ARMI SPECIAL SEMINAR 2024

Insights into sex determination and aging from a short-lived killifish

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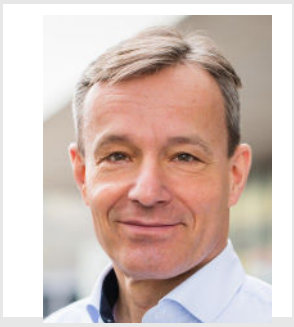

Abstract

The turquoise killifish *Nothobranchius furzeri* is the shortest-lived vertebrate that can currently be bred in the laboratory. Phenotypes like rapid growth, early sexual maturation, accelerated aging and stages of embryonic arrest (diapause) make it an attractive model organism in biomedical research. Killifish employ a XX/XY sex determination system. We have recently discovered that the Y-chromosomal copy of the TGF-β family member gdf6 (*gdf6Y*) is the male sex determinant in *N.furzeri*. Our data suggest that Gdf6y gained this function through allelic diversification.
In the context of aging, cellular senescence is a major interest in the lab. To study senescence *in vivo* we have recently developed a respective reporter line, which carries a fluorophore encoding gene in the *cdkn1a* (*p21*) locus, a senescence marker gene. The line itself is transparent, which has been achieved by the simultaneous inactivation of three key loci responsible for pigmentation. Current applications of the senescence reporter line will be presented in the talk.

Bio

Christoph Englert is Professor of Molecular Genetics at the University of Jena, Germany, and group leader at the Leibniz Institute on Aging – Fritz Lipmann Institute (FLI). He received his PhD from the Max Planck Institute for Biochemistry / University of Munich and carried out his postdoctoral training with Daniel Haber at the Cancer Center of Massachusetts General Hospital / Harvard Medical School. The Englert lab, together with two other labs has established the short-lived African killifish *Nothobranchius furzeri*, as a new model for research on aging. Currently, several projects in the lab *utilize N. furzeri*, allowing the investigation of the age-dependency of organ homeostasis and regeneration as well as the genetic basis of aging. Recently, the lab has discovered a member of the TGF-β signalling pathway as the male sex determining factor in killifish. In addition, the group has generated a transparent killifish line named *klara* that can serve as a tool for *in vivo* applications in research on aging and beyond.

EVENT DETAILS

DATE:
February 15, 2024

TIME:
12.00 – 13.00 hours

VENUE:
G19, 15 Innovation Walk
Monash University
Clayton Campus

HOST:
Peter Currie

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