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**Basic Information:**
Course Title: DNA-replication, RNA-transcription, protein translation and cell division-morphological aspect
Lecturers:

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Total Teaching Hours: 30

**Annotation** (up to 150 words)
The course aims to expand knowledge of the PhD students / biologists, doctors and others / about the possibilities of electronic microscopy and molecular morphology as a tool for visualization of the fundamental biological processes in the cell - DNA replication, RNA transcription, translation of proteins and cell division. An accent will be given to the peculiarities of the structure and functions of all cellular organelles involved in these processes. Prepared material for illustration is the result of our long-standing research presented as publications in international journals. PhD students will become familiar with the methods used in these studies - these are the most modern morphological methods routine in a small number of leading European laboratories such like the „Spread“ Mieler technique for visualization of DNA and RNA, electron microscopic autoradiography, imunohistochemistry and others. It is expected this training course to be complementary to the notion of fundamental biological processes in the cell, obtained from university education and to benefit the completion of the general biological culture of the students.

**Course content** (brief description by topics or modules)
Topic / Module 1: General introduction to the device and principle of operation of an electron microscope.
Topic / Module 2: Introduction to the methodologies related to DNA replication and RNA transcription: Miller spread technique, EL-MI autoradiography, immunogold labeling.
Topic / Module 3: Final interview and summary review of acquired knowledge and skills.

**Teaching and assessment methods**
Theoretical and practical activity as described in the modules.

**Competencies acquired as a result of training** (3–5 points)
The information obtained will encourage molecular biologists, biochemists, and microbiologists to refine their results with such molecular-morphological methods.

**Literature:**
Molecular biology of the gene, Watson James, 2014, Internet Archive – free download, 828 pgs
Molecular biology of the cell, Bruce Alberts, 2015, Internet Archive – free download, 989 pgs