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Investigating the effect of low background radiation in the origin of animals - (remote)

Tuesday, 20 August 2024 16:00 (30 minutes)

20-minute talk + 10-minute questions

Background radiation is an abiotic component of Earth's surface environment that has potentially influenced biophysical and biochemical processes throughout evolution. One of the most critical evolutionary transitions was the emergence of multicellularity in animals, which led to the vast diversity observed in animals today. By studying the unicellular relatives of animals, we can gain valuable insights into this transition. To investigate how background radiation may have influenced the origin of multicellularity in animals, we designed an experimental evolution project at the Canfranc Underground Lab. This experiment involves exposing two species of unicellular animal relatives, *Capsaspora owczarzaki* and *Sphaeroforma arctica*, to low background radiation for six months. We will monitor the organisms' growth kinetics, assess changes in gene expression using transcriptomics, and sequence their genomes to identify any emerging mutations. This study aims to elucidate the potential role of background radiation in the evolution of multicellularity, providing new perspectives on the evolutionary processes that shaped early animal life. Additionally, by studying these two species, we will double the number of eukaryotic lineages in which background radiation has been studied.

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Session Classification: Studies of Life in Low Background Radiation