

***Naegleria gruberi* as new model for investigating the evolution and cell biology of eukaryotes**

Eleanna Kazana^{1,2}, Lyto Yiangou^{1,2}, Jan Pyrih^{1,2}, Veronica Freire-Beneitez^{1,2}, Diego M. Cantoni¹, Christopher N. Miller^{1,2}, Emily Herman³, Alessia Buscaino¹, Tobias von der Haar¹, Joel B. Dacks³ and Anastasios D. Tsaousis^{1,2}

1. *School of Biosciences, University of Kent, Canterbury, Kent, United Kingdom*
2. *Laboratory of Molecular and Evolutionary Parasitology, RAPID Group, University of Kent, Canterbury, United Kingdom*
3. *Department of Cell Biology, University of Alberta, Edmonton, Canada*

Naegleria gruberi, is a free-living microbial eukaryote, which belongs to the group of Excavates. The organism is widely distributed especially in aquatic environments and it is famous for its ability to transform from an amoeba to flagellate and cyst forms depending on its surroundings. *In silico* examination of the published *Naegleria gruberi* genome opened up the possibility of functional exploration of the organism by molecular cell biology. Despite this, several attempts to genetically transfect or genetically manipulate the organism have been unsuccessful so far due to the unique morphological and cellular adaptations of the organisms, but also due to its resistance to certain basic antibiotics. Using a series of protocols and combination of cell biological tools, we were able to initiate investigations to explore the cell biology of *Naegleria gruberi* and attempted to tackle questions of the unique cellular and biochemical adaptations of this microbe. Preliminary data from these investigations will be discussed. This work is going to provide traits found in the last eukaryotic common ancestor and provide a model for investigating the cell biology of other free-living eukaryotes.