

Investigating the potential of intracellular mineral inclusions in microalgae as a novel bioremediation method for radioactive ^{90}Sr water pollution

Inés Segovia Campos¹, Agathe Martignier¹, Jean-Michel Jaquet¹, François Barja², Montserrat Filella³ & Daniel Ariztegui¹

¹ Département des Sciences de la Terre, Université de Genève, Rue de Maraîchers 13, CH-1205 Genève, Suisse (ines.segoviacampos@unige.ch)

² Unité de Microbiologie, Université de Genève, Quai Ernest-Ansermet 30, CH-1205 Genève, Suisse

³ Département F.-A. Forel, Université de Genève, Boulevard Carl-Vogt 66, CH-1205 Genève, Suisse

Chlorodendrales are an order of unicellular green algae widespread in the aquatic environment (brackish water, seawater and freshwater) that have recently been discovered to form intracellular carbonates. These mineral inclusions, called *micropearls*, are mainly composed of hydrated amorphous calcium carbonates (ACC) in which strontium can also accumulate at high concentrations. Under natural conditions, the Sr/Ca ratio of micropearls can be 200 times higher than in their environment. These observations suggest that Chlorodendrales species might be considered as potential candidates for new bioremediation methods for radioactive ^{90}Sr water contamination. In order to engineer a bioreactor, ongoing experiments with laboratory cultures are providing essential information that will enable the optimization of accumulation of ^{90}Sr by these species.