



# RENEB - REALISING THE EUROPEAN NETWORK OF BIOLOGICAL DOSIMETRY

U. Kulka<sup>1</sup>, L. Ainsbury<sup>2</sup>, M. Atkinson<sup>3</sup>, J.F. Barquinero<sup>4</sup>, C. Bassinet<sup>4</sup>, L. Barrios<sup>5</sup>, C. Beinke<sup>6</sup>, G. Bogner<sup>7</sup>, A. Cucu<sup>8</sup>, F. Darroudi<sup>9</sup>, P. Fattibene<sup>10</sup>, O. Gil<sup>11</sup>, E. Gregoire<sup>4</sup>, V. Hadjidekova<sup>12</sup>, S. Haghdoost<sup>13</sup>, R. Herranz<sup>14</sup>, A. Jaworska<sup>15</sup>, C. Lindholm<sup>16</sup>, R. Mkacher<sup>17</sup>, S. Mörtz<sup>3</sup>, A. Montoro<sup>18</sup>, J. Moquet<sup>2</sup>, M. Moreno<sup>14</sup>, A. Obazghi<sup>17</sup>, U. Oestreicher<sup>1</sup>, F. Palitti<sup>19</sup>, G. Pantelias<sup>20</sup>, I. Popescu<sup>8</sup>, M.J Prieto<sup>14</sup>, H. Romm<sup>1</sup>, K. Rothkamm<sup>2</sup>, L. Sabatier<sup>17</sup>, S. Sommer<sup>21</sup>, G. Terzoudi<sup>20</sup>, A. Testa<sup>22</sup>, H. Thierens<sup>23</sup>, F. Trompier<sup>4</sup>, I. Turai<sup>7</sup>, V. Vandersickel<sup>23</sup>, P. Vaz<sup>11</sup>, P. Voisin<sup>4</sup>, A. Vral<sup>23</sup>, F. Ugletveit<sup>15</sup>, A. Wieser<sup>3</sup>, C. Woda<sup>3</sup>, A. Wojcik<sup>13</sup>

1. <i>Bundesamt für Strahlenschutz (BfS, Germany)</i>	13. <i>Stockholm University (SU, Sweden)</i>
2. <i>Health Protection Agency (HPA, United Kingdom)</i>	14. <i>Servicio Madrileño de Salud - Hospital General Universitario Gregorio Marañón (SERMAS, Spain)</i>
3. <i>Helmholtz Centre Munich (HMGU, Germany)</i>	15. <i>Norwegian Radiation Protection Authority (NRPA, Norway)</i>
4. <i>Institut de Radioprotection et de Sûreté Nucléaire (IRSN, France)</i>	16. <i>Radiation and Nuclear Safety Authority (STUK, Finland)</i>
5. <i>Universitat Autònoma de Barcelona (UAB, Spain)</i>	17. <i>Commissariat à l'Énergie Atomique (CEA, France)</i>
6. <i>Bundeswehr Institut für Radiobiologie / Universität Ulm (BIR/UULM, Germany)</i>	18. <i>Fundacion para la Investigacion del Hospital Universitario La Fe de la Comunidad Valenciana (LAFE, Spain)</i>
7. <i>"Frédéric Joliot-Curie" National Research Institute for Radiobiology &amp; Radiohygiene, Budapest (NRIRR, Hungary)</i>	19. <i>University of Tuscia (UNITUS, Italy)</i>
8. <i>National Institute of Public Health Romania, Bucharest (INSP, Romania)</i>	20. <i>National Centre for Scientific Research Demokritos (NCSR D, Greece)</i>
9. <i>Leiden University Medical Center (LUMC, The Netherlands)</i>	21. <i>Instytut Chemii i Techniki Jadrowej (ICHTJ, Poland)</i>
10. <i>Istituto Superiore di Sanità (ISS, Italy)</i>	22. <i>Agenzia Nazionale per le Nuove Tecnologie, L'Energia e lo Sviluppo Economico Sostenibile (ENEA, Italy)</i>
11. <i>Instituto Tecnológico e Nuclear, Instituto Superior Técnico, Universidade Técnica de Lisboa (IST/ITN, Portugal)</i>	23. <i>Universiteit Gent (UGent, Belgium)</i>

## Introduction

Over the last years, the risk of a large scale radiological event has markedly increased, including possible accidents in nuclear facilities but also potential terrorist attacks against key facilities or civil targets. In both contexts, biological dosimetry is an essential tool to estimate an actual absorbed dose. In such large-scale radiological scenarios the capacity of individual or few biodosimetry laboratories will be overwhelmed. As a consequence biodosimetry networking has been recognized as a sensible and important element of emergency response strategy. Now a European Network of Biodosimetry is on the way to being realized. **Beyond its use for emergency cases, the network with its capability to jointly analyse large numbers of samples will also be able to contribute to a wider field of radiation research, especially in the low dose range. In this regard, an interaction with radiation research platforms such as MELODI is envisaged.**

## Objectives

RENEB will establish a sustainable European network in biological dosimetry. A total of 23 organisations (listed in the heading) from 16 European countries will cooperate to guarantee the highest efficiency in the processing and scoring of biological samples for fast, reliable results implemented in the EU emergency management and the radiation research community.

## Link to MELODI



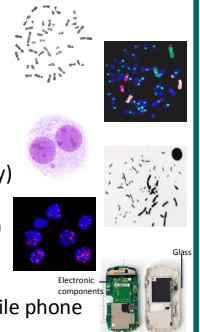
- **Contribution to low dose radiation research**
- **Contribution to the education and training program**
  - **Quality management & Quality assurance**
  - **long term training program**
- **Contribution to infrastructure**
  - **Standardized platform for biomarkers of exposure**

## Implementation

### WP 1 Operational Basis

**„Stand by mode” of reliable and proven biomarkers of exposure:**

- Conventional chromosome aberration assay
- Fluorescence in situ hybridisation (FISH-Assay)
- Micronucleus Assay
- Premature Chromosome Condensation (PCC)
- $\gamma$ -H2AX foci
- Electron Paramagnetic Resonance/Optically Stimulated Luminescence (EPR/OSL) on mobile phone



### WP 2 Basis for Developing the Network

**Horizon scanning for new techniques and partners:**

- Identification, validation and inclusion of new assays
- Identification, qualification and integration of new partners

### WP 3 Quality, Education and Training

**Assurance of efficient and reliable analysis and results:**

- Harmonisation of biodosimetry procedures
- Establishing an education program (members & non-members)
- Setting up a quality assurance & management program
- Development of a long-term training program based on regular training exercises according to international standards

### WP 4 Sustainability of the Network

**Assurance of legal certainty and integration to research platforms**

- Establishing a legal framework
- Establishing a network infrastructure
- **Linking RENEB to research platforms (e.g. MELODI, ERA)**

### WP 5 Dissemination

**Strengthening the awareness of RENEB:**

- Connecting RENEB to the European and international radiation emergency preparedness and response system
- Spreading the information of RENEB via modern communication