

# **OPERRA Workshop**

## **Integrative Biology and Systems Biology**

**Date:** Monday, **January 12, 2015**, 14:00 – Tuesday, **January 13, 2015**, 17:30

**Place:** Helmholtz Zentrum München, Neuherberg, Germany

**Task 2.6: Integrating knowledge from non-radiation research**

**Subtask 2.6.5: Systems Biology in Radiation Research**

### **Background**

As part of the activities of the HORIZON2020 framework programme, the European Union (EU) is setting up a European Joint Programme (EJP) in radiation protection to promote the common programming and implementation of Member States research activities. The EJP's scientific content will be laid down in Strategic Research Agendas (SRAs) for a number of EU-funded research networks under the administrative umbrella structure OPERRA (Open Project for the European Radiation Research Area; Website under construction, information accessible at MELODI website, see below) for further integration and definition of research priorities in Europe. OPERRA has the capacity to administer future calls for research in radiation protection on behalf of the European Commission.

Under OPERRA, the three networks ALLIANCE, NERIS and EURADOS address important topics in radioecology, emergency preparedness and dosimetry.

The fourth network, MELODI (Multidisciplinary European Low Dose Initiative, [www.melodi-online.eu](http://www.melodi-online.eu)), is concerned with assessing the health effects of ionizing radiation at low doses. MELODI was founded in 2010 as a registered association under French law. The purpose of MELODI is to propose research priorities for Europe in this field of competence, to establish and update a SRA addressing health risks at low doses, to contribute to the dissemination of knowledge, and to liaise with international partners like WHO and IAEA.

The objective of OPERRA task 2.6 is the exploration of expertise gathered in other fields of research, not directly related to radiation protection research, with a view to strengthening the exchange and integration of knowledge between the radiation and non-radiation research communities. For this, task 2.6 will organize small workshops with scientists from outside and inside the radiation community in order to identify knowledge and infrastructures that can be applied to radiation research, thus optimizing resources for the future. By bringing together relevant experts in thematic workshops, a roadmap will be developed for the integration of knowledge in epidemiology, bioinformatics, animal models, biomarkers, integrative biology and modelling from outside the radiation R&D field that will support on-going efforts to better understand mechanisms of radiation-induced health effects. This will be achieved through six complementary subtasks. Subtask 2.6.5 includes the organisation of a workshop on "Integrative biology and systems biology".

Two sessions of this workshop will be jointly held with the OPERRA workshop on „Modelling of pathogenesis“ organised by Dr Markus Eidemüller from the Institute of Radiation Protection (ISS). The Institute of Radiation Protection and ZYTO are members of the Department of Radiation Sciences at the Helmholtz Zentrum München. Both workshops precede the OPERRA periodic meeting on 14-16 January on the same campus.

As a result of these workshops, a "Roadmap for integrating knowledge from non-radiation research" will be prepared that will support on-going and future efforts to better understand mechanisms of radiation induced health effects.

## Preliminary programme

### Monday, January 12

#### **Session 1            14:00 - 15:45**

##### **Challenges in data-driven radiation biology: The biologist's perspective**

Talk 1:     14:00 - 14:45

Talk 2:     14:45 - 15:30

Discussion: 15:30 - 15:45

#### ***Coffee Break        15:45 - 16:15***

#### **Session 2            16:15 - 18:00**

##### **What does epidemiological risk-modelling want from biology: The risk modellers perspective**

Talk 3:     16:15 - 17:00

Talk 4:     17:00 - 17:45

Discussion: 17:45 - 18:00

#### ***Dinner at Bavarian Restaurant***

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### Tuesday, January 13

#### **Session 3            09:00 - 10:45**

##### **What data can we generate/analyse in order to provide results being useful for epidemiologic risk-modellers**

Talk 5:     09:00 - 09:45

Talk 6:     09:45 - 10:30

Discussion: 10:30 - 10:45

#### ***Coffee Break        10:45 - 11:00***

#### **Session 4            11:00 - 12:30**

##### **Methods for the inference of molecular interaction networks from high-dimensional data**

Talk 7:     11:00 - 11:45

Talk 8:     11:45 - 12:30

Discussion: 12:30 - 12:45

#### ***Lunch Break        12:45 - 13:45***

**Session 5            13:45 - 15:30**

**Challenges: Intra-tumour heterogeneity and how to address the time aspect in data**

Talk 9:        13:45 - 14:30

Talk 10:      14:30 - 15:15

Discussion: 15:15 - 15:30

***Coffee Break        15:30 - 16:00***

**Session 6            16:00 - 17:30**

**Summary discussion, definition of research priorities**

***End of Workshop***

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**List of Speakers**

- Mark van de Wiel VUMC Amsterdam
- Steffen Sass ICB HMGU
- Nikola Müller ICB HMGU
- Adriana Pitea ZYTO/ICB HMGU
- Kristian Unger ZYTO HMGU
- Christian Kaiser ISS HMGU
- Markus Eidemüller ISS HMGU
- Heiko Enderling Moffitt Cancer Center, Tampa, USA
- Marko Krznaric Imperial College London