



# MOBI-KIDS

Study on communication technology,  
environment and brain tumours  
in young people

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# Outline presentation

- Background
- Study objective
- Study design
- Data collection
- Validation studies
- Planning
- Questions?



# Background: Brain tumours

- Brain tumours second most common cancer type in young people (after leukemia)
- Risk factors of brain tumours largely unknown
  - Known risk factors:
    - Family history of brain tumours
    - Ionizing radiation
  - Speculated risk factors:
    - Chemicals
    - Allergies
    - Electromagnetic fields (EMF)

# Background:

## Communication technologies

- Dramatic increase in wireless communication technology usage, e.g. mobile phone, WiFi, particularly young people



- Public and public health concern/interest
  - International recommendations:
    - WHO International EMF Project
    - EU supported EMF-Net
  - National recommendations

# RF & (Children's) Health

- Health effects of radiofrequency fields (RF) hardly demonstrated at this point, e.g. INTERPHONE

*... but if there is a risk, it is likely to be greater for exposures in childhood and adolescence*

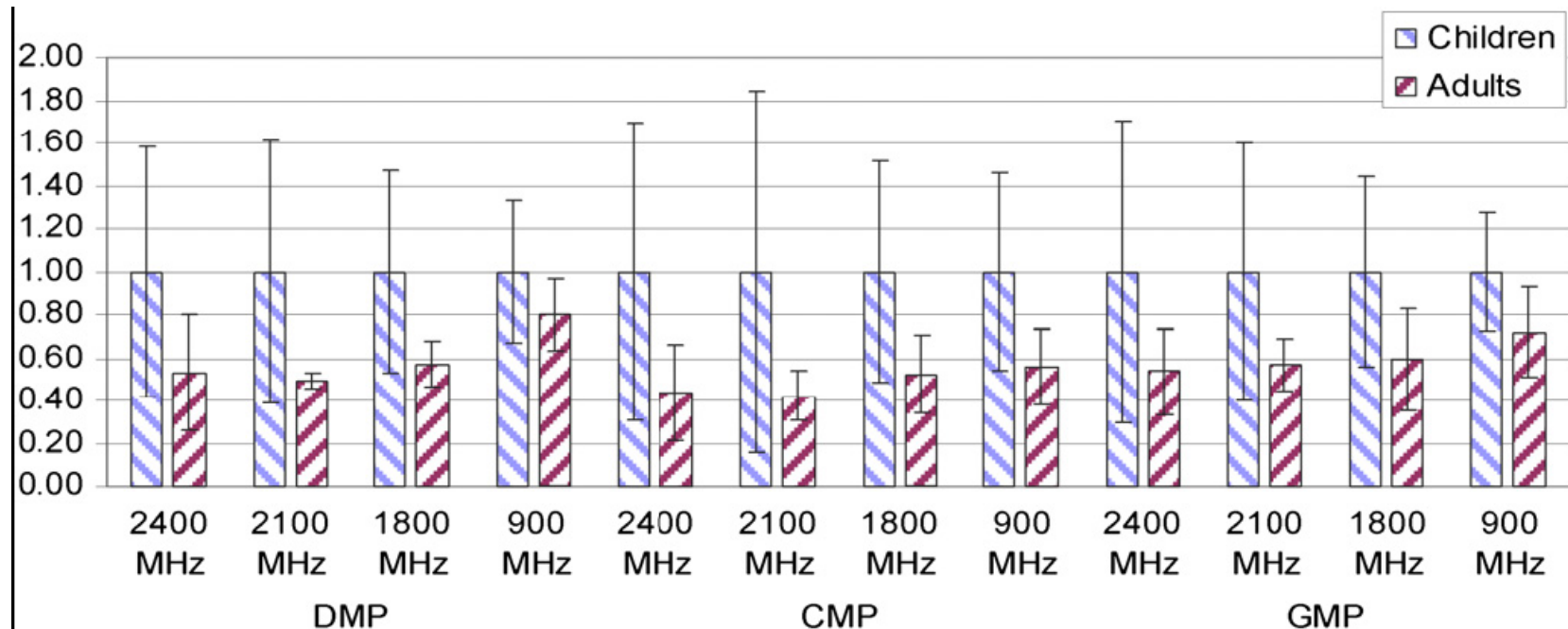
...

