

発生ダイナミクス分野主催セミナー
Developmental Dynamics Seminar



2026年6月5日(金) 16:00~17:30

自然共生実験棟クリエイティブスペース1F(ハイブリッド開催)

望月 一史 博士

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**Integrating Genetic and Epigenetic Information
During Programmed Genome Rearrangement
in *Tetrahymena***

Abstract:

Programmed DNA elimination (PDE) in *Tetrahymena* is a model of transgenerational epigenetic inheritance. During sexual reproduction, a new somatic macronucleus (MAC) develops from the germline micronucleus (MIC), eliminating ~50% of the genome, including most transposable elements. PDE is guided by Piwi-associated ~29-nt RNAs (scnRNAs) through a genome subtraction process. scnRNAs produced from the MIC are filtered in the parental MAC, where sequences matching the somatic genome are removed. The remaining scnRNAs direct elimination in the developing MAC.

We identify an additional, genetically encoded pathway of scnRNA production. Highly repetitive MIC-limited sequences (MLSs), mainly at chromosome ends, act as major scnRNA sources. Although representing only ~2% of the MIC genome, they generate ~25% of scnRNAs and can target ~60% of eliminated sequences. These results support a two-layer model combining soma-to-soma epigenetic inheritance and germline-to-soma genetic control. Together, these pathways shape the streamlined somatic genome and provide insight into parallels with piRNA-mediated transposon silencing in animals.

*This seminar will be held in English.

*単位認定セミナー・イノベーションセミナー(2ポイント)

*イノベーションセミナーのポイント認定は留学生に限る

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