

# 京都産業大学 生命科学部×タンパク質動態研究所 バイオフィォーラム 2024

最先端の生命科学研究に触れてみませんか

【日時】 2024年11月 7日(木) 16:00~17:30

【場所】 京都産業大学 15号1階15102セミナー室

【講師】 Patricia L. Clark 博士 (Notre Dame 大学)



【演題】 Synonymous codon substitutions modulate transcription and translation of a divergent upstream gene

【要旨】 Synonymous codons were originally viewed as interchangeable, with no phenotypic consequences. However, substantial evidence has now demonstrated that synonymous substitutions can perturb a variety of gene expression mechanisms. To date, most studies of synonymous codon-derived perturbations have focused on effects within a single gene. Here we show that synonymous codon substitutions made far within an E. coli plasmid-encoded gene can significantly increase expression of a divergent upstream gene, due to antisense transcription originating from an intragenic transcription start site (TSS). Surprisingly, this transcription readily bypasses native transcriptional repression. Even more surprisingly, accumulation of the protein encoded by the upstream gene correlated with the fraction of RNA originating from the intragenic TSS, rather than total RNA. These effects of synonymous codon substitutions on intergenic transcription and translation suggest that synonymous codons in bacteria may be under selection to both preserve the amino acid sequence of the encoded gene and avoid internal sequence elements with the potential to significantly perturb expression of neighboring genes. Avoiding such sequences may be especially important in prokaryotic genomes, where genes and regulatory elements are densely packed.

※本講演は英語講演となります。通訳はありませんので、ご注意ください。

## □お問合せ□

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## □交 通□

※キャンパス内に駐車場はありません。公共交通機関をご利用ください。

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地下鉄北大路駅下車→市バス(北3号系統)または京都バスで京都産大前下車

## □主 催□

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