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Talk title	Geological Insights into the Nature of Early Eukaryotes
By	Dr. Galen P. Halverson
Date	Tuesday, 10th June 2025
Time	17h30
VENUE	Auditorium of the MME

Abstract:

Geological Insights into the Nature of Early Eukaryotes
Dr. Galen P. Halverson

One of the most compelling questions in science is how eukaryotic life emerged from its prokaryotic ancestors. It is widely accepted that eukaryotes originated via endosymbiosis between an archaeal host and a bacteria that closely resembled modern Alphaproteobacteria. However, the relatively recent discovery of the Asgard archaea and its identification as the closest archaeal relative to eukaryotes has reinvigorated the study of eukaryogenesis. While most of the rapid progress on this topic invariably falls within the realm of biology, the geologic record offers the potential for key insights into the timing and setting of eukaryogenesis, the morphology of early eukaryotes, and potentially the sequence of trait acquisition during the transition from the first eukaryotic common ancestor (FECA) to the last eukaryotic common ancestor (LECA). Impressively, molecular clock estimates and the fossil record broadly converge on a timing for eukaryogenesis of ca. 2.0–1.6 Ga. In this presentation, I will place the origin of eukaryotic life into the broader context of Earth's geophysical and environmental evolution during the Precambrian, then present new results from drill cores in Australia that shed light on the age and environmental setting of the oldest tangible vestiges of eukaryotic life.
