November 23, 2026

University Day



Prof. Dr. Dániel András Drexler is a distinguished researcher and prominent academic figure at Obuda University, Hungary, where he is affiliated with the Institute of Biomathematics and Applied Artificial Intelligence and the Research Centre for Physiological Controls. His research focuses on physiological control systems, nonlinear systems control, chemical reaction control, robot kinematics, and singularities in robotics. He earned his MSc in Electrical Engineering and MSc in Biomedical Engineering from Budapest University of Technology and Economics (BME), where he subsequently obtained his PhD in Electrical Engineering in 2015. He also holds an MSc in Applied Mathematics.

Prof. Drexler has been actively involved in research and academic teaching since 2009, with a particular emphasis on control theory, robotics, mathematical modelling, and biomedical engineering. He has contributed to numerous national and international research projects, including the European Research Council Starting Grant project Tamed Cancer, and has participated in international research collaborations in China, Slovenia, Brazil, and Austria. He is currently Deputy Director of the Research Centre for Physiological Controls at Obuda University and has received several academic awards, including the Young Researcher of the Year Award in 2018 and the Young Excellence Researcher Award in 2022. He is an IEEE member and serves as Vice President of the IEEE Hungary Section. His scientific activities include extensive publication, conference reviewing, and supervision of undergraduate, master's, and doctoral students in engineering and applied mathematics.

Obuda University
HUNGARY

November 23, 2026

University Day

Modeling and Control of Physiological Systems: Cancer Research from an Engineer's Perspective

Improving cancer therapy does not necessarily require new drugs: existing drugs can be administered more effectively. This lecture presents an engineering approach in which tumor growth and drug effect are described by a mathematical model validated in animal experiments, and personalized dosing protocols are designed by control-theoretic methods. In a mouse model of triple-negative breast cancer, algorithm-assisted therapy design improved survival. In order to explain relapse after treatment, the model is extended with drug-induced dormancy and the stochastic reactivation of dormant cells, simulated by a hybrid stochastic–deterministic method. Finally, injection schedules are computed that keep the drug level above the minimum inhibitory concentration.

Obuda University
HUNGARY