MUNI

Annex No. 11 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

PUBLIC LECTURE EVALUATION

Masaryk University	
Faculty	Faculty of Science
Procedure field	Microbiology
Applicant	doc. Mgr. Monika Vítězová, Ph.D.
Lecture date	22 November 2024
Lecture topic	**Greenhouse gas emissions - are microorganisms a threat or a rescue?**
Persons present (number)	45 total (43 on site + 2 online)
Designated evaluators (board members)	Prof. RNDr. Ivo Sedláček, CSc. (on site) Prof. RNDr. Kateřina Malachová, CSc. (on site) Prof. RNDr. Luděk Bláha, Ph.D. (on site) Prof. RNDr. Helena Bujdáková, CSc. (online)

The public lecture by Monika Vítězová was organised as part of the Doctoral Seminar Series lectures (Bi0100) at the Faculty of Science, Masaryk University. The announcement of the lecture was distributed to the students of the Department of Experimental Biology and to participants from several institutions outside Masaryk University.

The lecture and discussion were held in Czech. The introduction clearly described the motivation for the research and the general significance of greenhouse gas emissions and provided information on anthropogenic sources of pollution and their influence on the Earth's temperature. The following parts of the presentation covered:
(a) the importance of methane production, including methane hydrate dissociation for the atmosphere and environmental monitoring of methane in recent decades;
(b) microorganisms as a natural biogeochemical force for the utilisation of carbon from organic material with particular emphasis on methanogenic archaea as model organisms as well as the reduction of methane production through the use of phytoadditives in animal feed;

(c) establishment of a laboratory for anaerobic microorganisms with a focus on methanogenic archaea and sulphate-reducing bacteria and research studies in this laboratory;
(d) biotechnological utilisation of methanogens with the "Power to Methane" project - new research with underground gas storage, renewable energy and biomethane;
(e) underground water sampling with isolation of methanogens for in vitro testing.

Important new findings were highlighted in the presentation, such as the role of different methanogenic archaea for gas production in underground gas storages or a one-year in vitro experiment on methane production in a high-pressure bioreactor followed by a field experiment in the real environment, or the composition of the microbial community with the identification of the variability and concentrations of archaea as well as the negative impacts of natural biomethane production compared to the ecological risks from greenhouse gas emissions.

The conclusions of the presentation by Monika. Vítězová were clearly formulated and the content and format of the presentation were appropriately adapted to the audience, which consisted mainly of PhD students from the Department of Experimental Biology as well as senior scientists and post-docs. The lecture was didactically well prepared, Monika Vítězová attracted attention and demonstrated her good pedagogical skills. The accompanying PowerPoint presentation slides were carefully arranged and the content of the PowerPoint presentation was balanced and contained a mixture of text sections, several graphical schemes as well as scientific results presented in graphs and tables.

The evaluation committee **did not find any negative aspects** in the presentation of Monika. Vítězová.

During the discussion following the presentation, several legitimate questions and/or comments were raised by participants of the presentation (prof. Bujdáková, prof. Malachová, prof. Bláha, doc. Dvořák, 2x anonymous from the audience) who asked/comment on the following questions: (i) what is the ratio between culturable and non-culturable methanogens; (ii) is it possible to influence the microbiome of ruminants and stay healthy with reduced methane production; (iii) are methanogens responsible for induced corrosion?; (iv) how profitable is underground biological methane production?; (v) is it possible to measure cell biomass in the bioreactor?; (vi) does the addition of phyto-additives in feed affect milk and meat production in cattle?; (vii) does the addition of phyto-additives in cattle feed affect the rumen microbiome?

Conclusion

The lecture delivered by Monika Vítězová, entitled "**Greenhouse gas emissions - are microorganisms a threat or a rescue?"**, 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 Microbiology.

The lecture took place in a hybrid form on 22 November 2024 at 12:00 noon. The above-mentioned members of the board attended the lecture and provided its evaluation. All designated evaluators are familiar with the text of the evaluation and agree with it.

Date: 27.11.2024

Ivo Sedláček

Kateřina Malachová

Luděk Bláha

Helena Bujdáková - participated online -