**Metafer Slide Scanning System**

**Equipment:** Metafer Slide Scanning System version 3.2.

**No. of Equipment: IEM3**

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**Equipment Description**

**Description of equipment:**

The automated scanning system Metafer 4, Version 3.2.1, is a set of motorized Axio Imager Z1 microscope and software for scoring of binucleated cells and metaphases.

Specifications and technical features:

 Fluorescent and light microscopy

 Unattended scoring of binucleated cells

 Automated analysis of micronuclei

 Unattended scoring of metaphases

 Archiving of findings in image gallery

*Axio Imager Z1 microscope.*

 Producer: Carl Zeiss, Germany

 Type: Axio Imager Z1

 Objectives: A. Plan-APOCHROMAT 10x/0.45

 B. EC Plan-NEOFLUAR 63x/1.25 oil

 Individual filters: DAPI, FITC, Cy-3

 Control: TFT display

 Stage capacity: 8 slides

Source of light: Burner Mercury – HBO 100W/2

*Software for scanning of micronuclei and their analysis.*

 Producer: MetaSystems, Germany

 Software: MicroNuc, Version 3.8.6 for scanning of binucleated cells

 Program configuration: Flexible classifier setting

 Final magnification: 100x

 Identification of results: Yes with correction

*Software for scanning of metaphases and their magnification.*

 Producer: MetaSystems, Germany

 Software: A. MSearch for metaphase scanning (100x - DAPI),

 B. AutoCapt for object magnification (630x – DAPI, FITC, Cy-3)

 Final magnification: 100x or 630x

 Identification of results: Visual control of results

**Specification of expertise relevant to NanoEnviCz workpackages:**

**WP3**a,d,f,g,h, **WP4**a,b, **WP6**a,d, **WP7**a,c,e,h,i, **WP9**a,b,c

**Detailed description of expertise**

**Please, specify the main research topics connected with equipment**:

Automated scanning and detection of micronuclei in binucleated cells in peripheral blood lymphocytes or cell lines.

**Please, specify the secondary research topics connected with equipment**:

Detection and magnification of metaphases for future analysis of individual types of structural and numerical chromosomal aberrations in peripheral blood lymphocytes or cell lines.

**Keywords describing research area:**

Cytogenetic, Micronuclei, Chromosomal damage, genetic toxicology

**Competence**

**Relevance for applied and industrial research:**

Automated analysis of chromosomal damage caused e. g. by nanomaterials, complex mixtures, individual chemicals or air pollution.

Assessment of toxicological consequences of using nanotechnology

**Relevance for fundamental studies:**

Reproducible measurement of genotoxic effects (DNA damage) after exposure to nanomaterials or to other chemicals.