



East Midlands Geological Society  
60<sup>th</sup> Anniversary 1964-2024  
*Autumn Lectures 2024*

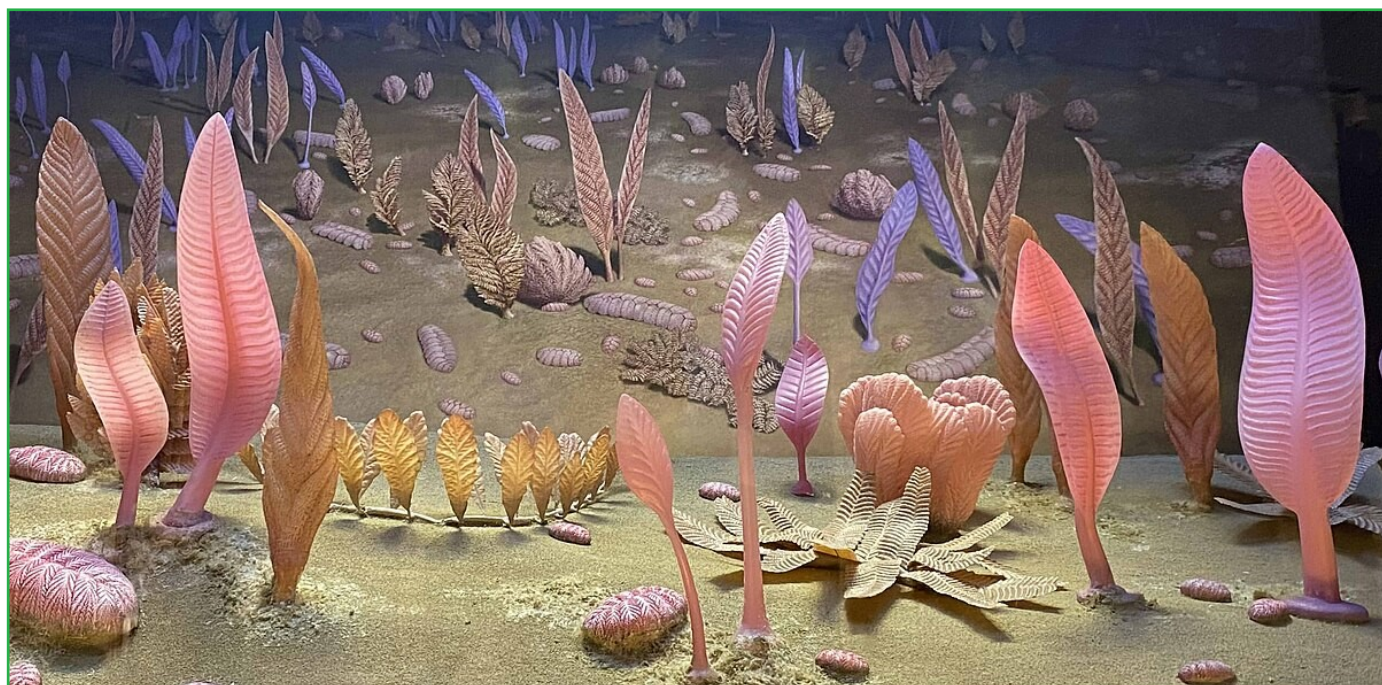


Saturday 9 November 2024, 6.00 - 7.00pm

*Early evolution of animal life and the generation of  
form*

[Dr Frankie Dunn](#)

University of Oxford Museum of Natural History



[Diorama of Ediacaran ecosystem, with abundant Charnia fronds, at the Smithsonian National Museum of Natural History](#)

**Venue:** School of Geography, Sir Clive Granger Building,  
University of Nottingham, University Park, Nottingham,  
NG7 2RD [Google Maps](#)

[EMGS Lectures Webpage](#)

## **ABSTRACT:**

The rise of the animals was a profound transition in the history of life; for the first time organisms were able to engineer the environment around them, altering geochemical cycles, building complex ecosystems and diversifying into myriad forms. However, the rise of the animals is also one of the most controversial episodes in Earth history. Most major animal groups appear in the fossil record during a major evolutionary radiation event between about 520 and 550 million years ago known as the Cambrian Explosion, when the blueprints for the animal phyla (arthropods, vertebrates, cnidarians) were laid down and, remarkably, have remained more-or-less unchanged in the half a billion years since. My research is focused on the period of time just before the Cambrian Explosion – the Ediacaran Period, and the Ediacaran–Cambrian transition. While fossil representatives of the living animal phyla diversified in the Cambrian Period, the timing and nature of their earliest antecedents remains controversial. Fossil assemblages from the late Ediacaran Period preserve the remains of fossil organisms with long-extinct body plans, historically excluded from analyses of the early evolution of animals because of extreme uncertainty regarding their phylogenetic placement. My novel approach to the study of these organisms has been to investigate their growth and development across whole populations of taxa with non-analogue frond-like body plans. My work has revealed new developmental characters that can be used to rigorously constrain the phylogenetic position of these fossils. In this talk, I will introduce my work on the fossils of the Ediacaran Period and set out the case for an animal affinity, but also discuss new fossil finds which suggest that the oldest yet known crown-group members of animal phyla lived and died hidden amongst the fronds