WG8: Systems Biology – perspectives on EU networking

NanoSafety Cluster Review Meeting – Dec 2014

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NanoSafety Cluster

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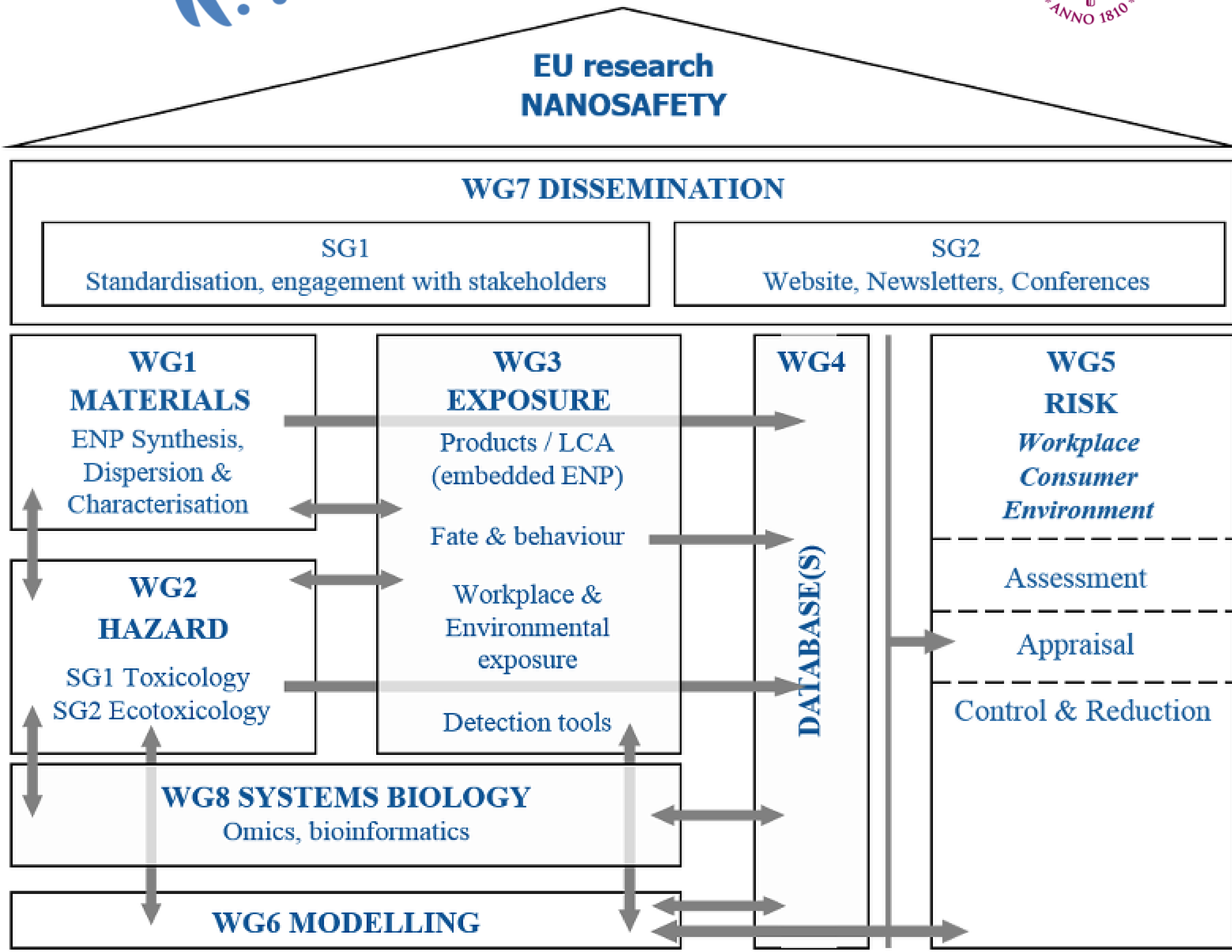

