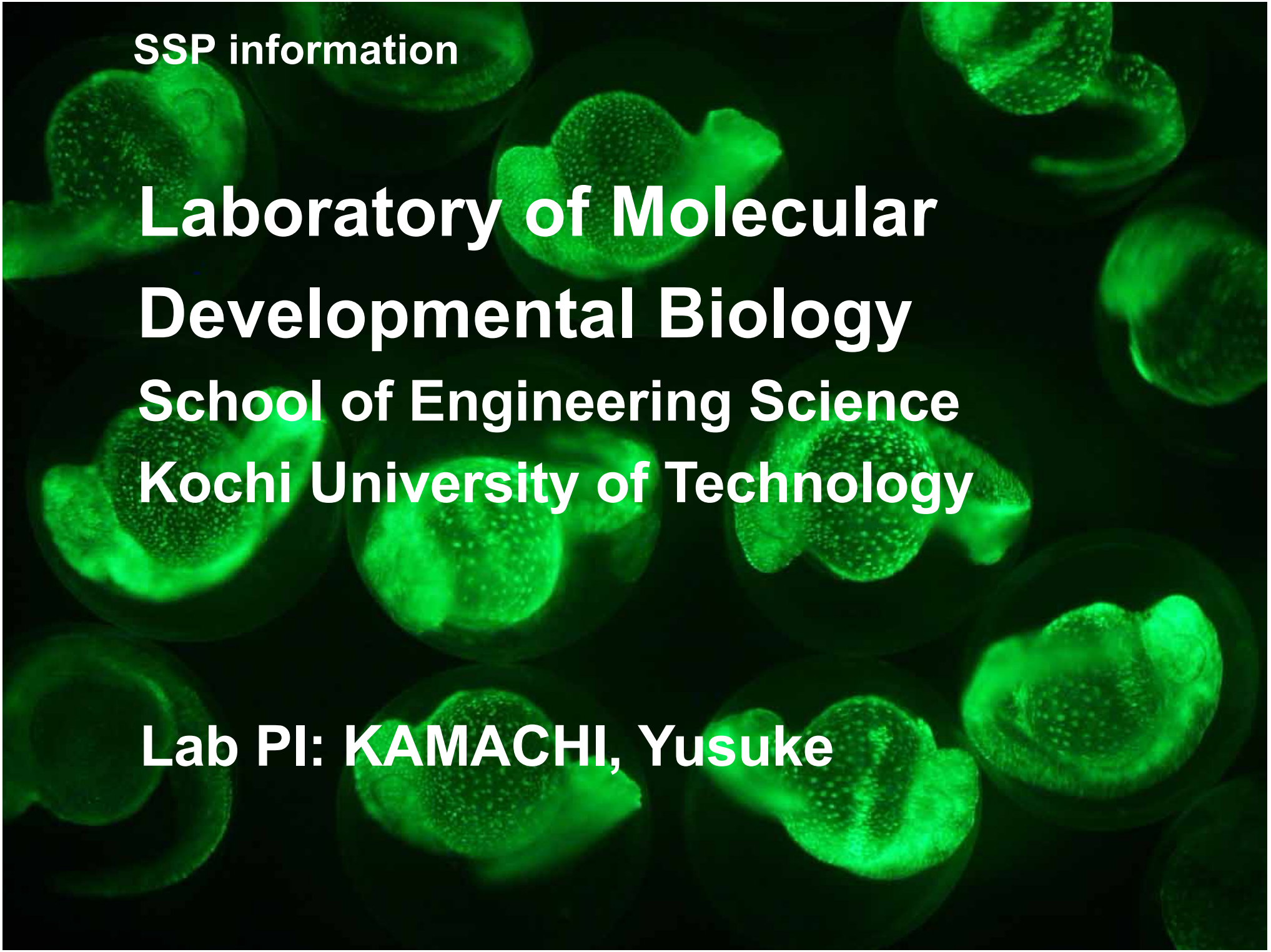
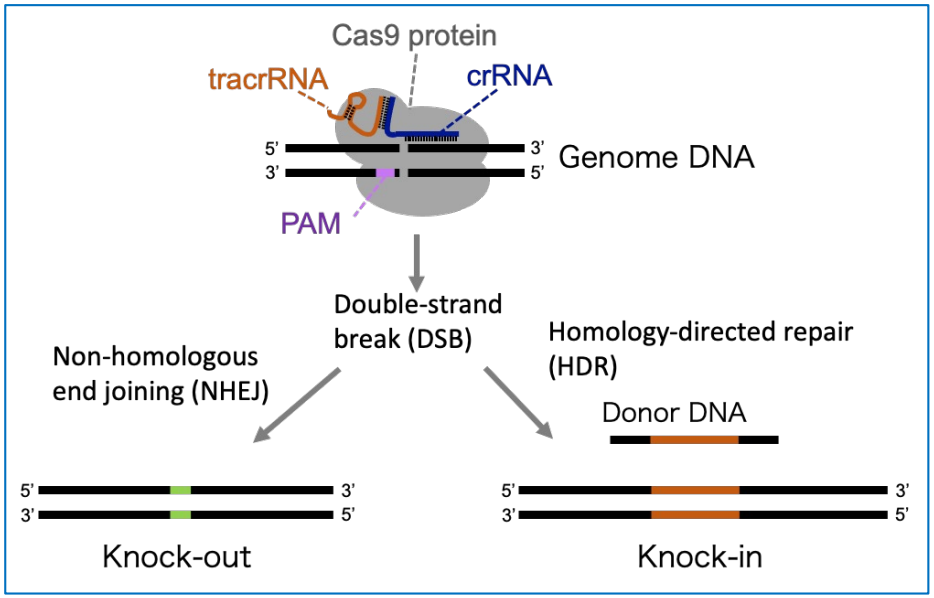

