

# Research Activity Worldwide on Mobile Telephony and Health

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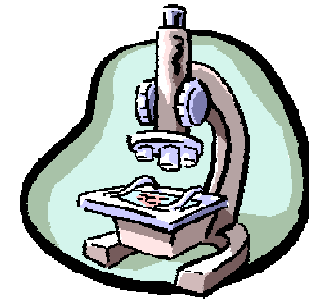
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# Review of international research on RF bioeffects

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# Scope of research



- EMF Portal database (2012)  
[www.emf-portal.de](http://www.emf-portal.de)

Type of studies	Number of published papers
Biology/health	781
Epidemiology	159
reviews, dosimetry, interference with implants	1481
Total	2421

# The new European call: 6 M€



- **ENV.2013.6.4-2 Closing gaps of knowledge and reducing exposure to EMF**
- better understand the possible **mechanisms** generating biological effects through the use of **novel approaches**,
- the role of RF exposures in **cancer** risk, **neurodegenerative** diseases, **reproductive** problems, behaviour and **ageing**, and exposure and health effects from **intermediate frequency** (IF) fields.

# Reports: HPA (AGNIR)



- Most recent and comprehensive report



## Health Effects from Radiofrequency Electromagnetic Fields

Report of the independent Advisory Group on Non-ionising Radiation

# Reports: HPA (conclusions)



- Cell studies
  - At present there is **no known pattern of exposure** conditions that has been shown consistently to **cause a biological effect** from exposures below guideline levels.
- Animal studies
  - There is **no clear evidence of harmful effects** with low level exposures, although **some studies have continued to report subtle biological changes**, often following single, acute exposures.

# Reports: HPA (conclusions)



- Human CNS studies
  - **EEG studies have also produced mixed results.**  
Small increases in alpha-band EEG power have been reported during or after exposure.
  - However, **the effects are small and inconsistent** between studies, so the reliability and **biological significance of these findings still remain unclear.**

# Reports: HPA (conclusions)



- Non-cancer human studies
  - Overall, since 2003 there is **no new evidence** from human exposure studies that indicates any other non-cancer morbidity resulting from RF field exposure below current guideline levels.



# Reports: HPA (conclusions)



- EHS
  - The overall evidence from the numerous experimental studies that have been conducted suggests that **no causal link exists for short-term exposures.**
  - At present, **insufficient good quality evidence is available** to draw conclusions as to the **role of long-term exposure to RF fields** in causing symptoms.

# Reports: GAO



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**GAO**

United States Government Accountability Office

Report to Congressional Requesters

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July 2012

**TELECOMMUNICATIONS**

**Exposure and Testing  
Requirements for Mobile  
Phones Should Be  
Reassessed**



**G A O**

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Accountability \* Integrity \* Reliability

# Reports: GAO



- “Studies we reviewed suggested and experts we interviewed stated that **laboratory research has not demonstrated adverse human health effects** from RF energy exposure **from mobile phone use, but the research is not conclusive** because findings from some studies have observed effects on test subjects.”

# GAO: NIH ongoing studies



Description	NIH institute	Funding	Completion
Examining effects of cell phones on brain glucose	National Institute on Alcohol Abuse and Alcoholism (NIAAA)	0.6 M\$	2012
Effects of exposure to cell phones on the CNS using children in the Danish National Birth Cohort	National Institute of Environmental Health Sciences (NIEHS)	0.4 M\$	2012
Toxicology and carcinogenic effects of RF in lab animals (National Toxicology Program)	National Institute of Environmental Health Sciences (NIEHS)	25.6 M\$	2015

