(online) Kick of meeting – 23.02.2021

Agenda

11:00 – 11:15 Participants connect to the online platform

11:15 – 12:20 Opening of the meeting (Małgorzata Lekka)

A general description of the projects aims and objectives, reporting, indicators of project realization, administration, etc. (first report: 15.03.2021, first verification of 70% funds spent, next in October 2021).

12:20 – 13:00 Project member presentations on their skills and expertise

Employed post-docs will present their skills and expertise

12:20 – 12:30 Ingrid Haga Øvreeide (NTNU)
12:30 – 12:40 Marcin Luty (IFJ PAN)
12:40 – 12:50 Renata Szydlak (IFJ PAN)
12:50 – 13:00 Joanna Zemła (IFJ PAN)

13:00 – 13:30 Lunch break

13:30 – 14:45 Project task presentations and discussion

First year of the project realization

*A. Microfluidic device design and production – **task 1***

Duration: 1 – 5 months; leading partner: NTNU

Task description: Within this task, the NTNU partner with the IFJ PAN partner will design and produce the microfluidic system tailored towards the needs of cancer cell sorting used for AFM-based determination of mechanical properties.

13:30 – 13:45 – Ingrid Haga Øvreeide (NTNU) presentation – plans how to realize this tasks (10 min + 5 discussion)

*B. Preparing surfaces selective capturing sorted cells – **task 4***

Duration: 1 – 6 months; leading partner: IFJ PAN

Task description: To prepared surface for selective capturing of sorted cells, a microcontact printing technique will be applied. Functionalized glass or plastic surface will be printed with chosen lectins or antibodies. The choice of the proper molecule will be dependent on the surface properties of the studied cells.

13:45 – 14:00 – Joanna Zemła presentation – plans how to realize this tasks (10 min + 5 discussion)

*C. Characterization of invasive phenotype of studied cells **– task 9***

Duration: 3 – 30 months; leading partner: IFJ PAN

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Task description: Within this task, several cellular characteristics of the studied cells will be obtained. We plan to quantify the migratory phenotype of cells, the organization of actin and microtubular cytoskeletal network, to estimate the expression of characteristic antigens and carbohydrate moieties of cell surface. It is planned to carry out single-cell force spectroscopy to quantify specific adhesive properties of single cells. The measurements will be carried out between a cell and chosen molecule used to immobilize the surface (antibodies or lectins). All these studies aims to achieve improvement in selective sorting and capturing of a specific cell population. This task will be realized during the whole project duration to continuously characterize the studied cells.

14:00 – 14:15 – Marcin Luty presentation – plans how to realize this tasks
(10 min + 5 discussion)

D. Verification of biological activity of immobilized molecules ***– task 5***

Duration: 6 – 8 months; leading partner: IFJ PAN

Task description: This task will be devoted to verify whether molecules (antibodies or lectin) immobilized on glass or plastic surfaces by microcontact printing are biologically active. Fluorescent microscopy will be applied using specific monoclonal antibodies combined with a binding (interaction) inhibition approach.

14:15 – 14:30 Renata Szydlak presentation – plans how to realize this tasks
(10 min + 5 discussion)

E. Optimization of properties of designed microfluidic system ***– task 2***

Duration: 5 – 15 months; leading partner: NTNU & IFJ PAN

Task description: Within this task, two participating institutions will combine their effort to optimize the properties of the microfluidic system to gain effective sorting of cells. First, hydrogel beads with tunable mechanical properties will be used as a model material, applied to understand how cells behave during flow, i.e. to understand how generated shear forces change their mechanical/rheological properties and how it is linked with the sorting effectiveness of beads/cells characterized by distinct mechanical properties.

14:30 – 14:45 Bjorn Stokke - discussion

14:45 – 15:45 Discussion on:
– common papers
– common experiments, travel (Covid 19 related issues), etc.
– project webpage
– meetings, seminars?

15:45 – 16:00 Tasks foreseen for the 2nd and 3rd year of the project realization

END of the kick of meeting