***In vitro* assay platform**	**Category: D. *In vitro* Toxicity studies** **Institute: VITO** **Location: Industriezone Vlasmeer 7, 2400 Mol, Belgium** **Contact Details of Technology Expert:** **Inge Nelissen** **Phone: +32 (0)14 335211** **Fax: +32 (0)14 582657** **E-mail: inge.nelissen@vito.be**

Short technology description/Overview *(approx 300 words)*:

A platform of *in vitro* models and methods to assess nanomaterial's biological activity available:

- **For characterization of nanoparticles' human health impact** *in vitro* cell culture systems (cell lines, primary cells, 3-dimensional tissue cultures, or air-lifted cultures) are used to assess various biological endpoints, such as cell growth, apoptosis, oxidative stress, DNA damage (micronucleus assay, comet), immunological response (surface marker expression, cytokine release, gene expression), and (fluorescent) particle uptake. Zebrafish embryos are used for assessment of developmental and neurological effects (behavioral studies).
- To assess **environmental impact of nanomaterials** acute and chronic tests (algae, daphnia magna, different life stages of fish) are performed using OECD testing guidelines.

State-of-the-art laboratory equipment is present for performance of standard tests according to OECD principles of Good Laboratory Practice (GLP) and Good Cell Culture Practice (GCCP).

Main Features (Equipment Capabilities):

Several state-of-the-art cell culture laboratories, acclimatized rooms and cultivation rooms are in place. Laboratories are equipped with glove boxes, biosafety cabinets class I, II and III, and fume cupboards to ensure safe handling of nanomaterials. Supporting equipment includes:

- Scanning fluorescence microscope (Zeiss Axioplan 2 MOT) with automated slide feeder (10X8 slides) and image analysis (MetaSystems) for genotoxicity assays (see image below)
- Inverted fluorescence microscope with time lapse (Olympus IX81)
- Multiplate readers for absorbance, fluorescence and luminescence
- Flow cytometer FACSCalibur with two lasers, FACS loader for 40 samples and CellQuest Pro acquisition and analysis software (Becton Dickinson)
- Luminex^{100} system with StarStation software (Applied Cytometry Systems)
- VITROCELL Systems 6 PT-CF module with quartz microbalance (4x24 mm cell culture insert positions)
- NS500-HSGFZ nanoparticle characterization system (Nanosight), with zeta potential and DLS capability

Typical Samples & Images:

Any further Information: