



Barcelona Medical Photonics Network celebrates its 2nd annual meeting

Gathering of experts focuses discussion on microcirculation in health and disease

May 04, 2023

The Barcelona Medical Photonics Network (BMPN) met at [Parc Tauli Hospital](#) for its annual meeting. The BMPN formally launched in March 2021 as a platform to promote the research and development activities in photonics being carried out in the Barcelona region through long-standing collaborations between ICFO and its biomedical and clinical partners. This year, discussions focused on microcirculation in various fields, including critical care, cancer, stroke, and infant development, with contributed talks from experts within the network and from European collaborators. ICREA Professor at ICFO Dr **Turgut Durduran**, leader of the [Medical Optics](#) research group, introduced the event, highlighting the collaborative nature of the network and the shared goal of all present to work toward increased integration of photonics solutions in a variety of medical techniques and practices.

Monitoring microcirculation in critical care

Prof. Dr. Daniel de Backer, Head of the Intensive Care Department at the [Universite Libre de Bruxelles](#) and CHIREC hospitals, launched the morning sessions covering the historical approaches to measuring microcirculatory health in the ICU, stressing the importance of tissue perfusion and the lessons learned from the Covid-19 pandemic. He concluded his talk by mentioning the existing limitations of microcirculation monitoring techniques and the parameters of interest.

The session continued exploring the measurement of microcirculation in the intensive care units. **Dr. Jonathan Montomoli**, from the Infermi Hospital Rimini and the [Erasmus MC in Rotterdam](#), presented a project on sublingual microscopy, while **Dr. Guillem Guartmoner** and **Dr. Jaume Mesquida**, clinicians at the Parc Tauli Hospital, discussed the use of near-infrared spectroscopy (NIRS) in the ICU, both in patients with septic shock and during the weaning from mechanical ventilation.

Microcirculation in cancer, stroke, and infant development

The afternoon session shifted the focus towards microcirculation beyond critical care. **Dr. Mireia Mora**, a clinician at the [Hospital Clinic of Barcelona](#) opened with a discussion of the role of microcirculation in thyroid cancer and how it can be monitored using diffuse optics coupled with ultrasounds. **Dr. Xabier Urrea** from [Hospital Clinic](#) and [IDIBAPS](#) continued, reporting on the relevance of microcirculation in stroke, followed by **Dr. Nuria Sebastian Galles**, a researcher at the [Center for Brain and Cognition](#) of the Pompeu Fabra University, who gave a talk on language development in infancy and the study of bilingualism using fNIRS. Finally, **Dr. Albert Busquets** from [INEFC](#) explained the importance of microcirculation in physical activity, discussing the factors that stimulate hypertrophy and highlighting the potential of photonic tools for personalising muscle training.

International collaborations

The outcomes of two international collaborations, led by ICFO, were also presented.

Postdoctoral researcher at ICFO **Dr. Lorenzo Cortese** presented the results of the [HEMOCOV-19](#) research study, an international cross-collaboration that started in the first months of the COVID-19 pandemic in order to obtain information about the health status of affected patients through a multi-center clinical campaign. After studying more than 600 patients using NIRS technology and vascular occlusion, the project found that [COVID-19 patients suffered alterations in their tissue microcirculation](#).

Prof. Davide Contini, Associate Professor at the Politecnico di Milano presented the outcomes of the European project [VASCOVID](#), which has developed a portable device to monitor the microcirculation of ICU patients. Prof. Contini presented the clinical studies, where more than 215 subjects have been monitored. The session closed with a live demonstration of the VASCOVID device, giving the meeting attendees the opportunity to see

how researchers use the device to monitor tissue microcirculation and to ask questions about its functioning.?

Overall, the event showcased the importance of microcirculation in various clinical areas and highlighted the potential of photonics and cross-collaborations in furthering our understanding of this crucial aspect of health and disease



BMP Network annual meeting attendees



Program intro by Prof Turgut Durduran