WP4: Toxicity mechanisms

The aim of the NanoToxClass project consists in the development of criteria for grouping NMs on the basis of identification of suitable, measurable and predictive toxicological endpoints and of decisive NMs physico-chemical parameters. One major points of this project consists in the integration of different omics approaches. Omics approaches are promising for acquiring comprehensive datasets that might be useful for the development of grouping scenario.
In Work package 4 (WP4) we will use different Omics techniques (i.e. transcriptomics, proteomics and metabolomics) to investigate the toxicity mechanisms and to study cell signal transduction pathways involved in this toxic response. The Omics data will enable a global overview of the biological interactions and identification of common cellular pathways disturbed by sets of NMs. The omics approach will allow the identification and selection of NMs signatures suitable for grouping based on alterations of biological functions which are often not translatable to observable established toxicity endpoints. We will study lung tissues from in vivo studies and samples from in vitro lung-related cell line.

WP4 is structured into four tasks:

- Task 1 - Transcriptomics
- Task 2 - Proteomics
- Task 3 - Metabolomics
- Task 4 - Analyse alterations of signal transduction pathways

All data will be forwarded to WP6 for overall analysis and correlation. In order to obtain useful results, one partner (BfR) will produce samples for all omics approaches and samples will be distributed to all partners for analysis.