



Institute of Molecular Biology and Genetics of the National Academy of Sciences of Ukraine



Deeping collaboration on novel biomolecular electronics based on “smart” nanomaterials between EU and UKRAINE

(BIONANOSENS # 951887, 2020–2024)

The Institute of Molecular Biology and Genetics of the National Academy of Sciences of Ukraine (IMBG), established in 1973, stands as a premier Ukrainian institution in life science research, boasting a high level of potential and delivering top-tier results, particularly in the field of biotechnology. Since the year 2000, IMBG has actively engaged in the EU Framework Programs, securing funding for eight EU projects, spanning from Innovation Actions to Coordination and Support Actions such as ERA-WIDE, IRSES, and RISE. In 2020, the ninth project, BIONANOSENS #951887 under the Horizon 2020 program, received funding from the EU for the period of 2020–2024.

Initiated by IMBG, the BIONANOSENS project is dedicated to fostering collaboration on novel biomolecular electronics based on “smart” nanomaterials. To achieve its objectives, IMBG formed a consortium comprising five partners, including IMBG and leading European research and management centers in Austria, France, and Germany: Université Claude Bernard Lyon 1 (UCBL),

Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Center of Social Innovations in Vienna (ZSI), Lyon Ingénierie Projets (LIP). IMBG assumed the role of coordinator for the consortium to ensure successful project implementation.

IMBG served as both an initiator and a beneficiary of the BIONANOSENS project, and its target institution. The project’s tasks were meticulously designed to enhance the Institute’s capabilities in innovation management and international cooperation while further advancing its excellence in biotechnology research. The project aimed also to establish an operational network of EU and Ukrainian scientists, fostering diverse approaches to research, innovation, and innovation management in analytical biotechnology.

The BIONANOSENS project started amidst the backdrop of the worldwide COVID-19 pandemic. The interim 15 months report on the project was under consideration by the EU at the very moment of the beginning of the rude Russian aggression in Ukraine. The project was paused for 2 months, then its duration was prolonged for 6 months more.

However, despite all the circumstances the BIONANOSENS project activities were fulfilled successfully with only slight changes in scope and timing, and have their valuable impact on the Institute's research innovation potential as well as on the IMBG's place in the national scientific community and in the ERA. 3 scientific meetings, 3 management trainings, the Call for start-ups in biotechnology area and the Summer school for early stage researchers were conducted in the project frames. IMBG Annual Competition "The Best Article of the Year" was held for the scientific papers published in 2021 (18 winners, including 4 young scientists), in 2022 (32 winners, including 5 young scientists working in Ukraine), and in 2023 (41 winners, among them 8 young scientists).

All the BIONANOSENS project activities were carried out against the state-of-the-art standards in managing EU funded R&I projects — including Responsible Research and Innovation, Gender balance, Open access (Data management, Intellectual Property management), exploitation and commercialization orientation, and ethics. The project's principal achievements include:

- Establishment of the IMBG International Advisory Board — General Assembly providing annual international expertise of the Institute activities and achievements, sharing experience in doing world level research and innovation management, recognizing Ukrainian institute as an international Centre for Excellence in analytical biotechnology.
- IMBG R&I Strategy in biomolecular electronics was developed for the next 7 years. It was based on the current SWOT analysis of IMBG

identifying strengths, weaknesses, threats, and potential areas for improvement, with guidance from esteemed European partners helping to improve research and management practice in the nowadays Ukrainian realities.

- Promotion of healthy competition among IMBG Departments in excellence of research and innovations, sharing the best research practice.
- Twinning with leading European research and management centers, bolstering IMBG's role in Ukraine's analytical biotechnology development.
- Enhanced visibility of IMBG in the European Research Area, resulting in increased invitations to participate in European research program calls.
- Establishment of the Innovation Management Unit (IMU) to enhance innovation management infrastructure and address the evolving needs of IMBG scientists.
- Creation of a PR-management group to raise awareness of biotechnology research and innovations' societal impact in Ukraine.
- Effective coordination and management of European-level projects in Ukraine, showcasing IMBG's capability to contribute actively to EU scientific and technical programs, establish international consortia, win grants, and execute projects aligned with societal needs.

Moving forward, IMBG's primary objective is to sustain the achievements gained through the project. The IMBG R&I Strategy in biomolecular electronics outlines future perspectives, emphasizing the realization of project benefits, continued improvement of international cooperation, and ongoing capacity building to ensure IMBG remains an active participant in the European Research Area.

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