SSP information
Laboratory of Molecular Developmental Biology
School of Engineering Science
Kochi University of Technology
Lab PI: KAMACHI, Yusuke

Kamachi lab research projects

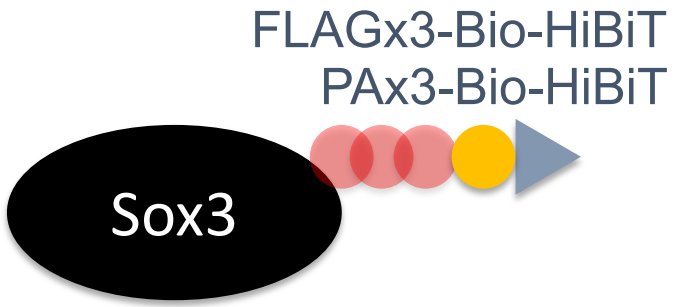
How are genes regulated during embryonic development?

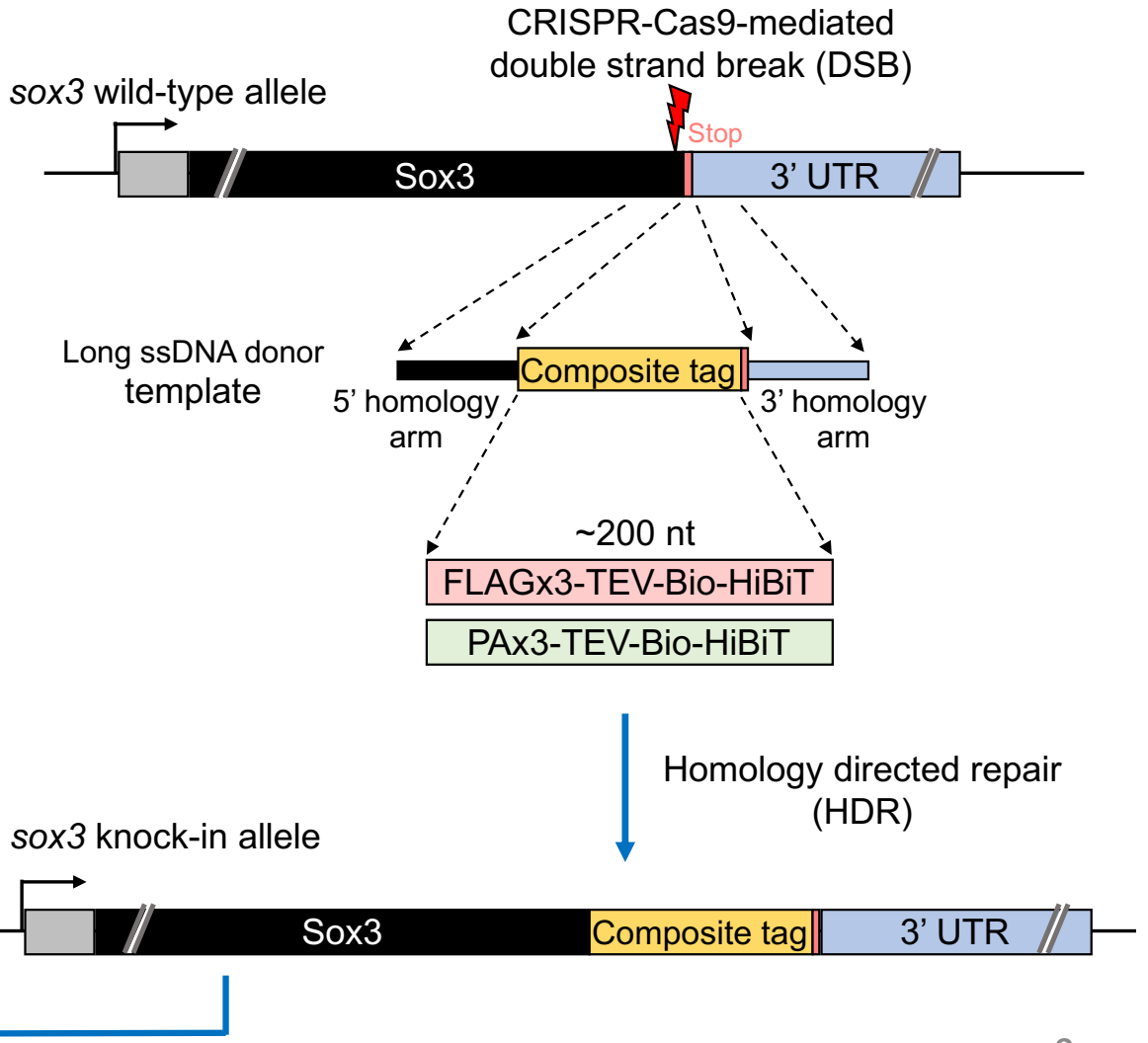
- We employ zebrafish as a model organism to understand molecular basis of gene regulation.
- Our research involves the advancement of genome editing technology, which we apply to investigate gene functions during embryonic development.
- Our primary emphasis lies in understanding gene regulation, particularly through the study of transcription factors including Sox and Pax family members.



