

**CONSILIUL NAȚIONAL DE ATESTARE A TITLURILOR,
DIPLOMELOR ȘI CERTIFICATELOR UNIVERSITARE**
NATIONAL COUNCIL FOR ATTESTATION OF
ACADEMIC TITLES, DIPLOMAS AND CERTIFICATES
(CNATDCU)

RAPORTUL COMISIEI DE ABILITARE
REPORT OF THE HABILITATION COMMISSION

din data de (date).....22.10.2021.....

NUMELE și Prenumele candidatului (SURNAME and Forename of the candidate):

MUȘAT, Florin

Titlul tezei de abilitare / direcțiile principale de cercetare (Title of habilitation thesis / main research areas):

Anaerobic oxidation of gaseous and cyclic alkanes (*Oxidarea anaerobă a alcanilor gazoși și ciclici*)

Domeniul de studii universitare de doctorat (Field of doctoral studies):

BIOLOGIE (BIOLOGY)

în care urmează să se confere calitatea de conducător de doctorat (future field of doctoral supervision)

Denumirea **Instituției Organizatoare de Studii Universitare de Doctorat (IOSUD) / Instituției Organizatoare de Doctorat (IOD)** unde are loc susținerea publică a tezei de abilitare (Name of the institution organizing doctoral studies (IOSUD), (IOD), where the public defense of the habilitation thesis takes place)

ȘCOALA DOCTORALĂ DE BIOLOGIE INTEGRATIVĂ
(DOCTORAL SCHOOL OF INTEGRATIVE BIOLOGY)

Punctele tari ale tezei de abilitare (Strong points of the habilitation thesis):

1. It is an overall strong thesis with clear data and important conclusions as also reflected by the publications of the candidate.
2. Isolation of organism or enrichments performing anaerobic alkanes oxidation and identification using an innovative combination of molecular biology analyses, stable isotope probing and single-cell chemical imaging based on nano-scale secondary ion mass spectrometry (NanoSIMS). In addition, estimating abundance and activity of such strains in the environment.
3. Elucidation of mechanisms of gaseous and cyclic alkanes degradation under anaerobic conditions
4. The Excellence is high. The thesis contains several important new findings e.g., the demonstration that gaseous alkanes can serve as growth substrates for anaerobic microorganisms; the proposal of an evolutionary model for archaeal alkane oxidation
5. Bringing the full strength of the power of the collaborators, their skills and logistics.
6. Wonderful possible applications for biotechnology
7. The candidate demonstrates his maturity as a scientist being able to generate scientific data published in high-ranked journals and to lead strong research groups.

Punctele slabe ale tezei de abilitare (**Weak points** of the habilitation thesis):

1. The introduction and academic development plan could have been elaborated in more details.
2. The reasoning behind the study and the impact of it is not described in details.
3. It is not clear from the thesis how strain BuS5 is isolated and why it was not possible to do isolations from the other enrichment cultures. BuS5 is also the only organisms that can degrade propane and butane simultaneously. The mechanisms behind that lacks details.
4. Less emphasis was put on the environmental relevance of described processes/ mechanisms.

Rezultatul votului / observații / concluziile comisiei de abilitare se motivează în continuare
(**Voting result / observations / premises for the conclusions** of the *habilitation commission* are as follows)

Based on the result of the vote cast, the habilitation commission **proposes the acceptance of the habilitation thesis** of the candidate **dr. Florin Mușat** in the field of Biology. The resolution of the committee is thus motivated by the following: the habilitation thesis is well-written as it logically connects the results of published research and provide important and comprehensive understanding of oxidation of gaseous and cyclic alkanes by anaerobic microorganisms both in the laboratory and in the environment; overall, the habilitation thesis is based on novel scientific findings uncovered by innovative combination of methods; the work open avenues towards novel discoveries in microbial alkane synthesis and its applicative potential; the candidate demonstrates solid scientific achievements validated through top publications, and strong motivation toward an academic career.

(a se continua pe verso – dacă este necesar) (continue overleaf if necessary)

COMISIA DE ABILITARE
HABILITATION COMMISSION

NUMELE și Prenumele
SURNAME and Forename

Semnătura
Signature

1. Prof. Peter R. GIRGUIS
2. Prof. Helle PLOUG
3. Prof. Jens Ejbye SCHMIDT
4. not applicable
5. not applicable

[Handwritten signatures and dates]
10/28/2021
03/11/21

A consemnat Prof. univ. dr. *Habil.* Horia Banciu
Cluj-Napoca, 22.10.2021

[Handwritten signature]
H/Banciu