

## RNA World: a new frontier in biomedical research

Consensus Conference

22-23 February 2009, Granada, Spain

Instituto de Parasitología y Biomedicina "López-Neyra", CSIC



**Chairs:**

- **Professor Lars Thelander** (Chair), Department of Medical Biochemistry and Biophysics, Umea University, Umea, SE
- **Dr. Jörg Vogel** (Co-chair), Max Planck Institute for Infection Biology, Berlin, DE
- **Dr. Annick Harel-Bellan** (Co-chair), Institut André Lwoff, CNRS, Villejuif, FR

[www.esf.org/rnaworld](http://www.esf.org/rnaworld)

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Since its establishment in 1974, ESF, which has its headquarters in Strasbourg with offices in Brussels and Ostend, has assembled a host of research organisations that span all disciplines of science in Europe, to create a common platform for cross-border cooperation.

We are dedicated to supporting our members in promoting science, scientific research and science policy across Europe. Through its activities and instruments, ESF has made major contributions to science in a global context. The ESF covers the following scientific domains: Humanities; Life, Earth and Environmental Sciences; Medical Sciences; Physical and Engineering Sciences; Social Sciences; Marine Sciences; Nuclear Physics; Polar Sciences; Radio Astronomy Frequencies; Space Sciences.

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The European Medical Research Councils (EMRC) is the membership organisation for all the medical research councils in Europe under the auspices of the ESF. EMRC's mission is to promote innovative medical research and its clinical application towards improving human health. EMRC offers authoritative strategic advice for policy making, research management, ethics and better health services. In its activities, EMRC serves as the voice of its Member Organisations within the European scientific community. EMRC disseminates knowledge and promotes the socio-economic value of medical research to the general public and decision makers.

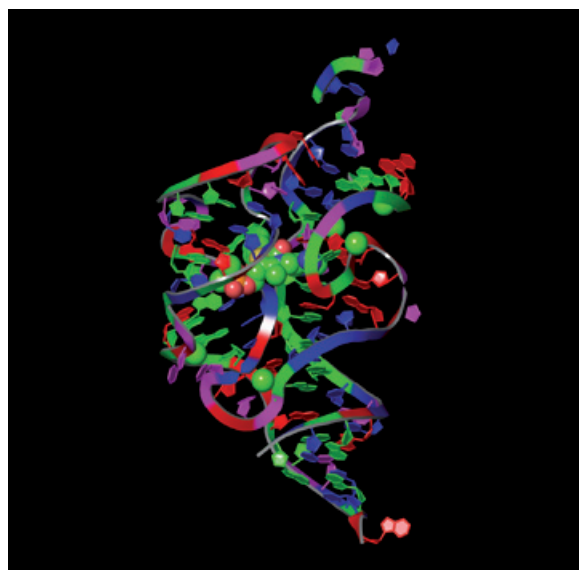
Crystal structures of the Thi-box riboswitch bound to thiamine pyrophosphate analogs reveal adaptive RNA-small molecule recognition (Structure **14**: 1459–1468). Image details: RNA: ribbon-plate representation, A—red, U—magenta, G—green, C—blue; Ca ions, benfotiamine: space-filling representation. The image was generated with the Accelrys Discovery Studio Visualizer. Image provided by the Jena Library of Biological Macromolecules—JenaLib ([www.fli-leibniz.de/IMAGE.html](http://www.fli-leibniz.de/IMAGE.html)).

## About the ESF Forward Look RNA World: a new frontier in biomedical research

The Forward Look **RNA World: a new frontier in biomedical research** aims at integrating several RNA research areas, not only within eukaryotic but also prokaryotic RNA research. Through a series of three thematic workshops and a consensus conference this foresight activity endeavours to investigate the status quo of the field, to determine European strengths and weaknesses and to establish a 5-10 year outlook. Workshops and the conference are considered stepping stones towards a planned report that is designed to give advice to research funding and research performing institutions.

The consensus conference in Granada is by invitation only and will involve contributions and discussions about the future of RNA research among scientists from academia and industry as well as policy makers, representatives of national funding institutions and the European Commission. Recommendations on how to strengthen RNA research in Europe which resulted from the three thematic workshops entitled: Methodologies for RNA Discovery; RNA Interaction Partners; and RNA Therapeutics will be discussed and challenged.

Foresight studies, referred to as ESF Forward Looks, represent the flagship activity within ESF's strategic portfolio. Forward Looks enable Europe's scientific community, in interaction with policy makers, to develop medium to long-term views and analyses of future research developments with the aim of defining research agendas at the national and European level. Forward Looks are driven by ESF's Member Organisations and by the European research community.



# Programme

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## Sunday 22 February 2009

**15:00 - 18:00**

**Alhambra Visit** (meeting point at 14.30 hrs at Hotel Abades Nevada Palace, C/de la Sultana, 3, 18008 Granada)

**19:00**

**Dinner** (at the Hotel Abades Nevada Palace)

## Monday 23 February 2009

### Session I: Science

Chair: Professor Lars Thelander

**09:00 - 09:20**

#### Welcome

Professor Juan José Damborenea González, CSIC Vice-president

#### Introduction to ESF

Professor Marja Makarow, ESF Chief Executive

**9:20 - 09:40**

#### From basic research to RNA therapeutics – background on the ESF Forward Look RNA World

Professor Lars Thelander, Chair of the Forward Look RNA World

**09:40 - 10:25**

#### Crawling out of the RNA World

**Keynote speaker:**

Professor Tom Cech, President of the Howard Hughes Medical Institute, Chevy Chase, US

**10:25 - 10:50**

#### Structural Biology of RNA and RNP

Professor Eric Westhof, Institut de Biologie Moléculaire et Cellulaire, Université Louis Pasteur, Strasbourg, FR

