BIOMEDIX Multiplier Event – "Digital Transformation in Biomedical Engineering" Successfully Held at the Technical University of Cluj-Napoca: Medical Innovations and New Opportunities for International Collaboration

The Technical University of Cluj-Napoca (TUCN) organized the BIOMEDIX Multiplier Event, entitled "Digital Transformation in Biomedical Engineering," on 9 October 2026. With over 300 participants from Romania and abroad attending throughout the day, the event provided an extensive platform for dialogue and collaboration between academia, engineering, medicine, research, and industry. It brought together students, academic staff, researchers, medical professionals, engineers, and company representatives interested in developing innovative solutions for the future of healthcare.

The event was officially opened by Prof. Dr. Eng. Vasile Țopa, Rector of the Technical University of Cluj-Napoca (TUCN), and Prof. Dr. Eng. Stelian Brad, Dean of the Faculty of Industrial Engineering, Robotics and Production Management at TUCN. Subsequently, Prof. Dr. Eng. Răzvan Păcurar (Department of Manufacturing Engineering, Faculty of Industrial Engineering, Robotics and Production Management) the coordinating responsible of the ERASMUS+ KA220 BIOMEDIX project on behalf of TUCN presented the project's objectives and the main directions of the BIOMEDIX Multiplier Event.

A distinguished guest at the BIOMEDIX Multiplier Event was His Excellency Mr. Meidyatama Suryodiningrat, Ambassador Extraordinary and Plenipotentiary of the Republic of Indonesia to Romania, accompanied by representatives of the Indonesian Embassy in Bucharest and a distinguished delegation from the city of Denpasar (Bali), led by its Mayor, Mr. I Gusti Ngurah Jaya Negara. During the BIOMEDIX event, His Excellency the Ambassador delivered an address highlighting the prospects for international cooperation in education and healthcare. Subsequent discussions with Prof. Dr. Eng. Nicolae Vlad Burnete, Vice-Rector responsible for International Relations, Communication and Image at TUCN, highlighted new opportunities for cooperation in education and research, including applications in biomedical engineering, through future academic mobility programmes, exchanges of experience, and joint interdisciplinary research projects. These discussions took place in the favourable diplomatic context of the signing, on the same day, at Cluj-Napoca City Hall, of a Letter of Intent regarding cooperation between Cluj-Napoca and Denpasar, aimed at establishing a sister-city partnership between the two cities.

One of the central objectives of the BIOMEDIX Multiplier Event organized at TUCN was the presentation and dissemination of the results of the ERASMUS+ KA220 BIOMEDIX project, which brings together international universities and companies to advance education, research, and skills development in biomedical engineering. Specialists from partner universities in Romania, Spain, Latvia, Poland, Croatia, and Serbia, together with

representatives of Materialise (Belgium) and viscoTec (Germany), presented the results of five case studies developed within the BIOMEDIX project. These included the development of 3D-printed scaffolds for cardiac tissue regeneration, personalized cranial implants manufactured from metallic and polymeric materials using 3D printing technologies, 3D bioprinting of a hydrogel-based breast implant, and the development of a personalized anatomical model of a human tongue affected by tumours, manufactured using 3D printing and vacuum casting techniques for treatment planning and analysis.

The session dedicated to perspectives on engineering and medical cooperation featured presentations by Prof. Dr. Eng. Cătălin Popa on nanostructured biomaterials and their applications in nanomedicine; Prof. Dr. Eng. Doina Pîslă, Director of the Council for Doctoral Studies at TUCN, on current challenges in medical robotics; and Dr. Daniel Ostaș from the "Iuliu Haţieganu" University of Medicine and Pharmacy in Cluj-Napoca, on digital planning of maxillofacial implants and reconstructions. International perspectives were further highlighted by Prof. Joaquín Roca from the Polytechnic University of Cartagena and Mr. José Manuel Baena, CEO of REGEMAT 3D (Spain), who presented advanced 3D bioprinting technologies, as well as research directions related to tissue regeneration and the development of new medical applications for future cancer treatment.

