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GTR Nagoya University

アドバンス生命理学特論・GTRセミナー
Topics in Advanced Biological Science/
GTR seminar

Metabolism and small RNA pathways are linked to cellular reprogramming in *C. elegans*

Speaker： **Baris Tursun**

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Professor

Time： 2026 April 9 (Thu) 10:30 ～12:00

Place： Science Building G101

Language： English

Using *C. elegans* to study cell fate reprogramming, we previously identified evolutionarily conserved factors that restrict transcription factor (TF) induced direct reprogramming. Systematic investigation of cell fate maintenance using whole-genome genetic screening discovered several factors that block direct reprogramming. These factors are involved in the regulation of chromatin, metabolism, proteostasis, and other cellular processes, including small RNA pathways. Notably, previous studies and ongoing research have revealed that many identified factors in *C. elegans* have analogous functions in human cells with respect to cellular reprogramming.

This talk reports on unpublished findings, including the identification of a highly conserved isocitrate-dehydrogenase as an impediment to direct reprogramming in living animals. Depletion of this mitochondrial enzyme allows TF-induced conversion of germ cells into neurons in worms. Furthermore, we identified a novel direct reprogramming phenomenon that facilitates us to study extensive morphological changes during direct reprogramming *in vivo*. In particular, we observe the remarkable generation of an intestinal lumen by a single cell. Additionally, our unique reprogramming system enabled the identification of a small RNA pathway required for cellular conversion.

Overall, *C. elegans* is a powerful *in vivo* system for identifying uncharted implications of molecular processes in cellular reprogramming, which may also be highly relevant in reprogramming human cells.

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