**10:50 - 11:10**

#### Coffee Break

**11:10 - 11:35**

#### Unresolved issues of plant small RNA biology

Dr. Olivier Voinnet, Institut de Biologie Moléculaire des Plantes, University of Strasbourg, FR

**11:35 - 12:00**

#### Computation in RNA biology: achievements and challenges

Professor Mihaela Zavolan, Division of Bioinformatics, University of Basel, CH

**12:00 - 12:25**

#### The spliceosome: Design principles of a highly dynamic and complex RNP machine

Professor Reinhard Lührmann, Max Planck Institut für Biophysikalische Chemie, Göttingen, DE

**12:25 - 13:30**

#### Lunch

**13:30 - 13:55**

#### Using RNA interference based genetic screens to identify biomarkers of responses to cancer drugs

Professor René Bernards, Netherlands Cancer Institute, Molecular Carcinogenesis, Amsterdam, NL

**13:55 - 14:20**

#### MicroRNAs: Regulators of metabolism and therapeutic opportunities

Professor Markus Stoffel, Institute of Molecular Systems Biology, Laboratory for Metabolic Disease, Zürich, CH

### Session II: Science Policy: Outcomes of Thematic Workshops Towards Forward Look Recommendations

Chair: Dr. Jörg Vogel

**14:20 - 16:20**

#### Methodologies for RNA Discovery

Dr. Thomas Tuschl, Chair of the 1<sup>st</sup> thematic workshop

#### RNA Interaction Partners

Dr. Annick Harel-Bellan, Chair of the 2<sup>nd</sup> thematic workshop

#### RNA Therapeutics

Professor Fritz Eckstein, Chair of the 3<sup>rd</sup> thematic workshop

#### Discussion

**16:20 - 16:45**

#### Tea Break

### Session III: Funding

Chair: Professor Albert Gjedde

**16:45 - 18:00**

#### Panel Discussion

Professor Juan José Damborenea González, CSIC, ES  
Professor Albert Gjedde, Danish Medical Research Council, DK

Dr. Patrik Kolar, European Commission, BE

Dr. David V. Morrissey, Novartis, US

Dr. Peter Mouritzen, Exiqon, DK

Dr. Thomas Singer, Roche, CH

**18:00 - 19:00**

#### General Discussion

#### Discussion on the future of RNA research and RNA Therapeutics involving audience

Professor Lars Thelander, Chair of FL RNA World

**19:00 - 19:10**

#### Closing Remarks

Professor Lars Thelander, Chair of FL RNA World

**20:00**

#### Conference Dinner

Departure from the **Conference venue** at 19:15 to the restaurant Jardines de Zoraya, Calle Panaderos 32, 18010 (Barrio Albaicín) Granada, Spain, Tel: +34 958206266

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## Management Committee:

- **Dr. Edvard Beem**, EMRC  
The Netherlands Organisation for Health Research and Development (ZonMw), The Hague (NL)
- **Dr. Annick Harel-Bellan**, Co-Chair  
Institut André Lwoff, CNRS, Villejuif (FR)
- **Professor Liselotte Højgaard**, EMRC Chair  
Clinical Physiology, Nuclear Medicine & PET  
Rigshospitalet, University of Copenhagen,  
Copenhagen (DK)
- **Professor Marja Makarow**, ESF Chief Executive  
European Science Foundation, Strasbourg (FR)
- **Professor Jan Motlik**, LESC Rapporteur  
Institute of Animal Physiology and Genetics,  
Academy of Sciences of the Czech Republic,  
Libechov (CZ)
- **Professor Lars Thelander**, Chair  
Department of Medical Biochemistry and  
Biophysics, Umea University, Umea (SE)
- **Dr. Jörg Vogel**, Co-chair  
Max Planck Institute for Infection Biology, Berlin (DE)

## Scientific Committee:

- **Professor Lars Thelander** (Chair)  
Department of Medical Biochemistry and  
Biophysics, Umea University, Umea (SE)
- **Dr. Annick Harel-Bellan** (co-chair and chair  
of Workshop II)  
Institut André Lwoff, CNRS, Villejuif (FR)
- **Dr. Jörg Vogel** (co-chair and chair of Workshop I)  
Max Planck Institute for Infection Biology, Berlin (DE)
- **Professor Alfredo Berzal-Herranz**  
(Host of consensus conference)  
Instituto de Parasitología y Biomedicina  
"López-Neyra", CSIC, Granada (ES)
- **Professor Fritz Eckstein** (Chair of Workshop III)  
Max-Planck Institute for Experimental Medicine,  
Göttingen (DE)
- **Professor Jørgen Kjems** (Chair of Workshop III)  
Department of Molecular Biology, University  
of Aarhus (DK)
- **Professor Bengt Nordén**  
Physical Chemistry, Chalmers University  
of Technology, Göteborg (SE)
- **Dr. Thomas Tuschl** (Chair of Workshop I)  
Laboratory of RNA Molecular Biology, Rockefeller  
University, New York (US)
- **Professor Eero Vasar**, EMRC Rapporteur  
Estonian Academy of Sciences, Tartu (EE)
- **Dr. Hans-Peter Vornlocher** (Chair of Workshop III)  
Roche Kulmbach GmbH, Kulmbach (DE)
- **Professor Gerhart Wagner** (Chair of Workshop II)  
Department of Cell & Molecular Biology, Uppsala  
University, Uppsala (SE)

## ESF office:

- **Dr. Thomas Bruhn**  
Science Officer, Medical Sciences Unit
- **Dr. Carole Moquin-Patthey**  
Head of Medical Sciences Unit
- **Ms. Blanche Facchini-Schaller**  
Administrator, Medical Sciences Unit