



**UNIVERSITÉ
DE GENÈVE**

FACULTÉ DES SCIENCES
Département des sciences
de la Terre

Seminar of the Department of Earth Sciences, UNIGE
March 20, 11h15 in Room 001
Rue des Maraîchers 13, CH-1205 Genève or via [Zoom](#)

Reading the layers of life: Stromatolites, from deep time to deep learning

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Abstract

Stromatolites are layered sedimentary structures formed under the influence of microbial communities and environmental factors. They constitute amongst the oldest known evidence of life on Earth – over 3.4 billion years old – and provide a unique fossil archive spanning nearly all of geological time. In this seminar, I will invite you on a journey through the Microbialite Collection of the *Muséum national d'histoire naturelle* (Paris), a unique archive to explore:

- How do stromatolites record the oxygenation of Earth's atmosphere and oceans?
- What can they tell us about the diversity of ancient surface environments?
- Are the rhythmic laminations driven by biological processes... or by climate cycles?
- Do these layered structures truly reflect biological activity?
- And how can AI help distinguish biogenic from abiotic laminated rocks?

At the intersection of geochemistry, palaeontology, and astrobiology, my research seeks to improve our understanding of how life has shaped the sedimentary record; with implications that extend beyond Earth's history to the search for life on other planets.



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