



Lisbon Cathedral, built after 1147 over the remnants of the mosque of the Islamic period.

## ESF Forward Look

### *RNA World: a new frontier in biomedical research*

3<sup>rd</sup> Workshop

## RNA Therapeutics

Hotel Sana Malhoe, Lisbon, Portugal

9-10 November 2008

**Chairs:** **Jørgen Kjems** (Department of Molecular Biology, University of Aarhus, DK), **Hans-Peter Vornlocher** (Roche Kulmbach GmpbH, Kulmbach, DE), and **Fritz Eckstein** (Max-Planck Institute for Experimental Medicine, Göttingen, DE)

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



[Ribeira Palace](#) of Lisbon in the 18th century

## About ESF, EMRC and ESF Forward Looks

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The European Science Foundation (ESF) provides a platform for its Member Organisations to advance European research and explore new directions for research at the European level. Established in 1974 as an independent non-governmental organisation, the ESF currently serves 77 Member Organisations across 30 countries. Its activities include providing science policy advice (Science Strategy); stimulating co-operation between researchers and organisations to explore new directions (Science Synergy); and the administration of externally funded programmes (Science Management). These take place in the following areas: physical and engineering sciences; medical sciences (EMRC); life, earth and environmental sciences; humanities; and social sciences.

The European Medical Research Councils (EMRC), managing all medical science issues within the ESF, is the membership organisation for all the Medical Research Councils in Europe. The mission of EMRC is to promote innovative medical research and its clinical application towards improved human health. EMRC offers authoritative strategic advice for policy making, research management, ethics, and better health services.

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 extension, the European research community.

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

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The Forward Look **RNA World: a new frontier in biomedical research** aims to integrate 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 to establish a 5-10 year outlook. The 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 third workshop, **RNA Therapeutics**, brings together experts and leaders in the area of RNA technologies suitable for application in therapeutics. The discussions will be directed to address certain areas of expertise specific to the European science environment and consider program recommendation and competition on those aims in other countries (Japan, USA). It is planned to discuss what the European strengths, weaknesses, and opportunities over the next 5 to 10 years in this field of research will/could be. Taking stock of what kind of programs already exist and what is needed to make Europe more competitive will be part of the debate.

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

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## Scientific Organising Committee:

### Chairs of the Workshop:

- **Jørgen Kjems**  
Department of Molecular Biology, University of Aarhus (DK)
- **Hans–Peter Vornlocher**  
Roche Kulmbach GmbH, Kulmbach (DE)
- **Fritz Eckstein**  
Max-Planck Institute for Experimental Medicine, Göttingen (DE)
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- **Lars Thelander (chair)**  
Department of Medical Biochemistry and Biophysics, Umea University, Umea (SE)
- **Jörg Vogel (co-chair)**  
Max Planck Institute for Infection Biology, Berlin (DE)
- **Annick Harel-Bellan (co-chair)**  
Institut André Lwoff, CNRS, Villejuif (FR)
- **Bengt Nordén**  
Physical Chemistry, Chalmers University of Technology, Göteborg (SE)
- **Thomas Tuschl**  
Laboratory of RNA Molecular Biology, Rockefeller University, New York (US)
- **Gerhart Wagner**  
Department of Cell & Molecular Biology, Uppsala University, Uppsala (SE)

### Speakers & Guests:

- Annemieke Aartsma-Rus, Leiden University Medical Center (NL)  
Ben Berkhout, University of Amsterdam, Laboratory of Experimental Virology (NL)  
John Cryan, University College Cork, School of Pharmacy (IE)  
Michael Gait, Medical Research Council, Laboratory of Molecular Biology, Cambridge (UK)  
Gunther Hartmann, University of Bonn, Institute of Clinical Chemistry and Pharmacology (DE)  
Olaf Heidenreich, Newcastle University, Northern Institute for Cancer Research (UK)  
Sakari Kauppinen, Santaris Pharma & University of Copenhagen (DK)  
Bruce Sullenger, Duke University Medical Center, Department Surgery, Durham (UK)  
Thomas Thum, Julius Maximilian University, Department of Cardiology, Würzburg (DE)  
Jesper Wengel, University of Southern Denmark, Odense (DK)
- Alfredo Berzal-Herranz, CSIC, Instituto de Parasitología y Biomedicina „Lopez-Neura“, Granada (ES)  
Jan Motlik, Institute of Animal Physiology and Genetics, Libečov (CZ)  
Joaquim Ribeiro, University of Lisbon, Institute of Pharmacology and Neurosciences (PT)  
Simon Hadlington, Science Writer (UK)

## ESF/EMRC office:

- **Thomas Bruhn**  
ESF Science Officer
- **Blanche Facchini-Schaller**  
Administrator

# Provisional Workshop Programme

## SUNDAY 9<sup>TH</sup> NOVEMBER

19.30 - 22.00 Welcome dinner (at the Hotel Sana Malhoa at 19.30 hrs)

## MONDAY 10<sup>TH</sup> NOVEMBER

08.45 – 09.00 Introduction to the ESF and the Forward Look Scheme

- Thomas Bruhn  
ESF Science Officer

09.00 – 09.10 Introduction to FL ***RNA World: a new frontier in biomedical research***

- Lars Thelander  
Chair

09.10 – 09.20 Introduction to the **Workshop**

- Jørgen Kjems

09.20 – 10.30 Introduction of Workshop Participants and Organisers

Each participant briefly introduces her/himself and focus on research: 5 min each with 3 slides maximum

Coffee Break 10.30 - 11.00

11.00 - 12.45 Discussion Subject 1 : RNA Technologies

**Session chair:** *Fritz Eckstein*

**Topics:** Antisense approaches to target mRNA and miRNAs, siRNA, aptamers, functional tethers

12.45 - 14.00 Lunch

14.00 - 15.45 Discussion Subject 2 : RNA-Delivery

**Session chair:** *Jørgen Kjems*

**Topics:** Conjugation and complex formulations for functional delivery of RNA in vivo

15.45 - 16.15 Coffee Break

16.15 - 17.45 Discussion Subject 3 : Preclinical Research

**Session chair:** *Hans-Peter Vornlocher*

**Topics:** Animal models, RNA safety, micro-RNAs as diagnostic tool and target

17.45 – 18.15 Wrapping up

- The chairs sum up the workshops and start building recommendations

18.15 Closing Remarks by Lars Thelander

19.30 Dinner (meeting point in the lobby of the Hotel Sana Malhoa at 19.30 hrs)

**Addendum:** The 3 slides from each participant should be sent to Blanche Facchini-Schaller ([bfacchini@esf.org](mailto:bfacchini@esf.org)) at least 3 days before the meeting to be readily available on PC.

Each participant will only have the 5 min in the Introduction Section to outline his/her expertise, thus no lectures in the conventional sense. The emphasis of the meeting is on discussion of the future development in the three different subject sections.