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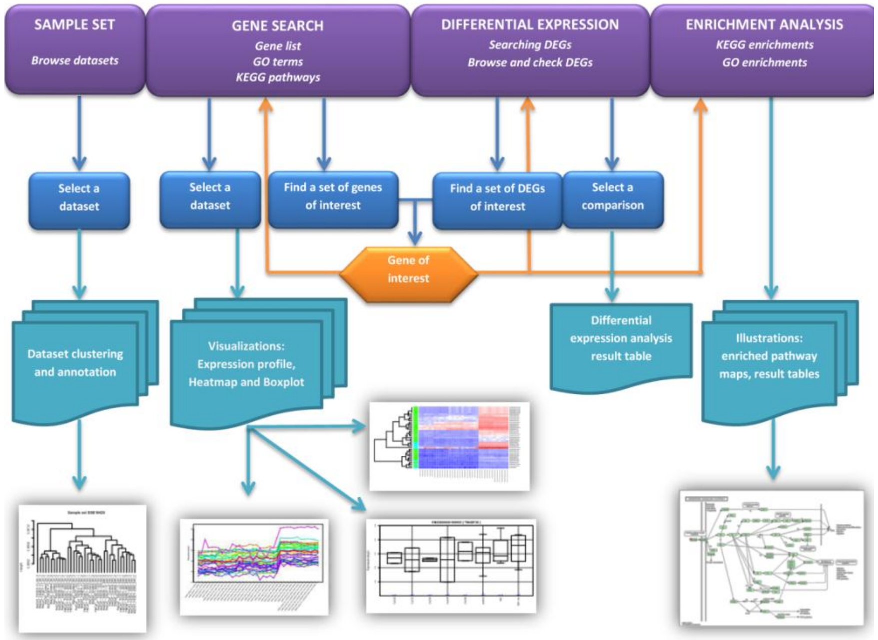
- US-EU collaborations on *in vitro* and *in vivo* toxicogenomics, and development of a publically available transcriptomics database, NanoMINER:



[Kong et al. PLoS One. 2013 Jul 12;8(7):e68414]

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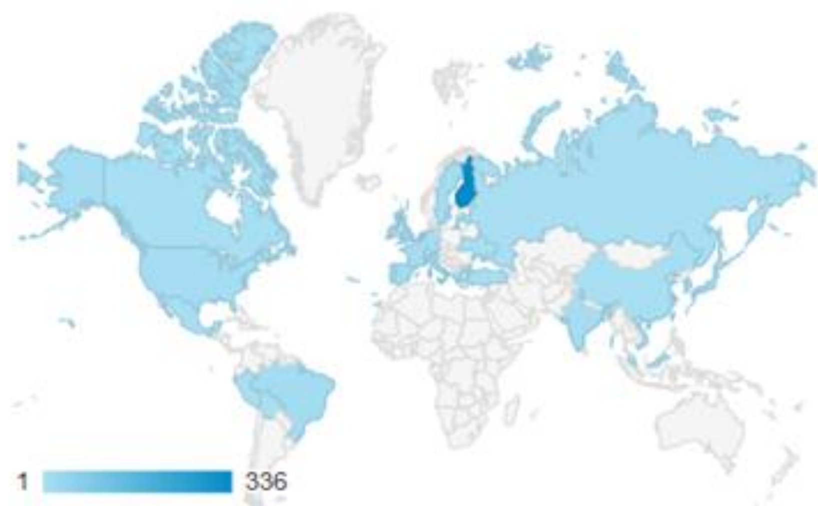

NanoMINER DB: used 535 times to date [50 registered users]

[Reija Autio, personal communication, Sept. 2014]

- Systems biology approaches are now emerging in many different nanosafety projects; at the inaugural WG8 meeting, representatives of the following projects were present: NanoSolutions, NanoReg, SUN, MARINA, NanoMILE, QUALITY-NANO, NanoValid, NanoFutureNeeds, NanoBEE, FABLE, GuideNano, NanoFate......more to come.

WG8 Systems Biology

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

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WG8 recent activities

- Systems Biology session at 7th 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.

