

Scientific supervisor	
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Department	Department of Medical Physics
Laboratory	Cell culture laboratory
Group webpage	http://www.zfm.if.uj.edu.pl/en_GB/grupy-badawcze/laboratorium-cytometrii-i-spektroskopii-nanoobiektow
Proposed research topic	
<i>2D and 3D cell cultures</i>	
<p>The laboratory measures exosome and extracellular vesicle (EV) samples from cell cultures and body fluids by fluorescence flow cytometry and tunable pulse conductometry.</p> <p>The laboratory is equipped with the following devices:</p> <ul style="list-style-type: none"> • ImageStream Luminex flow cytometer • Sorvall ultracentrifuge with angular rotor; Micro-Ultracentrifuge Sorvall mX150 +; Thermo Scientific • Izon particle size analyzer (qNano) • Izon cell size analyzer (qMikro) <p>The internship plan provides for:</p> <ol style="list-style-type: none"> 1. Getting to know the theoretical basics of performing cytometric and flow resistance measurements, 2. Getting to know the rules of working with biological and clinical material 3. Getting to know the techniques of exosome preparation by filtration and ultracentrifugation methods 4. Performing experiments and measurements depending on the project being carried out: <ul style="list-style-type: none"> • Concentration of urine samples or culture medium by filtration • Differential centrifugation • Ultracentrifugation • Determination of the number of exosomes in a sample • Characteristics of exosome-specific antigens • Evaluation of the extracellular vesicles size distribution <p>At the end of the internship, the student prepares a report on the measurements taken.</p>	
Main research tool	
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Additional requirements to the candidate	
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Possibility to continue student internship in the form of:	
Diploma thesis (master's or bachelor's degree)	X
PhD study	X