



第 489 回つくば分子生命科学セミナー

TSUKUBA MOLECULAR LIFE SCIENCE SEMINAR

演題 : Evolutionary constraints shape the evolution of mammalian tooth classes

演者 : Alexa Sadier 先生

The Institute of Evolutionary Science of Montpellier (ISEM),
University of Montpellier

日時 : 2025 年 9 月 11 日 (木) 10:00-10:45

会場 : 筑波大学健康医科学イノベーション棟 8 階講堂

(対面開催のみ)

要旨 : One long-standing question in evolutionary biology is: how do new morphological innovations arise? While integrative advances in paleontology, genomics, development and evolution have unveiled general principles behind evolutionary novelties, we are still far from understanding the mechanisms by which novelties emerge and diversify from constrained genomic and developmental programs. To address this question, we use the exceptional morphological and ecological diversity of bats as a model system. Using morphological, genomic, developmental and modelling approaches across multiple bat species in diverse ecological contexts, our goal is to understand the origin of mammalian tooth classes, a key evolutionary innovation. I will first present our work on the evolution of developmental cascades that pattern tooth classes and introduce a predictive model explaining the diversification of premolar and molar proportions. I will then present new results on the morphological diversification of mammalian teeth, focusing on molars, and show that molars diversify both through and by breaking developmental constraints. Finally, I will extend these insights to other tooth classes and appendages. Together, these results show that the evolution of tooth classes is both biased and facilitated by developmental constraints, a conclusion broadly applicable to other serial organs. By establishing bat teeth as a unique study system, our research provides an integrative framework that uses natural variation as a starting point to understand evolutionary trajectories in ecological contexts.

本セミナーは、医学学位プログラム（博士）「医学セミナー」（担当：専攻各教員）、及び、フロンティア医科学学位プログラム（修士）「医科学セミナーII」（担当：入江賢児）の関連セミナーに相当します。また、本セミナーは学術変革領域研究(A)「宇宙が映す生命」との共催です。

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