



Life, Aging, Disease and Death revealed in Small Fish and Human Samples

【Keywords】

Small Fish	Aging	Disease	Human Sample	Disability
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■ Summary

Our specialty is to reproduce or discover pathological conditions similar to those in humans in cultured cells or small fish (**Fig**), and to confirm new findings in human samples each time they are obtained, in order to further basic research. In particular, we are trying to clarify the causes of **"Diseases and Disorders of the Brain"**, **"Various Aging-related Diseases"** and **"Aging"** and to link them to treatment.



Fig: Circulating aquarium and fish
 Fish from top to bottom: African killifish (*Nothobranchius furzeri*, a fish that ages in only 3 months and reaches the end of its life span in 5 months), Japanese Medaka, Zebrafish (shown is *Casper*, a transparent strain)

■ Subject Details/Topic

The strengths of our laboratory are,

- 1: Various small fish models of disease and aging**
- 2: Immediate testing of the ideas in fish and cells**
- 3: Highly-controlled human samples**

We have used these strengths to elucidate the pathophysiology of intractable diseases (e.g. *Cell Rep.* 2019; *PNAS* 2014). As an example, we have reported that ectopic leakage of mitochondrial DNA from mitochondria into the cytoplasm can be a key factor in the pathogenesis of Parkinson's disease (*Nat. Commun.* 2021). Other unique findings in Alzheimer's disease, amyotrophic lateral sclerosis (ALS), liver disease NASH/NAFLD, and sarcopenia are also under investigation.

■ We hope to collaborate with...

Drug discovery, Health food development

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