7. INTERNATIONAL NANOTOXICOLOGY CONGRESS

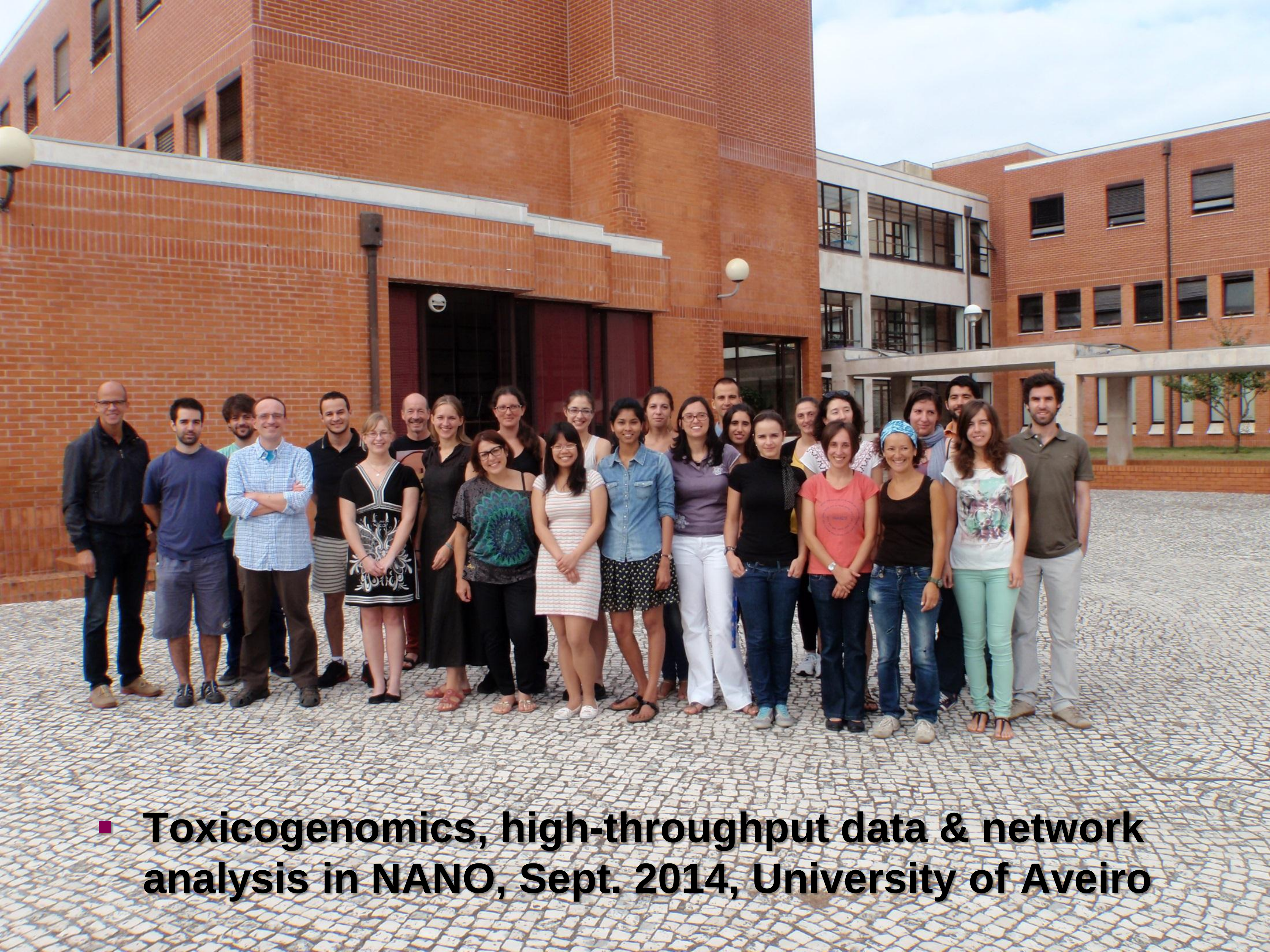
nanoTOX2014

April 23 - 26, Antalya

WG8 recent activities

- Organization of 1-week course on «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), MODERN (C. Roca). Course organizer: M. Amorim, FP7-SUN.

- Systems Biology session at the «Nanosafety Forum for Young Scientists» (9 October 2014, Syracusa) (with COST Action MODENA): H. Bouwmeester, and M. Driessen; chair: B. Fadeel.



- **Toxicogenomics, high-throughput data & network analysis in NANO, Sept. 2014, University of Aveiro**

WG8 future activities

- 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.

NANOSOLUTIONS

Conference ‘Systems Biology in Nanosafety Research’

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

Personal reflections

- The EU nanosafety cluster has been very good for networking (within the nanosafety community), but:
- we need to focus our joint efforts on the right issues, that is: pre-competitive issues, including best practices, best use of resources, and we need to actually implement lessons learned from all projects.
- Suggestion: rotate the chairpersons of each WG, perhaps every 2 years, and establish clear set of aims for each WG and aims for the whole cluster; disseminate our views, guidance documents, etc in scientific literature and via OECD, etc and not ‘only’ on cluster website or internal newsletter, or via SRA.

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editorial

Join the dialogue

The nanotoxicology community should implement guidelines on the types of information that are required in their research articles to improve the quality and relevance of the published papers.

- "….the [EU NanoSafety] Cluster is currently putting together a "chart of state-of-the-art methodologies in nanosafety research", and the issue of whether a set of minimal requirements for materials characterization can be defined has been taken on board." [Fadeel B, Savolainen K. Broaden the discussion. *Nat. Nanotech*. 2013 Feb;8(2):71; with contributions from members of the European NanoSafety Cluster: Derk Brouwer, Kenneth Dawson, Andrea Haase, Thomas Kuhlbusch and Ulla Vogel]…!

Nanosafety Forum for Young Scientists

Syracuse - Sicily, Italy, October 2014

The meeting was a success: a very nice way of engaging the next generation!

Personal reflections

- In the past 5 years, the EU nanosafety cluster has gone from being a ‘voluntary activity in a mandatory way’, to a ‘mandatory activity in a voluntary way’, that is: we agree that all new projects should join the cluster and discussions are often very constructive, but the follow-up and the implementation is not so good, possibly because ‘this [cluster work] is not funded’ or ‘we are too busy’; hence, the lack of coherence in the way that nanosafety research is done persists [Shrurs & Lison, Nat Nanotech. 2012] and may even be increasing [Krug, Angew Chem. 2014]: so, we need to do the work and learn the lessons, we will all benefit from this in years to come.