**Fluorescence Microscope**

**Equipment:** Fluorescence microscope Zeiss Axioskop

**No. of Equipment: IEM4**

**Responsible coordinator:** Dr. Andrea Rössnerová, PhD.

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**Equipment Description**

**Description of equipment:**

A set of fluorescent microscope and computer equipped with ISIS color fluorescence and FISH imaging system for analysis of chromosomal aberrations and fluorescently stained biological materials.

Specifications and technical features:

 Light microscopy (LI-M)

 Fluorescent microscopy (FL-M)

 Recording of findings in various magnifications

 Image processing

Archiving of findings in image gallery

*Fluorescent microscope.*

 Producer: Zeiss, Germany

 Type: Axioskop

 Objectives: A. Plan-NEOFLUAR Zeiss, 100x/1.30 OilIris

 B. Plan-NEOFLUAR Zeiss, 20x/0.50

 C. SPlan 10 Olympus, 10x/0.30

 Individual filters: DAPI, FITC, TRITC, Cy3

 Triple-band pass filter: DAPI-FITC-Texas Red

 Camera: CCD camera JAI M300

 Source of light: Burner Mercury – HBO 103W/2 (F)

*ISIS software.*

Producer: MetaSystems, Germany

Version: 4.4.16

Microscope compatibility: With FL-M equipped with a trinocular photo/TV tube

Fluorochrome setting: DAPI, FITC, TRITC

Applications: Research and routine diagnostics

Unrivalled user interface:Tool for routine color fluorescence and FISH imaging

Program configuration: Definition for staining specific configurations

Support of common file types: .pdf, .doc, .jpg, .bmp, .tiff.

Archiving: MetaArchive

Upgradability: Integration of Isis with the automatic fluorescence slide scanning system Metafer

**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**:

Analysis of individual types of structural and numerical chromosomal aberrations (translocations, reciprocal translocations, insertion, deletions, dicentric or tricentric chromosomes, duplications, acentric fragments, trisomy) in metaphases cells.

Chromosome counting.

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

Analysis of micronuclei in binucleated cells in DAPI stained slides.

Analysis of centromeric signal in micronuclei (identification of chromosomal breaks and losses).

General analyzing of fluorescently stained biological materials (e.g. peripheral blood lymphocytes, cell lines).

**Keywords describing research area:**

Cytogenetic, FISH analysis, Micronuclei, Immunostaining, Genetic toxicology

**Competence**

**Relevance for applied and industrial research:**

Versatile laboratory equipment for microscopic analysis of DNA damage in human biomonitoring studies or cell lines studies focused on the investigation of the effect of various exposure (air pollution, broad spectrum of chemicals, complex mixtures, nanoparticles etc.).

**Relevance for fundamental studies:**

Studying of DNA damage (chromosomal aberrations).

Cytogenetics and biomonitoring studies.

Immunostaining methods – visualization (DNA repair analysis).