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The Barcelona Medical Photonics Network: united to improve the health and well-being of society

Eight prominent health institutions in the Barcelona area, their research institutes and ICFO join forces through the creation of a network to bring cutting-edge photonic technologies to hospitals.

February 18, 2021

As the saying goes, i¿½it takes a village to raise a childi¿½. It is equally true that it takes c ose interdisciplinary R+D collaborations to bring children into the world, detect ng, understanding, monitoring, and treating health issues they may develop throughout t eir journey to old age. Today we celebrate the consolidation of the Barcelona Medical Photo ics Network that promotes the research and development activities carried out in and ar und Barcelona through long-standing collaborations between ICFO and its numerous clin cal partners.

Because of its exceptional versatility, precision, and non-invasive nature, photonics is playing an increasing role in medical techniques and practices, to the extent that today it is considered a key enabling technology in developing healthcare in Europe. Researchers at ICFO have extensive expertise in the development of photonic-based technologies for clinical use, in collaboration with doctors around the world, and especially in the Barcelona area.

Successful ?bench-to-bedside' translation of new technologies require the collaborative efforts of experts in different fields, ensuring that research around medical technologies is continuously aligned with the needs of citizens and society at large. **After over a decade of close collaboration with hospitals and health care specialists in the Barcelona area, the formalization of the Barcelona Medical Photonics network enables the solidification and expansion of the reach, scope and impact of these critical relationships**. This network is part of the Light for Health program at ICFO, an initiative that was launched and took root thanks to the impetus of the Cellex Foundation, and continued to grow through the continuous support from the i¿½La Caixai¿½ Foundation, Barcelona City Council, as well as funding from the PECT-InnoDelta project for Specialization and Territorial Competitivity, co-financ d by the European Regional Development Funds (ERDF) allocated to the Programa operatiu

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The Network aims to have an impact on society at many levels:

Sharing and contrasting of best practices for technology use, adoption and dissemination of results amongst care centers.
A formal structure that will allow for increased focus on a wide-range of patient scenarios that ultimately improves patient outcomes.
Flexibility to participate as a block in international initiatives and projects, primarily from the European Union, to expand the common research goals of the network partners.
Preparedness for engagement in emergencies, such as COVID, to rapidly and effectively test new technologies to meet emerging requirement for critical patient care.
An expanded range of data points from around Catalonia (age, geography, pathologies) for testing technologies providing reliable and insightful analysis.

The main established joint endeavors to date have spanned initiatives in disciplines such as neurology and neurosurgery, neonatal care, ophthalmology, oncology, intensive care monitoring, dermatology, rapid clinical analysis, rehabilitation, sports medicine, wellbeing, sleep disorders and anesthesiology, among others.

The partner institutions initially participating in this network include:

ICFO,
La Fundacio Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau,
l'Institut d'Investigacio Biomedica Sant Pau, L'Hospital Clinic de Barcelona,
L'Institut d'Investigacions Biomediques August Pi i Sunyer (IDIBAPS),
L'Hospital Sant Joan de Deu, L'Hospital Universitari Vall d'Hebron,
El Vall d'Hebron Institut de Recerca (VHIR),
L'Institut d'Investigacio Oncologica de Vall d'Hebron (VHIO),
L'Institut d'Investigacio i Innovacio Parc Tauli,
Germans Trias i Pujol Research Institute (IGTP),
El Parc Sanitari Pere Virgili,
La Fundacio Institut Hospital del Mar d'Investigacions Mediques (IMIM).

The initiative is open to the participation of other entities that may contribute to its goals.

As **Lluis Torner**, Director of ICFO, highlights i¿½It is incredibly rewarding to watch o r science and technology, often based on very frontier physics, move into hospitals where t can help doctors better care for their patients. This journey requires a lot of perseveran e and sustained support. Fortunately, for the past decade we have had this thanks o visionaries from the Cellex and i¿½La Caixai¿½ Foundations, Barcelona City Council a d the DGR of the Government of Catalonia. We thank everyone for their support and the d ctors for their participationi¿½.

Turgut Durduran, leader of the Medical Optics research group at ICFO, comments i¿½O r goal is to see technologies enabled by advanced photonics in clinical practice. We will o that by working together with clinicians and biomedical researchers of this network, wi h industry and ultimately with governments. Barcelona area is a world-class place to achie e this goal with its diverse array of hospitals, research centers and companies as well as t e support infrastructure.i¿½

On behalf of the Knowledge and Technology Transfer unit at ICFO, **Ariadna Martinez**, coordinator of the Light for Health Program at ICFO, emphasizes that i¿½The ?Light f r Health' program at ICFO' has been working for years to build the trust, understanding a d types of productive relationships with doctors and clinical and biomedical researchers th t we are consolidating today with the Barcelona Medical Photonics Network. Their knowled e of the patient's needs, and their motivation to work with interdisciplinary partners to me t those needs, are the central pieces of this puzzle, without which new technologies wou d have no hope of saving livesi¿½.

On behalf of the entities that have given support to the emergence of this network, **Angel Font**, Corporate Director of Research and Health of i¿½la Caixai¿½ Foundation, i¿½For mo e than 25 years, the i¿½la Caixai¿½ Foundation has been continuously contributing so that basic research can be translated into to real medical solutions that improve clinical pra tice; striving so that the most promising research results reach patients as quickly as possib e. We are proud to have been with ICFO in the "Light for Health" project for the last 10 years nd we congratulate them on their results, which convert the latest photonics advances into be efits for citizens' health."

From the City Hall of Barcelona, **Laia Bonet**, Deputy Mayor for Agenda 2030 and Digital Transition, also stresses out the importance of science and technology development by stating that i¿½Barcelona needs scientific and technological collaboration spaces to promo e research and innovation. Areas of collaboration between public and private sectors, betwe

n research centres and companies, and also between administrations. The Barcelona Medic l Photonics Network is one of the best examples of this. An example of applied research a d new technological solutions put to the service of improving health, using new techniqu s that will have a concrete effect on advancing healthcare solutions in the city's hospital . From the City Council we will collaborate with the Network on everything we can, as we ha e done to date with the ?Light for Health' program.i¿½

Finally, from the Government of Catalonia, **Joan Gomez,** Director General de Recerca, concludes that i¿½ICFO is one of our world renown research centers. There is no scientif c domain, anywhere that light touches, where they do not compete with competence, taki g risks and searching to push the limits of knowledge: they always work in uncharter d territory. In the world of light, these range from the limits of the universe to the tiniest vesse s of the human body. The father of the Gods was light, Zeus (his name literally meani g i¿½lighti¿½ in genitive), and ICFO is also light for all of us. It generates new knowledg with consistency and excellence. ICFO also knows that without technology transfer and out each, science will not reach its full potential. I am proud to have spent a few year of my life h lping to make some of their new projects a realityi¿½.

BMP Network video introduction