Our recent research topics:
Knock-in of tags into the *sox3* gene using CRISPR-Cas9 mediated genome editing

CRISPR-Cas9-mediated knock-in of composite tags in zebrafish using long ssDNA as a donor

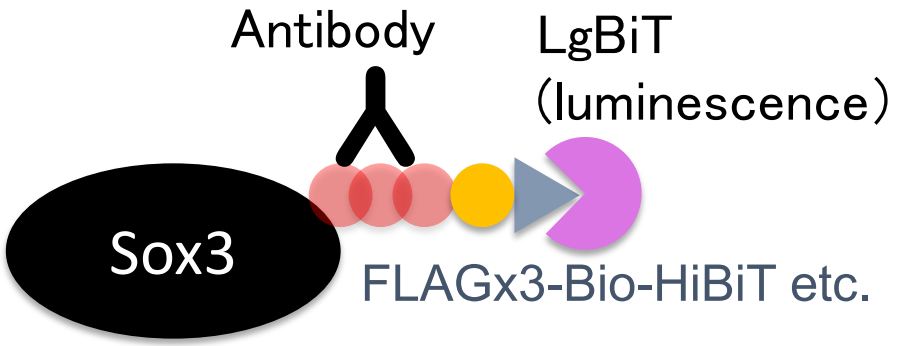




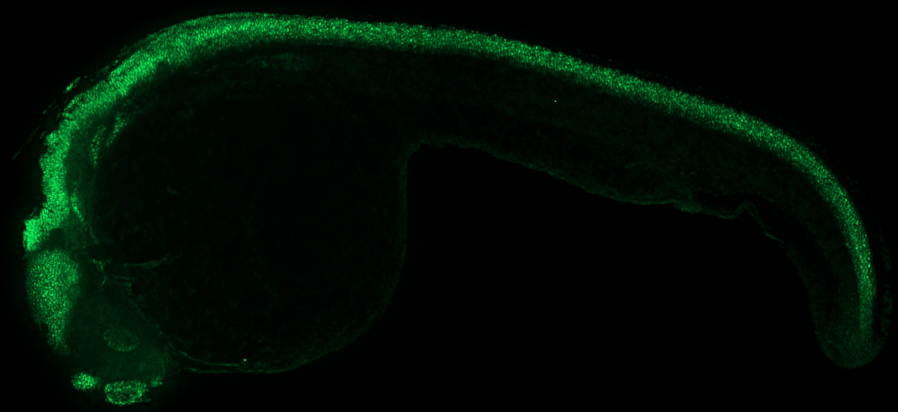
Our recent research topics:
Knock-in of tags into the *sox3* gene using CRISPR-Cas9 mediated genome editing

The use of composite tags enables efficient characterization of developmental transcription factors

