

Department seminar



日時：3月8日（金曜日）、16:00-17:00

場所：工学部3号館8B04講義室

演者：Sebastian A. Leidel

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m⁶A and pseudouridine (Ψ) in vertebrate mRNA

Chemical RNA modifications affect all aspects of RNA biology, including biogenesis, turnover, and tuning the interactions of RNA molecules. I will present two current stories from my lab involving mRNA and tRNA modifications. First, in collaboration with Sebastian Glatt's group (Krakow, Poland), we solved the structure of human PUS3 and performed several biochemical assays to understand how the absence of Ψ is associated with disease. Interestingly, our findings strongly argue against a role of PUS3 in mRNA modification, but reveal how the highly conserved PUS3 ensures target specificity. Second, to understand the role of N⁶-methyladenosine (m⁶A) during vertebrate development, we deleted *Mettl3* in zebrafish. *mettl3*^{-/-} fish die within the first month after fertilization. We combined RNA-seq and single-cell RNA-seq of *Mettl3*^{-/-} mutant heads to analyze the molecular phenotypes. Strikingly, genes associated with eye disease are dysregulated and histological analysis revealed significant morphological changes of the mutant retinas, while electroretinography uncovered visual defects. Furthermore, *mettl3*^{-/-} mutants displayed defects in locomotor activity in automated dark-light transition experiments, a phenotype that worsened over time. Finally, we found that mutant cells respond to the lack of m⁶A by regulating the splicing of *wtap*, the scaffold member of the m⁶A-writer complex.

このセミナーに関する連絡先

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