

創発的研究支援事業

終了報告書

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研究課題名	Isotopomics: towards understanding position-specific isotope signatures at natural abundance
研究実施期間	2022年1月1日～2024年12月31日

【国外研究機関に異動のため研究中止】

研究成果の概要

The plan of this project was to unlock the potential of position-specific isotope composition of biomolecules to shed light on their origin and history.

We developed methods for conducting position-specific isotope analysis (PSIA) of important biomolecules, including amino acids, sugars and lipids. The methods are based on an on-line pyrolysis system developed at Tokyo Tech and implemented for diverse molecules through wet chemistry methods.

The applications of these methods include: (i) understanding the cycle of organic acids in sediments, water and soil (Sato et al, in prep); (ii) using PSIA of amino acids to diagnose and understand cancer cell metabolism (iii) understanding past carbon cycle in sediments, in particular methane fluxes.

On the whole, while the project had to terminate before its expected end date, we have shown that position-specific isotope analysis is a method with high potential in many areas of Earth and life sciences.