Gene expression platform	**Category:** **D. Particle Exposure assessment** **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)*:

The laboratory is equipped for gene expression studies. RNA is extracted from biological samples (and cDNA synthesized and fluorescently labeled) using optimized protocols derived from commercial extraction kits. Quality control is performed using UV-spectrometry using Nanodrop technology and capillary electrophoresis with fluorescent detection using the Agilent 2100 BioAnalyzer.

The core of our microarray platform is Agilent technology. We routinely use Agilent's 4X44K arrays for transcriptomics studies in human, mouse, rat and zebrafish samples. However, we have the flexibility to analyze other microarray formats and applications. We have experience with both single- and dual-color applications.

Gene expression analysis can also be performed using real-time PCR performed in 96- or 384-well plates. We routinely use Sybr Green and Taqman technology.

Main Features (Equipment Capabilities):

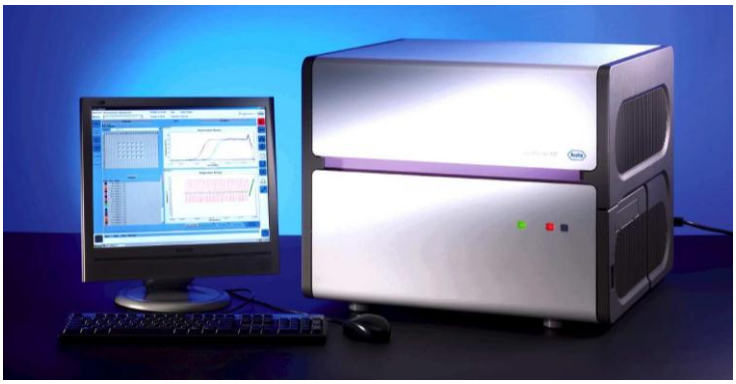
- RNA isolation labs with biosafety level 2 laminar flows and chemical hoods
- Homogenizers (Ultra-Turrax (IKA), Polytron (Kinematica) and Silent Crusher S (Heidolph)) and basic instruments for sample preparation
- RNA quality control: FlashGel (Lonza), NanoDrop spectrophotometer (Isogen), 2100 Bioanalyzer (Agilent)
- Tecan HS4800Pro Hybridization station for 4X44K arrays
- Agilent Hybridization oven and chambers for other microarray formats
- Agilent 2 µm-high resolution DNA microarray Scanner
- Agilent Feature Extraction Software for flagging, filtering and data normalization
- ArrayTrack, Genespring, R/Bioconductor , MultiExperiment Viewer and Ingenuity Pathway Analysis software tools for statistical analysis
- 96-well thermal cyclers (Eppendorf Mastercycler and Veriti Thermal cycler) for cDNA synthesis
- Two multi-colour icycler devices (Biorad)
- Lightcycler 480 (Roche) with 96- and 384-well block
- Qbase Plus software for analysis of real-time PCR data

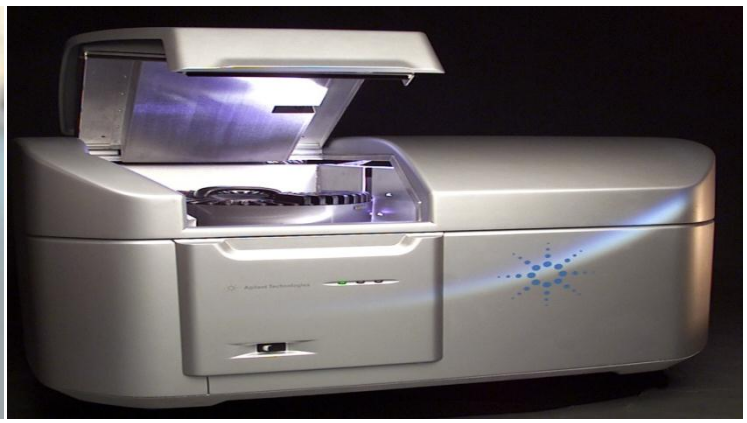
Typical Samples & Images:

RNA extraction from cultured cells, tissue, blood, saliva, zebrafish embryos

RNA sample requirements:

- Same RNA isolation method for all samples
- Bioanalyzer RNA Integrity Number (RIN) > 7 (optional for Real-time PCR)
- Nanodrop 260/280 between 1.8 - 2.1 and 260/230 > 1.2
- Minimal RNA quantity for microarray: 200 ng, for real-time PCR: 1 µg





Any further Information: