



“Towards a mechanism-based framework in EMF research”

2nd international workshop in the framework of NRP 57 “Non-Ionising Radiation – Health and Environment”

A research programme of the Swiss National Science Foundation

- Organizer:** Swiss National Science Foundation, National Research Programmes
Date: May 5 and 6, 2008
Venue: Zurich, Hotel Zürichberg (www.zuerichberg.ch)
Attendance: Only upon registration
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Goals

In view of the scientific uncertainties regarding non-ionising radiation and the public concern in Switzerland and abroad, the National Research Programme NRP 57 is dedicated to state-of-the-art research to identify potential, adverse non-thermal effects of ELF and RF exposures on human health and to facilitate the risk assessment of current and future technologies. In its framework, 11 research projects covering four research areas address various aspects ranging from interaction mechanisms at the cellular level to risk perception in the general population. The projects are also in the focus of a series of scientific workshops. More information on the programme and the projects can be found on the programme web page www.nrp57.ch.

The second scientific workshop “Towards a mechanism-based framework in EMF research” is aimed at exploring the difficulties as regards the newest results in the areas of ELF and RF electromagnetic fields and their effect on DNA damage and repair, stress response (with emphasis on MAPK, ERK and Hsp27) as well as the role of temperature in these processes (thermal vs. non-thermal effects, temperature change sensing elements and down-stream signalling, role of temperature in induction of stress response). Despite an increasing interest in this research field and extensive investigation of the relation of EMF and effects at the cellular level, the numerous findings remain isolated, controversial and problematic due to the lack of a sophisticated mechanism-based framework. As a consequence, the problems and shortcomings in the approaches used until now and the lack of a coherent strategy have so far also prevented a meaningful assessment of the significance of the data and their potential effects on human health.

Designated experts from abroad and researchers from the programme have been invited to actively discuss these scientific issues, providing a unique opportunity for a fruitful exchange of views to advance the field. Attendance is open also to researchers not involved in the programme and other interested parties on a national and international level.



Workshop Agenda

Towards a mechanism-based framework in EMF research

Monday, May 5

- 13:00-13:50 Registration
13:50-14:00 Welcoming address (Alexander Borbély, President SC NRP 57)
- Session 1** **DNA damage and repair in EMF exposed cells**
Chairs: Dariusz Leszczynki and Christian Hess
- 14:00-14:30 Radiation-induced damage to DNA: assessment of oxidatively generated lesions
Jean Cadet, Laboratoire Lésions des Acides Nucléiques, Département de Recherche Fondamentale sur la Matière Condensée, Commissariat à l'Énergie Atomique (CEA), Grenoble, France
Discussion
- 14:40-15:10 Mechanisms of radiation-induced genotoxicity and DNA repair, implications for EMF and low dose ionizing radiation
Tomas Lindahl, Mutagenesis Laboratory, Clare Hall Laboratories, London Research Institute, Cancer Research, UK
Discussion
- 15:20-15:40 *COFFEE BREAK*
- 15:40-16:10 Cytogenetics in EMF research: What can be expected, what has been achieved?
Günter Obe, Prof. em., University Duisburg-Essen, Germany
Discussion
- 16:20-16:50 Genotoxicity of EMFs: Exploring DNA directed effects and experimental discrepancies
Primo Schär, Institute of Biochemistry and Genetics, Department of Clinical and Biological Research, University of Basel, Switzerland
Discussion
- Panel Discussion** **Shortcomings in mechanism-based EMF research and ways forward**
Chair: Alexander Borbély
- 17:00-18:00 Synthesis by the speakers and plenary discussion with all participants
19:00 *DINNER (invitation only)*



Tuesday, May 6

Session 2

Cellular stress response to EMF

Chairs: Pierre Goloubinoff and Primo Schär

09:00-09:30

Small stress proteins as regulators of intracellular redox state and programmed cell death

André-Patrick Arrigo, Head of Stress, Chaperons and Cell Death Laboratory, Claude Bernard University, Lyon, France

Discussion

09:40-10:10

Mechanism of short-term ERK activation by electromagnetic fields at mobile phone frequencies

Rony Seger, Department of Biological Regulation, The Weizmann Institute of Science, Rehovot, Israel

Discussion

10:20-10:40

COFFEE BREAK

10:40-11:10

Activation of p38MAPK/Hsp27 stress pathway by RF-EMF and its possible consequences

Dariusz Leszczynski, Radiation Biology Unit, Radiation and Nuclear Safety Authority (STUK), Helsinki, Finland and Guangbiao Professor, Zhejiang University, Hangzhou, China

Discussion

11:20-11:50

Challenges from the perspective of stress-response in EMF studies

Meike Mevissen, Division of Veterinary Pharmacology and Toxicology, Vetsuisse Faculty Bern, University of Bern, Switzerland

Discussion

12:00-13:00

LIGHT LUNCH

Session 3

Research models in EMF research

Chairs: Meike Mevissen and Dariusz Leszczynski

13:00-13:30

Weak microwave radiation does not substantially alter gene expression patterns in the nematode *Caenorhabditis elegans*

David de Pomerai, Institute of Genetics, University of Nottingham, UK

Discussion

13:40-14:10

The plant heat-shock response is controlled by specific calcium channels in the plasma membrane

