

Morphology and geochemistry of the enigmatic Ediacaran *Palaeopascichnus* in the Fermeuse Formation, Ferryland, Newfoundland, Canada

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Palaeopascichnus is an exclusively late Ediacaran fossil comprised of a series of bedding parallel, crescentic, uniserially-arranged lobes, which can be straight, sinuous, curved, branched, or meandering. It has been described from tuffs, cherts, carbonates, claystones, siltstones, sandstones, and dolomitic sandstones. It is known from Southern Australia, the United Kingdom, northern Norway, the Ukraine, southern China, and Newfoundland. *Palaeopascichnus* was originally described as a trace fossil, but more recently it has been considered to be a multi-chambered body fossil of a xenophyophoran protist, specifically, a benthic agglutinating foraminifera. This study aims to better constrain the morphology and biogeochemistry of *Palaeopascichnus*, as well as its biogeochemical signature. Polished blocks from the Fermeuse Formation were cut perpendicular and parallel to bedding through the fossils. The blocks were then geochemically analysed using the SEM (EDAX) to produce elemental maps that could be directly related to the fossil material. The same fossiliferous blocks were then used to make petrographic thin sections to better appreciate the associated sedimentary fabrics. This study aims to determine whether there are any mineralogical or biogeochemical differences between the inferred chambers, and the host sediment. The results of this biogeochemical analysis are discussed in the context of the possible palaeobiology and affinity of this enigmatic Ediacaran. A sort of 'halo' surrounding the chambers, composed of for example the titanium bearing mineral rutile would suggest an agglutinating origin, however in our preliminary SEM modeling that does not appear to be the case, except perhaps in one sample.