EuroMicropH
Acidic Fridays

5th Acidic Friday 2021-04-16 16:00 CET

Open discussion platform of the COST action EuroMicropH. This discussion series is intended to stimulate an exchange on the different aspects of how microorganisms react to low pH conditions and why people are interested to investigate this subject.

Please register here for the upcoming meeting. To access the meeting please follow the Zoom link beneath.

16.04.2021 16:00 CEST

Join Zoom-Meeting

https://tuwien.zoom.us/j/93058961195?pwd=UVlaY21lNkg5eEZZWUg4Wmk5aWgyZz09

Agenda

Chairs

Daniela de Biase, Sapienza – University of Rome , Italy

Matthias Steiger, TU Wien, Austria

Programm

16:00 Welcome

16:05 Gennaro Agrimi, University Bari, Italy

Mitochondrial proton grandient, and its influence on mitochondrial transport

16:25 Babak Momeni, Boston College, United States

Coexistence of nasal bacteria under a fluctuating environmental pH: an in silico investigation

Questions and Discussion

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Abstracts

Gennaro Agrimi, University Bari, Italy

Mitochondrial proton grandient, and its influence on mitochondrial transport

Proton gradient across the inner mitochondrial membrane (IMM) is key element in connecting oxidation of nutrients and ATP synthesis. The chemical gradient of protons is also a the driving force in the transport of fundamental substrates such as pyruvate and phosphate across the IMM. Other mitochondrial carriers, the uncoupling proteins, have been on the other hand, involved in proton gradient dissipation. As demonstrated by our recent studies on yeast carboxylic acid transporters, mitochondrial transport reactions can deeply affect the intracellular flux distribution and the production of carboxylic acids. Consequently we can assume that a change in the mitochondrial proton gradient can be a silent and underappreciated regulator of intracellular metabolism.

Babak Momeni, Boston College, United States

Coexistence of nasal bacteria under a fluctuating environmental pH: an in silico investigation

To manipulate nasal microbiota for respiratory health, we need to better understand how this microbial community is assembled and maintained. Previous work has demonstrated that the pH in the nasal passage experiences temporal fluctuations. Yet, the impact of such pH fluctuations on nasal microbiota is not fully understood. Here, we examine how temporal fluctuations in pH might affect the coexistence of nasal bacteria in in silico communities. We take advantage of the cultivability of nasal bacteria to experimentally assess their responses to pH and the presence of other species. Based on experimentally observed responses, we formulate a mathematical model to investigate in silico the impact of temporal pH fluctuations on species coexistence. Overall, we find that the composition of nasal communities is generally robust against pH fluctuations within the expected range of amplitudes and frequencies.