ICFO FRONTIERS RESEARCH SCHOOL: Physics for Biology and Medicine

July 07, 2025 to July 11, 2025
ICFO Auditorium

During the school we will explore the transformative role of physics in understanding an addressing key challenges in biology and medicine.

This **5-day interdisciplinary school** will cover topics including:

Physics for Biology at the Molecular Level, examining the physical principles governing biomolecules and their interactions
Physics for Biology at the Sub-Cellular & Cellular Level, focusing on cellular mechanics, transport phenomena, and biophysical processes
Physics of Multicellular Systems, investigating the emergent behaviours in cell aggregates, organoids, and small organisms
Physics in Medicine, highlighting applications in imaging, diagnostics, and therapeutic technologies

Bringing together experts from diverse fields, this school will provide participants with a comprehensive perspective on the cutting-edge intersection of physics, biology, and medicine.

The event will include lectures & tutorials, research seminars, hands-on lab sessions and a poster session where participants will have the opportunity to interact and present their own research.

Lecturers:

Adel Al Jord, CRG
Anna Taubenberger, TU Dresden
Carlos Bustamante, UC Berkeley
Irina Larina, Baylor College of Medicine

Jennifer Kefauver, CIBER
Juan Torres, ICFO
Lukas Kapitein, Utrecht University
Maria Garcia-Parajo, ICFO
Michael Krieg, ICFO
Nicoletta Liguori, ICFO
Nilli Lavie, UCL
Pablo Loza, ICFO
Paola Taroni, POLIMI
Patricia Bassereau, Institut Curie
Roser Sala Llonch, UB
Turgut Durduran, ICFO
Vangelis Daskalakis, University of Patras
Xavier Salvatella, IRB Barcelona

Hands-on sessions:
Participants will engage in lab sessions focused on the latest photonics technologies. Each lab session will provide participants with an opportunity to work directly with advanced equipment and gain valuable practical skills.

The sessions will take place in the following labs:

Super resolution Light microscopy and Nanoscopy
Neurophotonics and Mechanical Systems Biology
Medical Optics
Photon Harvesting in Plants and Biomolecules
Single Molecules Biophotonics

Registration & Accommodation:

The school will be limited to a maximum of **30 external students**, selected on the basis of academic merit. 30 places will be reserved to ICFO students.

Local accommodation for 4 nights will be provided for a maximum of 30 external participants from outside the Barcelona region.

There is NO fee for students to attend the school.

Travel Fellowships:

ICFO will offer up to **5 SPIE@ICFO Chair Travel Fellowships** for selected undergraduate or masters students from outside the Barcelona region to attend the school.

All eligible applicants will be automatically considered for travel fellowships.

The fellowships will include reimbursement of travel expenses of up to ?350 and accommodation for 4 nights.

Research Internships:

Up to two **SPIE@ICFO Chair Research Internships** to conduct a project with an ICFO research group are also available on a competitive basis to outstanding undergraduate or masters students selected to attend the school. To be eligible, students must still be enrolled in an undergraduate or masters program when they undertake the internship.

For any questions, please contact us at frontiers@icfo.eu.?

Eligibility:

We welcome applications from individuals worldwide with a variety of backgrounds, including optics, physics, mathematics, electronics, engineering, chemistry and biology.??

Candidates must have an excellent academic record, and a strong commitment for scientific research.??

Priority will be given to masters-level and advanced undergraduate students, although PhD students and young researchers are welcome to apply.??

Persons with disabilities are strongly encouraged to apply. There are no restrictions of citizenship or gender.?

How To Apply:

To register for the school, applicants must submit the following documents:

A **Curriculum Vitae**, including contact details.
Scanned copies of complete university academic transcripts (Bachelor's and Master's or

equivalent) in English or Spanish.
A **statement of purpose** describing their background, research interests, and motivation for attending the school.
The **title and abstract** of a proposed poster.
A **support letter** from a potential referee.

Applications must be submitted online, and all required application material must be complete in order to be considered.?

Applicants will automatically be considered for the fellowships and / or internships on offer.

The application deadline has been extended to May 31.
Candidates who submitted their applications by the original deadline of May 16 will be notified during the week of May 26-31. Those who apply during the extension period will be notified during the week of June 2-6.

For any questions, please contact us at frontiers@icfo.eu

Venue:

ICFO is a young research institution that aims to advance the very limits of the science and technology of light, tackling important challenges faced by society at large in all areas of life, including health, energy, information, safety, security and caring for the environment. ICFO is a member of BIST, the Barcelona Institute of Science and Technology, and is situated in Castelldefels, a small town located by the sea just outside of Barcelona, Spain.

More information about how to get to ICFO can be found HERE.

About:

International Schools on the Frontiers of Light aim at giving talented young researchers and students worldwide a first introduction to a thematic research area and a taste of an international research environment. These schools incorporate a dynamic and social learning environment beyond participating in lectures, including group discussions, direct interactions with the lecturers, student talks and poster presentations.

ICFO does not tolerate any type of conduct or behavior considered harassment or bullying and has clearly defined policies against harassment.

Organizing Committee:

Prof. Dr. Maria Garcia-Parajo (ICFO), Prof. Dr. Nicoletta Liguori (ICFO), Prof. Dr. Turgut Durduran (ICFO), Dr. Pablo Loza, Prof. Dr. Michael Krieg, Dr. Giovanna Petrillo (ICFO)