

# Multi-disciplinary biodosimetric tools to manage high scale radiological casualties MULTIBIDOSE

**Were they exposed to radiation?**

# multibiodose

In the event of a large scale radiological emergency, biosimetry tools that can provide timely assessment of radiation exposure to the general population, and enable the identification of those exposed who should receive medical treatment, will be essential.



A number of biosimetric tools are potentially available, but they must be adapted and tested for a large-scale emergency scenario. These methods differ in their specificity and sensitivity to radiation, the stability of the signal and speed of performance.

A large-scale radiological emergency can take different forms. Based on the emergency scenario, different biosimetric tools should be applied, and an approach with using several assays may be a method of choice in many circumstances.

The aim of this multi-disciplinary collaborative project is to analyse a variety of biosimetric tools and adapt them to different mass casualty scenarios.

It is envisaged that the project will result in an establishment of a biosimetric network that is fully functional and ready to respond in case of a mass casualty.



The MULTIBIODOSE project was launched on May 1st 2010, and it is planned to continue until April 2013. It is a Capability project funded within the 7th EU Framework Programme under Theme 10 - SECURITY. The project has total cost of approximately 4.7 million EUR with contribution from EU of approximately 3.5 million EUR.

The project is coordinated from Centre for Radiation Protection Research at University of Stockholm. The coordinator of the project is Prof. Andrzej Wojcik,

# The workpackages and their aims

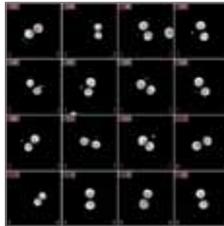
## WP1: Dicentric assay (lead by BfS)

To adapt the dicentric chromosome assay to mass casualty scenarios by validating: 1) the conventional assay, 2) automation and 3) telescoring; to organise training within each task.



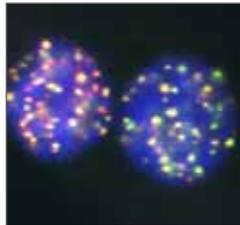
## WP2: Automated micronucleus assay (lead by UGent)

To validate and adapt the automated peripheral blood lymphocyte micronucleus assay to mass casualty scenarios and to organise training.



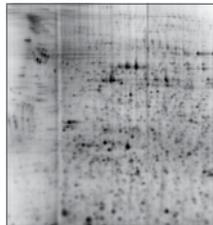
## WP3: Gamma-H2AX assay (lead by HPA)

To optimise and validate the  $\gamma$ -H2AX assay as a rapid triage device for a mass casualty scenario. To perform training and pursue commercialisation.



## WP4: Skin speckle assay (SSA) and blood serum protein assay (SPA) (lead by IRSN)

To identify and validate a dose detection assay based on radiation-induced optical changes of skin (SSA) and changes in the level of selected serum proteins (SPA).



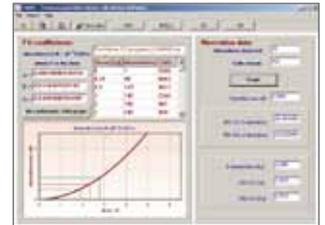
## WP5: Electron paramagnetic resonance/optically stimulated luminescence (EPR/OSL) (lead by ISS)

To develop and validate EPR and OSL methods on components of portable electronic devices (PED: mobile phones, mp3 players, etc.) for dose assessment in a mass casualty scenario and to organise training.



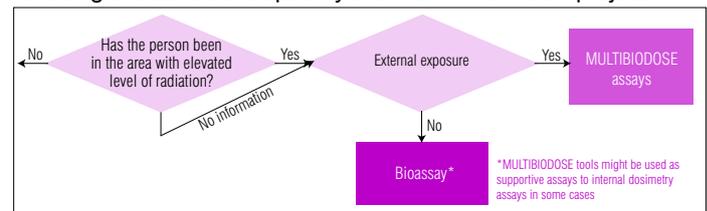
## WP6: Statistical software package (lead by HPA)

To produce a software package for integrated statistical analysis of data from each of the assays described in WP1 to 5. It is intended that the software will be freely distributed.