- Children will have more exposure:
  - Greater quantity of use as much cheaper than before
  - Many more years of use
- Children may be more vulnerable due to developing brain and skull



# Children's exposure is greater...

The relative mean MSAR1g tends to be higher in children than in adult brain tissues  
*(results normalized to children)*



Wart et al, 2008

# Study objective



mobi-kids

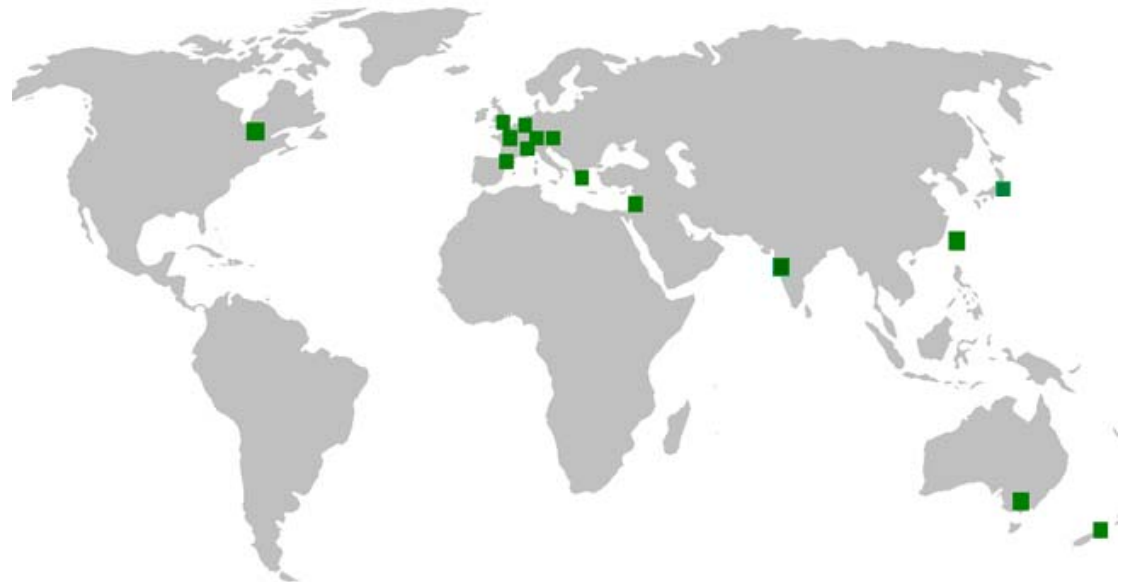
Study on Communication Technology,  
Environment and Brain Tumours in Young People

To assess the risk of brain tumours  
in young people in relation to:

- childhood and adolescent exposure to EMF from wireless communication technologies
- other potential environmental and host factors

# Participating countries (15)

- Australia
- Austria
- Canada
- France
- Germany
- Greece
- India
- Israel
- Italy
- Japan
- New Zealand
- Spain
- Taiwan
- The Netherlands
- UK



# Project management

- Funding:
  - European Union – FP7 - Grant agreement n°226873
  - National and local grants
- International coordinator:  
Elisabeth Cardis, CREAL  
Barcelona, Spain





# Study design

- Case-control study
  - Cases
    - Benign and malignant brain tumours
    - Aged 10-24y
    - Diagnosed during study period
    - Residing in study region
  - Controls
    - Hospital-based (to minimize non-participation and selection bias): patients operated for suspected appendicitis
    - Aged 10-24y
    - 2 per case
    - Individually matched on age, sex and region

# Expected number of brain tumour cases in the age range 10-24y

Country	Expected number of cases	
	Per year	Study period
Australia	71	178
Austria	35	86
Canada	94	234
France	94	235
Germany	125	313
Greece	25	63
<i>India</i>	?	?
Israel	40	120
Italy	68	169
<i>Japan</i>	?	?
New Zealand	25	63
Spain	125	313
<i>Taiwan</i>	?	?
The Netherlands	84	210
<b>Total</b>	<b>786</b>	<b>1,984</b>



# Data collection

- Face-to-face interview with subject & parent(s):
  - Detailed communication technology usage, e.g. mobile phone, cordless phone, WiFi
  - History of home and school addresses
  - Subject and family history of diseases
  - Exposure to medical and dental radiation
  - Occupational history
  - Exposures *in utero* and preconception
- Optional: Saliva collection for genetic analyses

# Validation self-reported mobile phone use



- Historical traffic/billing records from providers
  - Frequency and duration of voice and data use
- Software-modified-phones (SMP) study among volunteers
  - Frequency and duration of voice and data use
  - Laterality
  - Estimated output power



# Validation brain tumour diagnosis

- Tumour localisation:  
review of MRI/CT scans to mark precise location of tumour on specially developed grids
- Tumour diagnosis:  
central review of sample of histological slides  
by international panel of neuropathologists to verify diagnosis



# Planning

- Ethics approvals:
  - Obtained or ongoing in most countries
- First interviews started in first countries in October 2010
- Data collection duration: 2.5 years

## Questions?

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M Maslanyj, F Merletti, K Radon, M Sim, R Vermeulen, J Wiart  
*on behalf of the MOBI-KIDS Study Group\**

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