# Reports: GAO (recommendations)



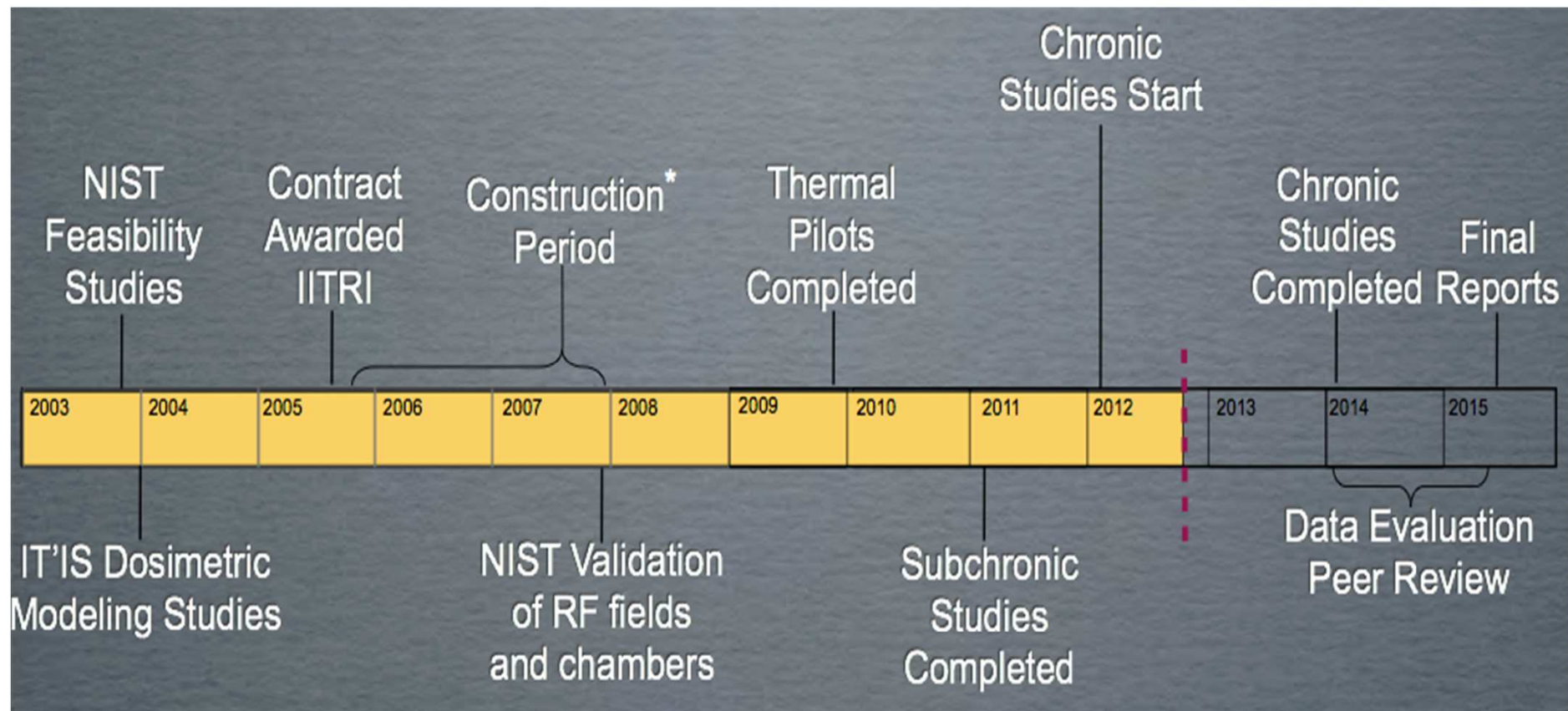
- long-term prospective (epi) cohort studies
- case-control (epi) studies on children
- non-thermal cell (lab) studies
- human volunteer studies “determine if possible **observed changes in neurological functioning from RF are adverse effects.**”
- re-evaluation of existing studies to determine whether additional research in certain areas is warranted.

# NTP study in Chicago

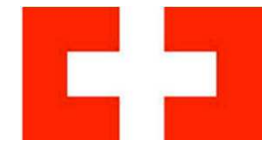


- Exposure to RF in reverberation chambers  
Intermittent exposure (10 min on / 10 min off) for 18.3 hours/day
- 900 MHz, GSM & CDMA – Rats
- 1900 MHz, GSM & CDMA – Mice
- Thermal pilot studies at SAR of 4–12 W/kg  
Subchronic studies at 3, 6, 9 W/kg in rats,  
and 5, 10, 15 W/kg in mice
- Chronic studies based on results from subchronic studies