Particular interest towards the end of this session focused on diploma and research projects carried out by TUCN students in collaboration with the "Iuliu Haţieganu" University of Medicine and Pharmacy in Cluj-Napoca, the BIOMEDIX consortium, and partner companies participating in the event. The results were presented by Prof. Dr. Eng. Răzvan Păcurar, the TUCN coordinator of the BIOMEDIX project, and Assoc. Prof. Dr. Alexandru Burdea from the "Iuliu Haţieganu" University of Medicine and Pharmacy in Cluj-Napoca. Examples included personalized ear reconstruction, a smart orthopaedic insole designed for patients with diabetic foot ulcers, cranial and dental implants, implants for hand bones, customized orthoses, and scaffolds for human bone tissue regeneration. These achievements illustrated how collaboration between engineers, medical professionals, and companies can transform a specific medical need into a diploma project, a research initiative, or a technological solution with potential clinical applications.

Another important component of the BIOMEDIX event was dedicated to company presentations, during a session coordinated by Prof. Dr. Eng. Daniela Popescu, Vice-Rector responsible for University Management and Relations with the Socio-Economic Environment at TUCN. Representatives of companies from Romania and abroad, including Materialise (Belgium) and viscoTec (Germany), partners within the BIOMEDIX consortium, alongside REGEMAT 3D (Spain), 3D Republika (Serbia), Total Biotek, NU Technologies, CAD Works, Admasys, Apel Laser, Epic Crafting, Zala Medical, and Brain Symphony (Romania), presented innovative technologies and solutions with applications in biomedical engineering.

The technological exhibition organized as part of the BIOMEDIX Multiplier Event provided participants with the opportunity to interact directly with company specialists and explore 3D printing and bioprinting equipment, advanced materials, software applications, virtual reality solutions, and other digital technologies for medical applications. The discussions contributed to identifying new directions for cooperation between academia, engineering, medicine, and industry. New partnership and collaboration agreements were initiated with participating companies, aimed at supporting the development of future bachelor's, master's, and PhD thesis, as well as research initiatives in biomedical engineering.

The final session, opened by Prof. Dr. Eng. Daniela Popescu, Vice-Rector responsible for University Management and Relations with the Socio-Economic Environment at TUCN, focused on the development of educational and research projects, technology transfer, entrepreneurship, and funding opportunities. Representatives of the North-West Regional Development Agency, the INNOCORE Foundation, Transylvania IT Cluster, and Cluj IT Cluster, together with specialists from TUCN, presented opportunities related to start-up acceleration, access to testing infrastructure, the development of regional healthcare innovation ecosystems, and the commercialization of research results through collaboration between academia and industry. European and national funding programmes, including ERASMUS+, were also highlighted, as well as other new regional initiatives dedicated to healthcare innovation.

Activities within the BIOMEDIX project will continue until its completion in the summer of 2027, providing students and academic staff with further opportunities for training and international collaboration. Upcoming activities include student training programmes at Materialise (Belgium) in November 2026 and viscoTec (Germany) in May 2027, a hackathon hosted by the University of Niš (Serbia) in April 2027, and a summer school organized at the Polytechnic University of Cartagena (Spain) in July 2027.

A strategic direction established by the BIOMEDIX consortium partners during the Multiplier Event involves preparing a new ERASMUS MUNDUS project proposal in 2027, aimed at developing an international master's degree programme focused on digital transformation in biomedical engineering. This initiative will build on the experience and partnerships developed through the BIOMEDIX project, involving partner universities, including those within the European University of Technology (EUt+) alliance, as well as four faculties of TUCN: the Faculty of Industrial Engineering, Robotics and Production Management (FIIRMP), the Faculty of Electrical Engineering (IE), the Faculty of Materials and Environmental Engineering (IMM), and the Faculty of Automotive Engineering, Mechatronics and Mechanics (ARMM).

Through this initiative and continued development of partnerships with universities, medical institutions, and companies, TUCN aims to expand educational, international mobility, and research opportunities for students and academic staff, while fostering new interdisciplinary projects with applications in biomedical engineering in the future.

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materialise
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