolymers on membrane elasticity and phase behavior"

10:30 - 11:00 Coffee Break - Terrace Level

Nucleic acids and proteins I

11:00 - 11:45 E. Westhof  
Institute de Biologie Moleculaire et Cellulaire,  
Strasbourg, France  
"RNA self assembly"

11:45 - 12:30 J.M. Schurr  
University of Washington, Seattle, U.S.A.  
"Effect of PEG on the supercoiling free energy: role of osmotic exclusion forces"

12:30 - 14:30 Lunch

Afternoon Session

Chair: P. Carloni

14:30 - 15:15 M. Giacca  
ICGEB, Trieste, Italy  
"Protein/protein and Protein/DNA complexes"

Poster fair and tutorials

15:15 - 16:00 Oral message-presentation of 9 hottest posters

16:00 - 18:30 Poster session and computer graphics and bioinformatics tutorials

19:30 - Conference Dinner

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Thursday, August 30

Morning Session

Chair: S. Leikin

Nucleic acids and proteins II

- 09:00 - 09:45 T. Hard  
Royal Institute of Technology, Huddinge, Sweden  
"NMR and thermodynamic studies of protein-DNA interactions"
- 09:45 - 10:30 M. Williams  
University of Minnesota, Saint Paul, U.S.A.  
"HIV nucleocapsid protein alters the helix-coil transition  
of single DNA molecules"
- 10:30 - 11:00 Coffee break - Terrace Level
- 11:00 - 11:45 J.E. Ladbury  
University College London, U.K.  
"Multimolecular assembly in tyrosine kinase-mediated  
intracellular signalling"
- 11:45 - 12:30 D. Moras  
Lab. de Biologie et Genomique Structurales, Illkirch, France  
"Transfer of information within a protein"
- 12:30 - 14:30 Lunch

Afternoon Session

Chair: A. Liu

Biopolymer-membrane interactions

- 14:30 - 15:15 F. Seno  
Università degli Studi di Padova, Italy  
"Deciphering the folding kinetics and the assembling of  
transmembrane helical proteins"
- 15:15 - 16:00 D. Andelman  
Tel Aviv University, Israel  
"Macromolecular/amphiphiles interaction"
- 16:00 - 16:30 Coffee break - Terrace Level
- 16:30 - 17:15 J.F. Joanny  
Institut Charles Sardon, Strasbourg, France  
"Interactions between charged polymers and surfaces"
- 17:15 - 18:00 A. Ben-Shaul  
The Hebrew University of Jerusalem, Israel  
"Role of membrane charge, curvature and composition in  
macromolecule-membrane interaction"

Friday, August 31

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## Morning Session

Chair: D. Andelman

### Molecular motors

- 09:00 - 09:45 R.F. Bruinsma  
University of California, Los Angeles, U.S.A.  
"How do proteins generate mechanical force? A Molecular  
Dynamics study of a soft protein switch."
- 09:45 - 10:30 R. Lipowsky  
MPI of Colloids and Interfaces, Potsdam, Germany  
"The movement of molecular motors"
- 10:30 - 11:00 Coffee Break - Terrace Level

### Biomolecular engineering and drug design

- 11:00 - 11:45 G. Cevc  
Idea Corporation, München, Germany  
"Molecular mechanisms of vesicles-promoted drug delivery and  
gene therapy"
- 11:45 - 12:30 H. Kubinyi  
BASF Aktiengesellschaft, Ludwigshafen, Germany  
"Structure-based, computer-aided and combinatorial drug design"
- 12:30 - 14:30 Lunch

## Afternoon Session

Chair: G. Cevc

- 14:30 - 15:15 P. Carloni  
SISSA, Trieste, Italy  
"Ab initio Approach to Drug-Protein Interactions"

### Special lecture: Frontiers in biomolecular engineering

- 15:15 - 16:15 J.-M. Lehn  
Université Louis Pasteur, Paris, France  
"Supramolecular Engineering through Programmed  
Self-Organization"

- 16:15 - 16:45 Coffee Break - Terrace Level

### Physics of bio-matter: lessons and disappointments.

- 16:45 - 18:30 Discussion mediated by:  
P. Carloni, A.A. Kornyshev and S. Leikin

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