

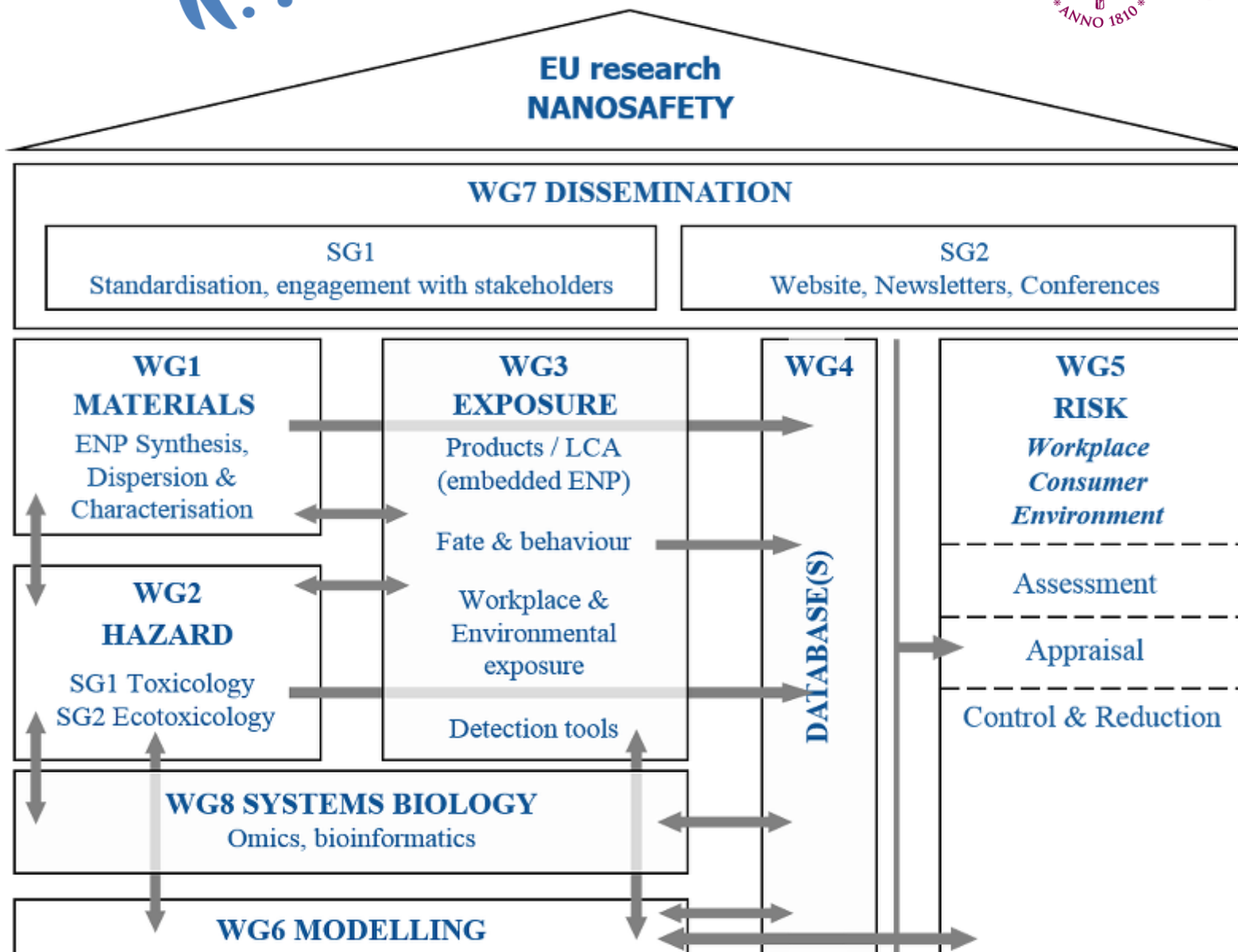


**Karolinska  
Institutet**

# **WG8: Systems Biology**

**NanoSafety Cluster Meeting  
Syracusa, Italy – October 7, 2014**

**Prof. Bengt Fadeel, MD, PhD, ATS  
Institute of Environmental Medicine  
Karolinska Institutet, Stockholm, Sweden  
Adjunct Prof., University of Pittsburgh, Pittsburgh, PA  
Visiting Prof., University of Rome 'Tor Vergata', Rome, Italy**



## **WG8 Systems Biology**

- WG8 seeks to bring together nanosafety researchers – including toxicologists and ecotoxicologists, ‘omics’ and systems biology experts, and material scientists – in order to develop and promote best practices for systems biology approaches in nanosafety research
  - Chair: Prof. Bengt Fadeel (FP7-NanoSolutions), Karolinska Institutet; Co-Chair: Prof. Mark Viant (FP7-NanoMILE), University of Birmingham, UK
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## WG8 objectives

- Best practice recommendations for systems biology approaches in nanosafety research, achieved through the organization of educational training courses, lectures and workshops.
  - Development of protocols for the analysis of microarray and other OMICS data in nanotoxicity studies, which ensure correctness and reproducibility of results.
  - Development of computational tools for the identification of activated pathways from transcriptomics, proteomics or metabolomics assays.
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## WG8 recent activities

- Systems Biology session in 7<sup>th</sup> International Nanotoxicology Congress (April 2014, Antalya, Turkey) with one NANOSOLUTIONS speaker (D. Greco) and one NANOMILE speaker (F. Falciani) plus one US speaker (B. Thrall). Chair: B. Fadeel.



## **WG8 recent activities**

- Organization of 1-week course on systems biology «Toxicogenomics, high-throughput data & network analysis in NANO» (September 2014, Aveiro, Portugal), with speakers from SUN (M. Amorim), MARINA (J. Scott-Fordsmand), NANOSOLUTIONS (B. Fadeel), and MODERN (C. Roca). Course organizer: M. Amorim, FP7-SUN.
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- **Toxicogenomics, high-throughput data & network analysis in NANO, Sept. 2014, University of Aveiro**

## **WG8 future activities**

- Systems Biology session at the «Nanosafety Forum for Young Scientists» (9 October 2014, Syracuse): H. Bouwmeester, M. Driessen; chair: B. Fadeel
  - Conference on «Systems Biology in Nanosafety Research» 9-10 November 2015, Nobel Forum, Karolinska Institutet, Stockholm. Organized by NANOSOLUTIONS (B. Fadeel, WP6; J. Kere, WP10) with participation from NANOMILE (M. Viant, co-chair, WG8) and other members of WG8.
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## Conference 'Systems Biology in Nanosafety Research'

- Nobel Forum, Karolinska Institutet, November 9-10, 2015;
- Organized by FP7-NANOSOLUTIONS [with input from WG8]

## **WG8 workplan**

- **Standardization activities aimed at good working practices in systems biology in nanosafety research; sharing and promoting the use of consistent protocols for omics studies, collect SOPs.**
- Discussion: important to use relevant model [in vitro and in vivo] systems, and well-characterized nanomaterials; systems biology vs. risk assessment
- Need to generate data compatible with existing data, to enable modeling [cf. systems biology: to produce a model]; high-throughput screening (HTS) to generate hypotheses; cf. ‘adverse outcome pathways’ (eg. at JRC)



WG8 meeting at Gran Cafe Del Duomo, Syracuse