# NTP study in Chicago



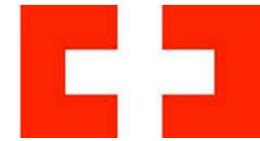
# Monte Verita meeting



**EMF HEALTH RISK RESEARCH WORKSHOP**  
**PROCEEDINGS OF THE SECOND MONTE VERITÀ WORKSHOP 2012**



# Monte Verita

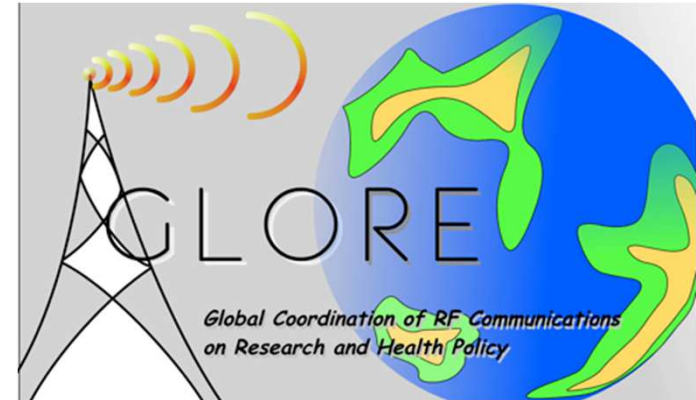


- Organized by ITIS
- 120 participants
- ELF and RF
- Mechanisms
- Challenges studies that are reproducible
- No new findings in the RF range



# The Glore initiative

- GLORE =
  - Global Coordination
  - RF Communications
  - Research and Health Policy
- Started in 1997 between Japon and Korea
- Now includes also EU and USA (+ Australia, New Zealand, and China)



# GLORE: some key issues



- Funding is decreasing everywhere except for...
  - France,
  - Korea,
  - China (2011-15, 4.5 M\$),
  - Australia, and
  - possibly US in the future
- Use of the precautionary principle in various countries including EU being debated
- Increasing concern Re Wireless Power Transfer
- Extrapolation to new signals
  - Text in available “signed” by GLORE and COST 704
- Japan: Research Supporting the 2010 WHO RF EMF Research Agenda

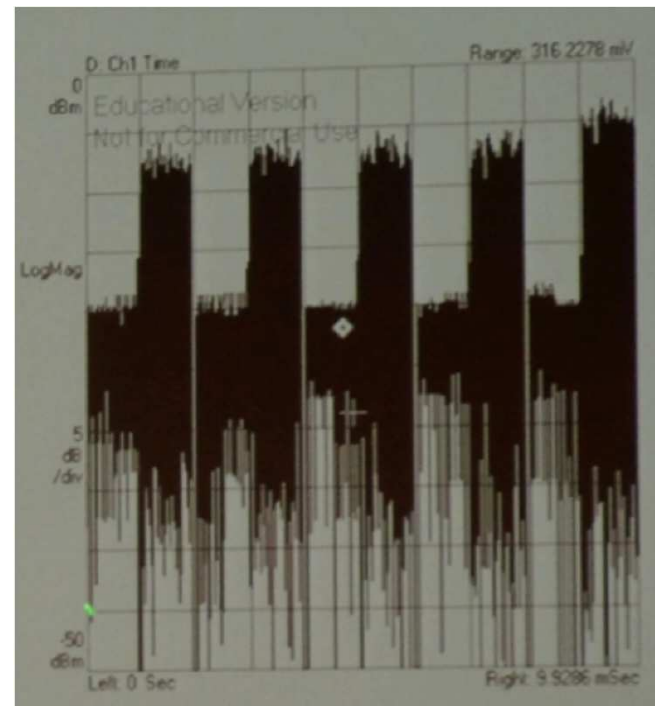
# GLORE: some key issues



- **LTE?**

- Korea: Exposure level of LTE BTS > other BTS
- DK: time profile of power resembles that of GSM

- Renewed fears?
- Need for laboratory investigations?



# Conclusion



- Lack of international coordination in research
  - Awaiting the outcome of the “big” study in Chicago
  - Race behind the introduction of new signals = the battle is lost unless extrapolation is possible (thermal vs. non thermal mechanisms)
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- See you all next year for the 20<sup>th</sup> edition!