Younousse Saidi, Biology Department, University of York, UK

Discussion

14:20-14:50

Temperature and EMF effects on nematodes modelling protein misfolding diseases

Pierre Goloubinoff, Department of Plant Molecular Biology, University of Lausanne, Switzerland

Discussion

15:00-15:30

COFFEE BREAK



Panel Discussion	Shortcomings in mechanism-based EMF research and ways forward; significance of observed effects for human health
	Chair: Alexander Borbély
15:30-17:00	Synthesis by all speakers of day 1 and 2 and plenary discussion with all workshop participants
17:00	Final remarks (Alexander Borbély)



VENUE

Location

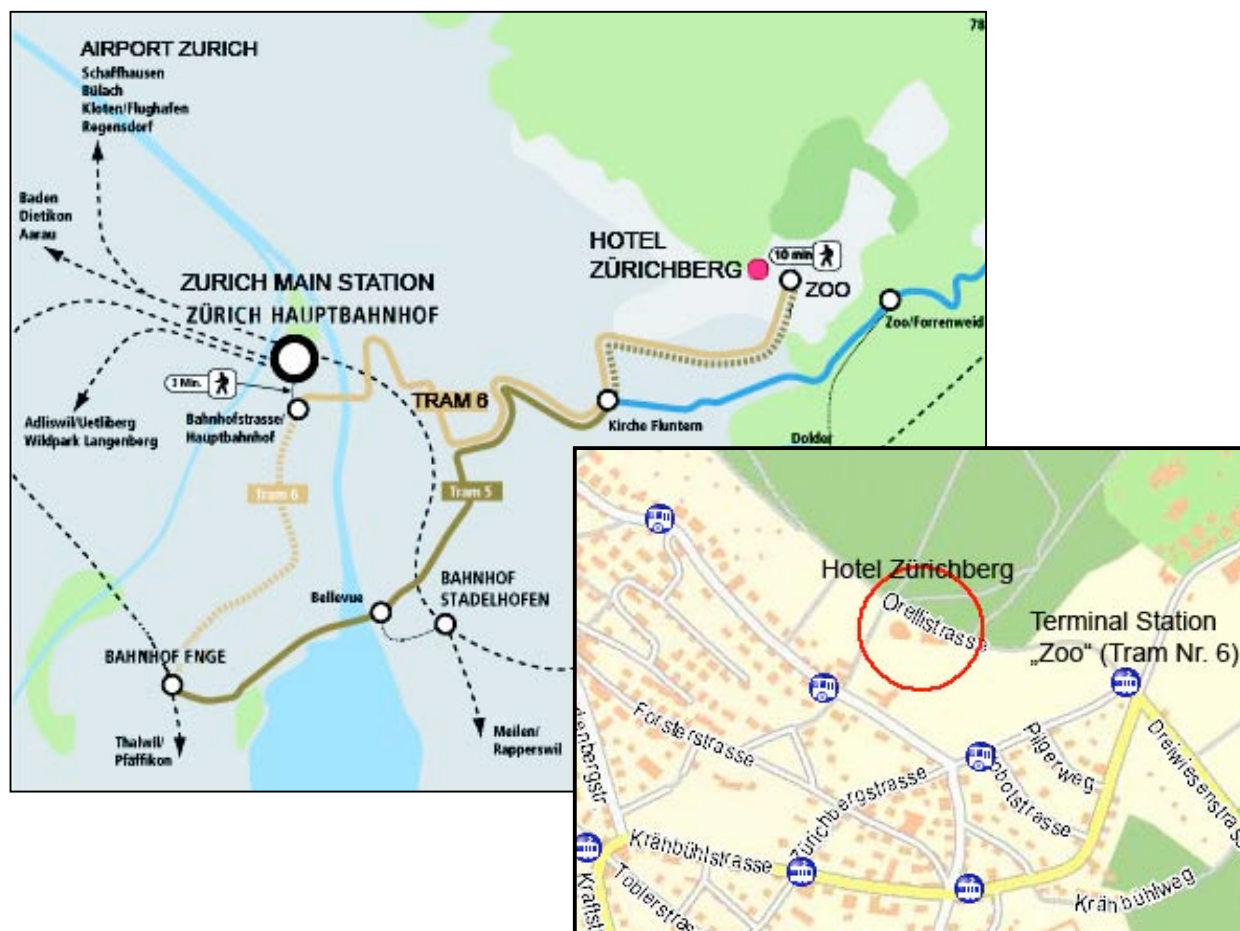
Hotel Zürichberg, Orellistrasse 21, 8044 Zurich; Phone +41 44 268 35 35; Email info@zuerichberg.ch; Web <http://www.zuerichberg.ch/>. The hotel is easily accessible by public transport from both the airport (approx. 30 min) and the city center (approx. 20 min).

How to get there

Taxi from airport: No reservation necessary. Approx. 60 CHF and 20-30 min drive.

Ben Bus: From airport to hotel no reservation necessary; booking needed from hotel to airport. Approx. 25 CHF per person and 35 min drive. Departure between Terminal 1 and 2.

Train/Tram: Regular trains connect the airport with the city center ("Main Station"). Departure every few minutes, duration 11 min. From the **Main Station**, tram nr. 6 to terminal stop "Zoo", duration 16 min. The hotel is a 10 min minute uphill walk from the terminal stop. Ticket Airport-Zoo: 6 CHF ("3 Zones").



Accommodation

A large range of hotels can be found at the official Zürich Tourism webpage: www.zuerich.com.