Blaž Ivšić

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Research Interests

Confocal microscopy, image analysis, computational modeling of live cells, biophysics, reaction-diffusion systems, cellular locomotion modeling.

Education

Master's degree in Physics
Faculty of Science, Univeristy of Zagreb, 2014. - 2019.
Thesis: "Dynamics of Rac1 protein and its dependence on cell shape"

Research Experience

Research Assistant
Institute of physics, Zagreb, 2020. - 2025.

- Performed live-cell imaging using confocal microscopy
- Employed lithography techniques, including mask design and UV-based lithography setup, to pattern glass coverslips with PLL-PEG patches for controlled cell adhesion.
- Analyzed microscopy data using Fiji/ImageJ and MATLAB to extract quantitative information.
- Developed a C program to simulate cell locomotion, integrating experimental observations.
- Set up an open-design confocal microscope for Fluorescence Correlation Spectroscopy (FCS) to measure molecular diffusion.

Technical Skills

Microscopy: Confocal, fluorescence, live-cell imaging.
Image Analysis: MATLAB, Python, ImageJ/Fiji.
Modeling & Simulation: Reaction-diffusion systems, Level-Set methods, FEM.
Numerical Analysis & Data Processing: Analytical and numerical methods for scientific computing, data analysis from simulations.
Programming: C, MATLAB, Python, LaTeX.
Design & CAD: QCad, Fusion, KLayout.
Other: Linux, Git, Inkscape, 3D Printing.

Languages

English: Fluent (written and spoken)
Croatian: Native speaker
Slovenian: Native speaker
German: Basic proficiency (A2 level)

Teaching experience

Teaching Assistant
Faculty of Science, Univeristy of Zagreb, 2021. - 2025.

1. Classical Mechanics 1
2. Classical Mechanics 2
3. Physics Laboratory

Faculty of Graphic Arts, Univeristy of Zagreb, 2022. - 2023.

1. Physics 1

Faculty of Food technology and Biotechnology, Univeristy of Zagreb, 2023. - 2025.

1. Physics (FT/BT)
2. Physics (N)

Conference Presentations

Ivšić, Blaž; Vuletić, Tomislav; Šoštar, Marko; Weber, Igor
Dependence of cell shape on spatial confinement.
4th Croatian Microscopy Congress with International Participation, Poreč, Croatia, 2022. (Poster)
Book of Abstracts, p. 64

Ivšić, Blaž; Šoštar, Marko; Vuletić, Tomislav; Weber, Igor
Influence of cell shape on dynamics of Rac1.
15th Easter Biophysics Workshop (EBW2022), Tainach, Austria, 2022. (Oral Presentation)
Book of Abstracts

Milisav, Ana-Marija; Šegota, Suzana; Vuletić, Tomislav; Ivšić, Blaž; Brkić, Antun Lovro; Dutour Sikirić, Maja
Multilayers of Polyaminoacids and Silver Nanoparticles as Antimicrobial Coatings for Orthopaedic Implants.
Symposium "Synergy at the Chemistry-Nanotechnology Interface", Zagreb, Croatia, 2022. (Oral Presentation)
Arhiv za higijenu rada i toksikologiju, Vol. 73 No. 2, p. A16.

References

dr. sc. Igor Weber
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dr. sc. Mario Cindrić
Head of laboratory
Institut Ruđer Bošković, Zagreb
Email: mcindric@irb.hr