



RESIM

FROM RESPONSIVE SUSPENSIONS
TO INTELLIGENT MATTER

7-9 JULY 2026 — RIGA, LATVIA

MICROFLUIDICS AND EMERGING
MICRO/NANOTECHNOLOGIES FOR BIOMEDICINE

FINAL PROGRAM



Program - 7 July 2026

Section 1 - Mechanobiology and rheology of biosuspensions

8:30-9:00	Registration + coffee
9:55-10:10	Welcoming words
10:10-10:50	Plenary 1: Lars Kaestner <i>The Mechanobiology of Red Blood Cells: From Basic Science to Translational Applications</i>
10:50-11:10	Talk 1.1 - Viesturs Sints <i>Cell surface shear stress measurements in Organ-on-a-Chip systems</i>
11:10-11:30	Talk 1.2 - Othmane Aouane <i>Rheology of Dense Suspensions of Soft Particles</i>
11:30-11:50	Talk 1.3 - Robin Bölsterli (zoom) <i>Epithelial tube contractions and sperm flows into active turbulence in vivo</i>
11:50-12:30	Posters + coffee + discussions
12:30-13:30	Lunch

Section 2 - Microfluidic and Lab-on-a-Chip platforms

13:30-14:10	Plenary 2: David Ku <i>From flow physics to patient care: translating microfluidic systems into biomedical applications</i>
14:10-14:30	Talk 2.1 - Shadab Dabagh <i>A Novel Green Microfiltration Approach by Developing a Lab-on-a-Chip System: A Case Study for Escherichia Coli</i>
14:30-14:50	Talk 2.2 - David Gonzalez <i>Droplet microfluidics reveals metal-induced redistribution of bacterial growth patterns under antibiotic stress</i>
14:50-15:30	Posters + coffee + discussions
15:30-15:50	Talk 2.3 - Jānis Čipa <i>Extracellular Vesicle Capture Dynamics in PDMS-Free Microfluidics device</i>
15:50-16:10	Talk 2.4 - Rolfs Buks <i>Human Gut-on-Chip Platform for Modeling Intestinal Microphysiology and Host-Microbe Interactions</i>
16:10-16:30	Information + posters + coffee + discussions
16:30	Departing for the city to UL to Old Town (optional)
18:00	City tour (optional)

Program - 8 July 2026

Section 3 - Micro/nanosensing and actuation

8:30-9:00	Registration
9:00-9:40	Plenary 3: Roberto Di Leonardo <i>Light-programmable bacterial microrobots</i>
9:40-10:00	Talk 3.1 - Liga Jasulaneca <i>Nanomechanical Biosensing Beyond Mass: Motion-Based Readout of Living Bacteria</i>
10:00-10:20	Talk 3.2 - Edmunds Zutis <i>Aptamer-Functionalized Gold Surfaces for Fluorescent Malaria Biosensing</i>
10:20-11:00	Coffee + posters + discussions
11:00-11:20	Talk 3.3 - Mihails Birjukovs <i>Magnetic control of magnetotactic bacteria swarms</i>
11:20-11:40	Talk 3.4 - Jonas Elschner <i>Collective colloidal calligraphy</i>
11:40-12:00	Talk 3.5 - Maira Elksne <i>Automation of DNA extraction methods</i>
12:00-13:00	Lunch
13:00-14:00	Coffee + posters + discussion
14:00-15:20	Panel discussion (moderator + plenary speakers)
15:20-16:00	Transportation UL to ISSP (optional)
16:00-17:00	Lab tours (optional under inscription)
19:00	Conference dinner

Program - 9 July 2026

Section 4 - Active matter and microrobotics

8:30-9:00	Registration
9:00-9:40	Plenary 4: Antoine Ferreira <i>AI-Powered Navigation of Magnetic Microrobots for Targeted Drug Delivery</i>
9:40-10:00	Talk 4.1 - Mihails Birjukovs <i>Automated image-based characterization of magnetotactic bacteria from laboratory and environmental samples</i>
10:00-10:20	Talk 4.2 - Aneena Rinu Perayil <i>Non-Reciprocal and Topological Transport of Magnetic Colloids on a Spiral Magnetic Pattern</i>
10:20-11:00	Coffee + posters + discussions
11:00-11:20	Talk 4.3 - Arturs Sergejevs <i>TBD</i>
11:20-11:40	Talk 4.4 - Constantin Lang <i>Topological Transport of Bipeds on a Non-Periodic Magnetic Pattern</i>
11:40-12:00	Concluding remarks
12:00-13:00	Lunch
13:00-14:00	Workshop - Part 1
14:00-14:30	Coffee
14:30-16:00	Workshop - Part 2

Poster Contributions

Poster sessions take place during the scheduled coffee breaks.

1. Gabriels Grinblats

Latvian Biomedical Research and Study Centre

"Comparative analysis of cancer stem cell marker expression and Tamoxifen sensitivity in MCF7 cells across well plates, transwells and organ-on-a-chip systems"

2. Artjoms Ščeglovs

Institute of Solid State Physics, University of Latvia

"Microfluidic chip-based platform towards replacing the in vivo rodent calvarial critical-size defect model"

3. Timothy Kokshrov

University of Latvia / ISSP UL

"Studying magnetotactic bacteria dynamics in porous media by using microfluidic chips"

4. Laura Millere

Riga Technical University

"Amorphous calcium phosphate physicochemical property changes in static vs. microfluidic systems"

5. Edvarts Uzulnieks

Institute of Solid State Physics, University of Latvia

"Electroless plating on polymer-based substrates"

6. Max Pöhlmann

University of Bayreuth

"A generalized irreversible topological magnetic Rubik's cube transport problem on a truncated dodecahedron"

7. Anjaly S Menon

Aalto University

"Magnetic Control of Suspensions of Non-Magnetic Bacteria"

8. Thomas Fischer

University of Bayreuth

"Applications of topological magnetic transport"

9. Marcus da Silva

Institute of Solid State Physics, University of Latvia

"Scalable manufacturing of a high-shear microfluidic test section for Point-of-Care clotting assessment, CLOTcheck"

10. Edmunds Zutis

Institute of Solid State Physics, University of Latvia

"Aptamer-Functionalized Gold Surfaces for Fluorescent Malaria Biosensing"

11. Justs Zalums

Latvian Biomedical Research and Study Centre

"Developing a gut-on-chip model for celiac disease using patient-derived induced pluripotent stem cells"

12. Mara Smite

Institute of Solid State Physics, University of Latvia

"Development of experimental, motility-based methods for the quantitative characterization of magnetotactic bacteria"