

PUBLIC LECTURE EVALUATION

Masaryk University

Faculty	Faculty of Medicine
Procedure field	Anatomy, histology and embryology
Applicant	doc. RNDr. Petr Vaňhara, Ph.D.
Lecture date	5. 6. 2026, 13:00
Lecture topic	Near-to-native engineered tissues for research and biomedical applications
Persons present (number)	47
Designated evaluators (board members)	prof. MUDr. Mgr. Zbyněk Tonar, Ph.D. prof. RNDr. Petr Dubový, CSc. prof. MUDr. Jaroslav Mokrý, Ph.D. prof. MUDr. Ondřej Naňka, Ph.D. Univ.-Prof. Dr. med. Niels Hammer

Associate Professor Petr Vaňhara delivered a public lecture entitled ***Near-to-native engineered tissues for research and biomedical applications: A journey from cancer research to investigating native cell and tissue complexity***. The lecture was clearly structured and delivered in a manner that made even complex experimental approaches accessible to a broader biomedical audience.

One of the strengths of the lecture was the way in which the candidate introduced the topic. He presented tissue engineering not a set of technical methods, but as a response to a real biological problems, such as when conventional cell cultures fail to reproduce the complexity of native tissues. This helped the audience appreciate why extracellular matrix organization, mechanical properties, soluble gradients, cell polarity and cell–cell interactions matter for physiologically relevant experimental models.

The candidate explained how this general concept has developed into his own research programme. He presented original work on quality control of cell models using intact-cell MALDI-TOF mass spectrometry, ex vivo organ cultures, and advanced three-dimensional tissue models. These examples were presented as parts of a coherent scientific direction focused on tissue plasticity, stress responses, regeneration and disease modelling.

Another strong part of the lecture concerned pancreatic ductal adenocarcinoma. The candidate emphasized that meaningful modelling of this disease cannot be limited to cancer cells alone, but must also include the surrounding stromal compartment. His work on patient-specific stromal spheroids, cancer-stromal cell interactions, biomechanical measurements and extracellular matrix-related features showed a clear translational perspective. These models

may help address clinically relevant questions such as invasiveness, immune escape, drug delivery and therapy resistance.

The next part dealt with lung epithelial models, especially the in-house Expandable Lung Epithelium platform. The candidate explained how pluripotent stem cell-derived lung epithelial cells can be used to model alveolar differentiation, stress responses, infection-related processes and abnormal tissue remodelling. This part of the lecture connected detailed experimental work with broader biomedical applications, including pulmonary fibrosis, acute respiratory failure and respiratory infections.

The lecture gave a very good impression of the candidate's ability to build and coordinate productive collaborations. He consistently acknowledged the contributions of junior colleagues, clinical partners, methodologists and international collaborators. This was not only a formal acknowledgement; the presented projects clearly depended on functional cooperation between cell biology, clinical medicine, mass spectrometry, imaging, biomechanics, organoid technologies and data integration. In this respect, the lecture demonstrated the candidate's role as a researcher who is able to connect people and combine methods and clinically relevant questions into a meaningful research programme.

From the pedagogical point of view, the lecture was clear, logical and visually well supported. The candidate introduced key concepts before moving to more specialized results, used appropriate examples, and maintained a good balance between background, methods and original data. He communicated the significance of complex techniques without unnecessary technical overload. The presentation therefore demonstrated not only strong scientific expertise, but also very good teaching and communication skills.

During the discussion, the candidate answered the questions with insight. His responses showed a good command of the biological, methodological and translational aspects of the presented work. He was able to discuss both the strengths and future directions of his research in a balanced and convincing way.

Conclusion

The lecture delivered by doc. RNDr. Petr Vaňhara, Ph.D., entitled "Near-to-native engineered tissues for research and biomedical applications" and delivered as part of the professor appointment procedure, **demonstrated** sufficient scholarly qualifications and pedagogical capabilities expected of applicants participating in a professor appointment procedure in the field of Anatomy, histology and embryology.

Date: 5. 6. 2026

prof. MUDr. Mgr. Zbyněk Tonar, Ph.D.

prof. RNDr. Petr Dubový, CSc.

prof. MUDr. Jaroslav Mokrý, Ph.D. on-line

prof. MUDr. Ondřej Naňka, Ph.D.

on-line

Univ.-Prof. Dr. med. Niels Hammer

on-line