



## Barcelona equips itself with a European first-class collaborative microscopy platform through the joint action of nine research institutions and the support of ERDF

- *The ALBA Synchrotron will host two new major experimental facilities, one dedicated to materials science, valued at 4.1 million euros and led by the Catalan Institute of Nanoscience and Nanotechnology (ICN2), and another meant for molecular biology, valued at 1.7 million euros and headed by the Institute of Molecular Biology of Barcelona (IBMB-CSIC).*
- *The new platform also counts with the participation of the Barcelona Institute of Science and Technology (BIST), the Spanish Council for Scientific Research (CSIC), the Institute for Biomedical Research (IRB Barcelona), the Autonomous University of Barcelona (UAB), the Institute of Materials Science of Barcelona (ICMAB-CSIC) and the Centre for Genomic Regulation (CRG).*
- *The provisional agreement for co-financing through the European Regional Development Fund (ERDF) these two scientific infrastructures has been announced today.*

**Barcelona, 9th April, 2020.** The resolution of the last call for co-funding through the European Regional Development Fund (ERDF) of cooperative projects was announced today. The purpose of the call was to create, build, acquire or improve shared scientific and technological equipment and platforms. Among those approved are two proposals, one led by the [Catalan Institute of Nanoscience and Nanotechnology](#) (ICN2), a BIST centre, and the other by the [Institute of Molecular Biology of Barcelona](#) (IBMB-CSIC), the fruit of a joint effort by nine research entities. The resulting acquisition and installation of advanced electron microscopy equipment at the [ALBA Synchrotron](#) will make Barcelona a hub of excellence in Europe for scientific collaboration in this field.

The ERDF funds, granted by the Secretariat of University and Research of the Department of Business and Knowledge of the Generalitat of Catalonia (Catalan government), will provide the scientific community with equipment and platforms to enhance scientific and technological excellence. The contribution from European funds reaches up to 50 % of the total cost of the acquisition and deployment of the microscopes and associated equipment.

This proposal was led by the ICN2, at a cost of approximately 4.1 million euros, is focused on acquiring and installing advanced equipment for electron microscopy and sample preparation especially designed for **materials science and atomic-scale studies**. This new installation consists of a Monochromated Transmission Electron Microscope with Aberration Correctors, to be installed at in the ALBA Synchrotron premises, and Focused Ion Beam (FIB) instrumentation to cut the samples in very thin layers and study them with atomic resolution, to be placed in the ICN2.

In addition to the ERDF grant, this initiative was also made possible thanks to contributions by the “Severo Ochoa Centers of Excellence” ICN2 funds (SEV-2017-0706), ALBA Synchrotron, CSIC, the [Institute of Materials Science of Barcelona](#) (ICMAB-CSIC), and the [Autonomous University of Barcelona](#) (UAB), as well as private donations by the **Barcelona Institute of Science and Technology** (BIST) —of which ICN2, CRG and IRB Barcelona are members, and the catalyst in 2016 of this collaborative initiative— and Microsoft. The ICN2 and Microsoft are currently collaborating on the design of hybrid nanowire-based networks and circuits for quantum computers.

On the other hand, the project led by the IBMB-CSIC, valued at about 1.7 million euros, has the purpose of purchasing a **high-voltage cryo-electron microscope for biological applications**. This type of equipment allows observing the structure of biomolecules at atomic scale without the need to obtain crystals. It is a microscope suitable for biological sample screening and atomic-level structural data acquisition of large molecular and cellular complexes, e.g.: the external structure of a coronavirus as the one responsible for today’s pandemics **COVID-19** or the receptors these viruses use to get into the cells. This acquisition will be possible thanks to the funding from ERDF, the IBMB-CSIC and the ALBA Synchrotron, as well as to the contributions of the [Institute for Biomedical Research](#) (IRB Barcelona), the [CSIC](#), the [Centre for Genomic Regulation](#) (CRG), the UAB and the BIST.

The second proposal, led by the IBMB-CSIC and valued at about 1.7 million euros, is intended to purchase a **high-voltage cryo-electron microscope for biological applications**. This type of equipment allows observing the structure of biomolecules at atomic scale without the need to obtain crystals. It is a microscope suitable for biological sample screening and atomic-level structural data acquisition of large molecular and cellular complexes. It may be used, for example, to study the external structure of a coronavirus, such as the one responsible for today’s **COVID-19** pandemics, or the receptors these viruses use to get into cells. The acquisition is made possible thanks to funding from ERDF, the IBMB-CSIC, and the ALBA Synchrotron, as well as contributions by the [Institute for Biomedical Research](#) (IRB Barcelona), the [CSIC](#), the [Centre for Genomic Regulation](#) (CRG), the UAB and BIST.

This cross-cutting initiative perfectly aligns with the worldwide trend of centralizing this kind of equipment near large particle accelerators or synchrotron facilities, with the uniqueness that this new research space will be created inside the ALBA premises. It will be a laboratory complementary to synchrotron-light ALBA beamlines, which will bring great added value for materials science and structural biology. The construction works to accommodate the new equipment are planned to start before the end of the year and it is expected that in about two years the new space will be able to receive the first users and host a constantly updated equipment. The electron microscopy platform will provide new opportunities to both research groups and companies looking for state-of-the-art microscopy equipment.

This collaborative initiative matches the worldwide trend of placing this kind of equipment near large particle accelerators or synchrotron facilities, such as the ALBA Synchrotron. It will be a laboratory complementary to the ALBA light beamlines, adding great capabilities for research in materials science and structural biology. Construction to accommodate the new equipment is scheduled to start before the end of the year, and the new equipment is expected to host its first users, from academic research groups and the private sector, in about two years..

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