## WP7: Guidance for using MULTIBIODOSE tools in emergencies and dissemination of results (lead by NRPA)

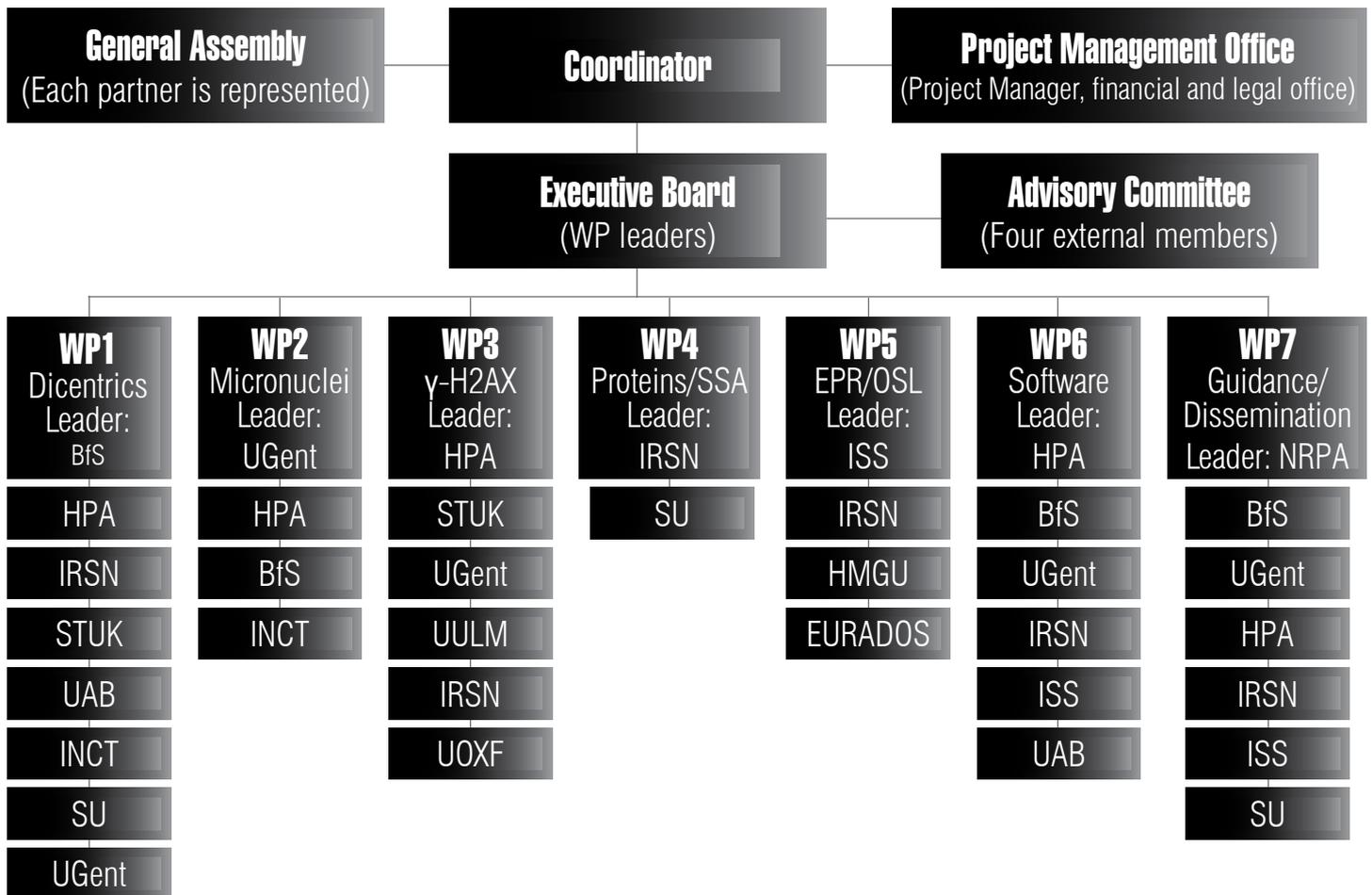
(1) To provide information on the project and its results to the emergency preparedness organisations and radiation dosimetry community across Europe, and (2) to develop operational guidance for using the tools developed by the MULTIBIODOSE project.



Example of one of the decision trees to be developed in the operational guidance for using the tools developed by the MULTIBIODOSE project

## WP8: Project management (lead by SU)

# Project organisation chart



# What happens in the project?

## Kick-off meeting

The two-day kick-off meeting took place in Stockholm on 17th and 18th May 2010. The meeting gathered 27 participants representing consortium members' organisations, the Advisory Committee, administrative support from the University of Stockholm, and the project officer from EU's Research Executive Agency (REA).

On the first day all of the Work Packages (WP) and the management of the project were presented. The day was concluded with the dinner hosted by Radiation Protection Research Centre at University of Stockholm.

On the second day th Work Package specific meetings and General Assembly of the project was held.



## Presentation of the project in international meetings

- European Radiation Research conference 5th-9th September 2010, Stockholm
- EPRBiodose conference 10th-14th October, Mandelieu La Napoule (France)



## Consortium Member institutions:



Stockholm University (SU), Sweden



Bundesamt für Strahlenschutz (BfS), Germany



Universiteit Gent (UGent), Belgium



Health Protection Agency (HPA), United Kingdom



Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France



Istituto Superiore di Sanità (ISS), Italy



Norwegian Radiation Protection Authority (NRPA), Norway



Radiation and Nuclear Safety Authority (STUK), Finland



Westlakes Scientific Consulting (WSC), United Kingdom\*



Universitat Autònoma de Barcelona (UAB), Spain



Institute of Nuclear Chemistry and Technology (INCT), Poland



Helmholtz Zentrum München (HMGU), Germany



Bundeswehr Institut für Radiobiologie in Verbindung mit der Universität Ulm (BIR), Germany



Gray Institute for Radiation Oncology and Biology, University of Oxford (UOXF), United Kingdom



European Radiation Dosimetry Group (EURADOS), European network registered in Germany

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\*) Former member. In August 2010 the Westlakes Research Institute ceased to exist and, consequently, left the consortium.