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## Dr Milena Korostenskaja: Specialists in Systems Biology Are in High Demand All over the World



Students, neurology residents, and doctoral students at the Faculty of Medicine of Vilnius University (VU) had the opportunity to discuss the latest topic in neurobiology, directly contributing to the

successful execution of the Systems Biology programme with a guest lecturer Dr Milena Korostenska, who is a much accomplished scientist in this field.

Professor Audronė Jakaitienė, coordinator of the Systems Biology Programme, also participated in the discussion – “The brain–computer interface and modelling of this interface were the subject of many questions and computational suggestions not only from students, but also from the Department of Statistics. VU scientists had the opportunity to broaden and deepen their knowledge of recent

Your Feedback

After her visit, Dr Korostenskaja discussed the possibility of teaching in the Systems Biology programme again. Having this in mind, let us find out more about Dr Milena Korostenska.

### **Dr Korostenskaja, we are very pleased to have you in Lithuania as a guest and lecturer. Could you briefly tell us about yourself?**

First and foremost, I am a scientist. My interest in research started when I entered the graduate Neurobiology programme at VU. I was among the first six students admitted to it. Words like neurobiology and neuroscience were unfamiliar to most people at that time. This was a cutting edge educational program developed by VU (Prof Osvaldas Ruksenas).

Since then, I have received my PhD and acquired a background in brain imaging techniques such as electroencephalography, magnetoencephalography, and electrocorticography. I have strengthened my research skills at various clinical research sites around the world, including Helsinki University Central Hospital and Cincinnati Children's Hospital. Right now, I work as a clinical research scientist leading the Brain-Computer Interface Program at AdventHealth Orlando in Orlando, Florida, USA. My main focus is on the Epilepsy Center to help guide epilepsy surgery by creating individual functional brain maps for surgical candidates. The goal is to establish the Adaptive Neurotechnology (AN) Clinic, where the latest innovations in the field of brain-computer interfaces will be utilised to improve the diagnosis, treatment, and quality of life of patients.

### **What are your main areas of scientific interest?**

Brain imaging in humans has always been my main area of interest. Finding the neural substrates of information processing is one of the fascinating opportunities that brain imaging offers. My keen interest in the neural underpinnings of human behavior brought me to the field of adaptive neurotechnologies – it enables real-time interactions between the nervous system and the environment around and within us. ANs have been developed over the past few years to improve the quality of life of people with severe disabilities, its applications have recently been extended to various research areas, such as rapid functional brain mapping, virtual reality, and motor rehabilitation after stroke.

### **Do you like working with students?**

I enjoy working with students and often serve as a mentor for their graduate research projects. One of my recent VU students received the best poster award at the Lithuanian Neuroscience Association Conference in 2018. I also have a passion for teaching both undergraduate and graduate students. I teach neuroscience and research-related courses such as behavioral neuroscience and human sensory perception at the University of North Florida and research methods at AdventHealth University. In addition, I have been teaching a course I developed, Adaptive Neurotechnology, at VU since 2017. Finally, I love sharing my knowledge and expertise with students and colleagues. I do it by giving lectures and hands-on workshops at different places around the world.

### **What are your thoughts on our new programme – Systems Biology?**

I think that the Systems Biology programme provides its graduates with a competitive edge for employment and career advancement opportunities. In this era of prodigious technological development, the health sciences need specialists who can extract meaningful information from clinical data. An ability to work with it helps develop new treatments and improve treatment outcomes. This is what students

### What was the main purpose of this trip to Vilnius and what did you expect from Lithuanian audiences?

The purpose was to share my knowledge and expertise in cutting-edge research, such as brain-computer interfaces, with various groups of students and professionals. I appreciate the invitation from Prof Audrone Jalkaitiene and Prof Osvaldas Ruksenas for this outstanding opportunity. I presented "Brain-Machine Interfaces (BMIs): Current State and Clinical Application" to master's degree students in system biology, medical residents, PhD students, and clinicians as a part of the Science Forum course. During my second talk "Advancing the Field of Pre-surgical Functional Brain Mapping: A Multidisciplinary Approach with Incorporated Machine Learning", I communicated with computer science, mathematics, and statistics specialists who are interested in exploring the rapidly developing field of brain-computer interfaces. Finally, together with my long-term collaborators from the company G-tec (Austria), I offered a day-long programme of lectures and hands-on training as an event preceding the 2019 Lithuanian Neuroscience Society conference in Kaunas. I want to thank Prof Aušra Saudargienė and Prof Rima Naginienė for their hospitality and . I also got the chance to be a member of the doctoral thesis defense committee for a very talented student at VU.

### Were your expectations met?

Yes, absolutely, I received a strong response regarding the topic of my talks from all the audiences wherever I spoke. I saw genuine interest from different people concerning the use and development of brain-computer interface technologies in Lithuania and worldwide. I was able to clarify many questions that both students and professionals had regarding the topic of my lectures. Moreover, I have developed new opportunities for collaboration with people whom I met during my visit to Lithuania. I have also discussed the continuation of my current collaborative research projects with colleagues whom I have been actively working with for several consecutive years in Lithuania.

### How do you feel about returning to your Alma Mater?

I have a sense of gratitude and accomplishment at the same time. I feel grateful for the opportunity to give back to VU by sharing with students and faculty the knowledge and experience I have acquired over my years of research and studies. Second, I feel quite satisfied to be able to introduce and spread innovative ideas. It reminds me of the times I brought new technologies and approaches to Lithuania in the past. For example, after learning evoked potential techniques at the University of Manchester and Helsinki University, I established a cognitive evoked potentials programme at Vilnius Republican Psychiatric Hospital. Seeing the results of my previous work inspires me to do it again by bringing VU new ideas and technologies such as brain-computer interfaces.

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## Information

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For admission:

International Admissions Office

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For current students:

Student Affairs and Career Office

Saulėtekio ave 9, III building, room 104

Phone: [+370 5 219 3277](tel:+37052193277)

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