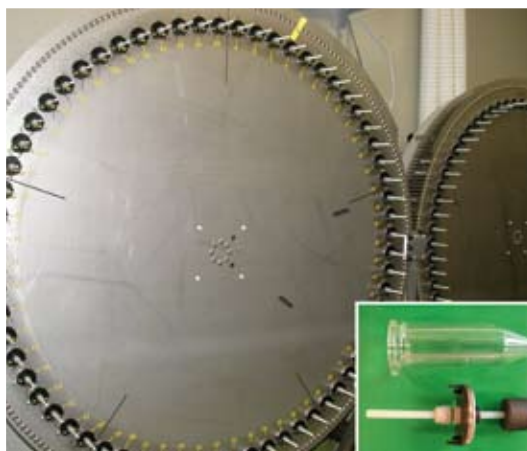


## The Perform-A Project:

# *In vivo* research on possible health effects of the use of mobile telephones and base stations (Carcinogenicity studies in rats and mice)

Concerns that the new, up-coming cellular phone technology may be linked to specific and non-specific health disorders have risen in European populations in the 1990s. In response to the existing rare experimental data on the health impacts of exposure to chronic radiofrequency radiation (RF), the European Commission, the Swiss and Austrian governments, the GSM Association and the Mobile Manufacturers Forum supported *in vivo* research addressing potential health effects related to the long-term use of mobile phones and base station exposure.



Setup for RF exposure for up to 65 restrained mice at Fraunhofer ITEM, radially arranged around the antenna. Inset: Cylindrical (polycarbonate) tube with adjustable backstop.

exposure of mice (PERFORM-A1, performed by Fraunhofer ITEM, Hannover, Germany) and rats (PERFORM-A2, performed by RCC Ltd, Itingen, Switzerland) to both 902-MHz GSM and 1747-MHz DCS "cocktail" signals. The experiments were performed as "classical" combined chronic toxicity and carcinogenicity studies at three dose levels (with a sham-exposed control group), and were designed like studies routinely performed for health risk evaluation for chemicals, pharmaceuticals or environmental agents.

Two additional PERFORM-A studies were conducted using animals predisposed

to tumour development [e.g., mammary tumour (PERFORM-A3, performed by ARC Research GmbH, Seibersdorf, Austria) or lymphoma (PERFORM-A4, performed by Istituto di Ricerche Biomediche "A. Marxer" (RBM), Colliere Giososa, Italy)]. All animal experiments were conducted in compliance with the international GLP (Good Laboratory Practice) Guidelines.

To ensure well characterised exposure conditions over the entire exposure period, two new setups, optimised for uniform whole-body exposure, were developed and employed in all PERFORM-A studies by the Foundation for Research on Information Technologies in Society, Zurich, Switzerland [IT'IS Foundation] assisted by the Radio Communications Laboratory, Dept. of Physics, University of Thessaloniki, Greece and ARC Research GmbH, Seibersdorf, Austria.

### Key findings and conclusions

Final results are being analysed and will be published in the course of 2007. Some results concerning mice were published in *Bioelectromagnetics* 28:173-187, 2007, showing no adverse health effects of exposure to RF in mice.

### Relevance and contribution to EU policy

Wireless technology has clearly become well rooted in the modern lifestyle and is expected to become an important motor for communication growth and innovation over the next decades in Europe. Recent public concern that cellular telephony might be linked to specific and non-specific health disorders, however, have been addressed in order to ensure that this technology remain as a vital component of the advancing European society. Research projects such as PERFORM-A have assisted in the development of a sound European public health policy with health and economic benefits to all consumers.

The present consortium comprised of laboratories in 5 different European countries, and had financial support from the cellular communications

industry to guarantee adequate funds to carry out the work. The remaining financial support for the project by a public research authority should ensure public confidence in the overall results. In addition, all studies will be published in peer-reviewed scientific journals.

The data generated by PERFORM-A, in combination with research on electromagnetic fields initiated largely by industry over the past few years, will contribute to a database for human risk assessment by public health agencies. Such an evaluation to determine the putative human cancer risk from cellular telephone radiofrequency exposure is currently performed by the International Agency for Research on Cancer (IARC) and World Health Organization (WHO), and the completed PERFORM-A project will certainly play an important role in this framework.

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#### Project acronym

PERFORM A

#### Contract number

QLK4-CT-1999-01476

#### FP5 Thematic Programme

Quality of Life and Management of Living Resources

#### Duration

66 months (2000-2005)

#### EC contribution

€ 2 050 000

#### Website

Not available

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### Objectives

The objectives of PERFORM-A were to investigate whether radio-frequency exposure induces or promotes the development of cancer in mice and rats. This type of *in vivo* research is important for the assessment of potential long-term effects of an agent on a biological system; PERFORM-A was conducted as six large-scale animal studies using both mice and rats exposed to typical mobile phone frequencies. The research project involved long-term