



# EMFnEAR

## EXPOSURE AT UMTS ELECTROMAGNETIC FIELDS: STUDY ON POTENTIAL ADVERSE EFFECTS ON HEARING

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MEETING OF THE WORKING PARTY ON HEALTH AND ENVIRONMENT  
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## The EMFnEAR Project



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- **Start Date:** December 15, 2004
- **End Date:** June 14, 2007
- **Duration:** 30 Months



## Specific Objectives



- Assess potential changes in auditory function of animals and humans due to exposure to EMF produced by UMTS phones
- Support informed decision-making by health and environmental authorities and public information
- Provide industry with adequate information for assessing and managing the potential risks of UMTS standard for hearing.
- Contribute to the definition of the exposure limits at this modulation and frequency band and, consequently, to the revision of Council Recommendation 1999/519/EC.

## Animal Experimentation



- Design and manufacturing of exposure and positioning systems

COMPLETED

- Animal experimentation:

- Exposure protocols
- Audiological assessment protocols
- In-vitro analysis protocols
- Ethical committee approvals

COMPLETED

- Experimental phases
- Data processing

IN PROGRESS

# Human Experimentation



- Exposure and positioning systems

IN PROGRESS

- Within-subject study:

- Exposure protocols
- Audiological assessment protocols

UNDER FINALIZATION

- Ethical committee approvals
- Experimental phases
- Data processing

NEXT STEPS

## Experimental Methods



### **In-vivo audiological assessment**

- Battery of audiological tests to be performed before, during (animals) and after UMTS controlled exposure:
  - Distortion Product Otoacoustic Emissions (animals and humans)
  - Transient Evoked Otoacoustic Emissions (humans)
  - Contralateral efferent effects (humans)
  - Auditory Evoked Potentials (humans)
  - Subjective audiogram (humans)

### **In-vitro audiological assessment**

Analysis of specific hair cells markers expression, apoptosis and ion concentration in outer hair cells of Sprague-Dawley or Wistar rats, following UMTS-exposure.



## Gantt Chart (updated Sept 05)

ACTIVITY	3	6	9	12	15	18	21	24	27	30
Animal Protocols	Done	Done								
Human Protocols	Done	Done	Done	To Be Done						
Animal Experiments			Done	To Be Done	To Be Done	To Be Done	To Be Done	To Be Done	To Be Done	
Human Experiments					To Be Done	To Be Done	To Be Done	To Be Done	To Be Done	
Dissemination		Done	Done	To Be Done	To Be Done	To Be Done	To Be Done	To Be Done	To Be Done	To Be Done

 **DONE**

 **TO BE DONE**

## **Dissemination Activities**



**EMFnEAR Website (<http://www.emfnear.polimi.it>)**

**EMFnEAR leaflets**

**Papers at International Conferences**

**Dissemination newspaper/television**

**Contacts with regulatory bodies**

**Contacts with stakeholders**

**EMFnEAR News (in preparation the first issue)**

**Special Session at NHS 2006 Conference – Cernobbio, Italy**



## Future Steps (next six months)



- **Finalize human protocols**
- **Start of in-vitro studies on hair cells in animals**
- **Start of human experimentations**

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