Detection and quantitation



Whole mount immunostaining with anti-FLAG Ab



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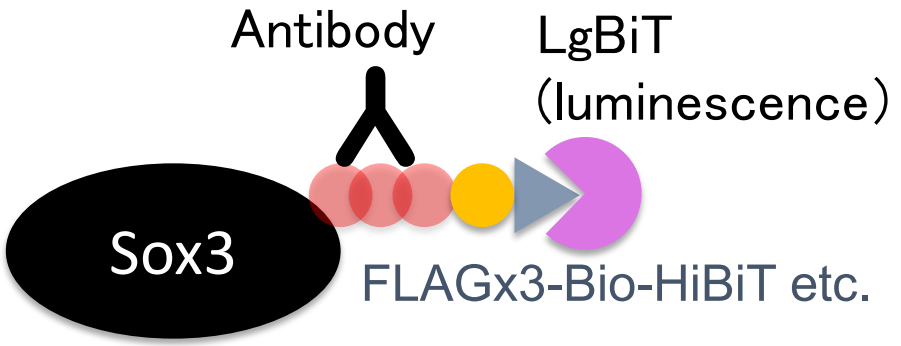
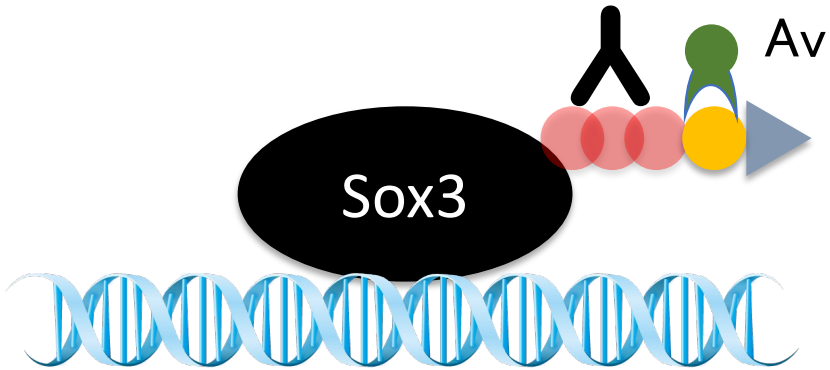
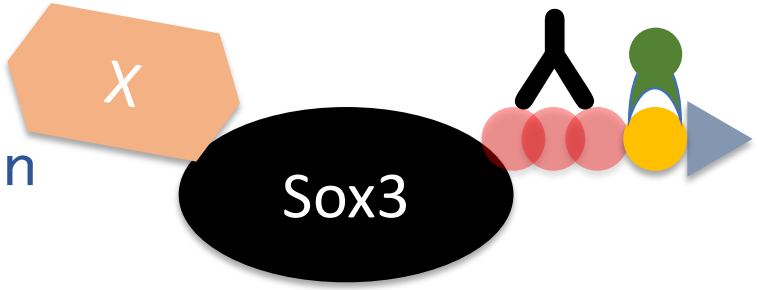


Protein–genomic DNA interaction



Protein–protein interaction



Recent publications from our lab

- Aoki, K., Yamasaki, M., Umezono, R., Hamamoto, T., Kamachi, Y. (2024) Systematic Comparison of Computational Tools for Sanger Sequencing-Based Genome Editing Analysis. *Cells*, 13, 261.

- Okada, K., Aoki, K., Tabei, T., Sugio, K., Imai, K., Bonkohara, Y., and Kamachi, Y. (2022) Key sequence features of CRISPR RNA for dual-guide CRISPR-Cas9 ribonucleoprotein complexes assembled with wild-type or HiFi Cas9. *Nucleic Acids Research*, 50: 2854-2871.

- Ranawakage, D. C., Okada, K., Sugio, K., Kawaguchi, Y., Kuninobu-Bonkohara, Y., Takada, T., and Kamachi, Y. (2021) Efficient CRISPR-Cas9-mediated knock-in of composite tags in zebrafishusing long ssDNA as a donor. *Frontiers in Cell and Developmental Biology*, 8:598634.

- Ranawakage, D. C., Takada, T., & Kamachi, Y. (2019) HiBiT-qIP, HiBiT-based quantitative immunoprecipitation, facilitates the determination of antibody affinity under immunoprecipitation conditions. *Scientific Reports*, 9(1), 6895.

All publications from our lab

https://scholar.google.com/citations?hl=en&user=YBuK3EYAAAAJ&view_op=list_works&sortby=pubdate

Required Skills and Knowledge

The successful candidate for our lab will have the following knowledge and skills:

- A solid understanding of molecular and cellular biology
- An understanding of developmental biology (preferred)
- General molecular biology skills