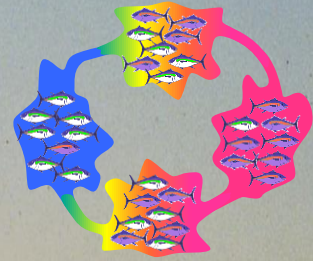


Laboratory of Population Biology

《 Biology and Conservation of Aquatic Animal Resources 》



Professor Carlos A. Strüssmann carlos*kaiyodai.ac.jp (*=@)

Research topics:

- ① Effects of global warming on fish reproduction
- ② Heat-induced germ cell apoptosis and degeneration
- ③ Fish gonadal sex differentiation and temperature-dependent sex determination
- ④ Otolith microchemistry and reconstruction of thermal history of individual fish
- ⑤ Biology and cryopreservation of fish gametes and embryos
- ⑥ Fish germ cell transplantation
- ⑦ Biology and culture of atherinopsid fish

Keywords:

Global warming, Fish reproduction, Gonadal sex differentiation, Temperature-dependent sex determination (TSD), Otolith, Apoptosis, Embryo cryopreservation, Germ cell transplantation

Publications:

(link)



Associate Professor Masashi Yokota yokota*kaiyodai.ac.jp (*=@)

Research topics:

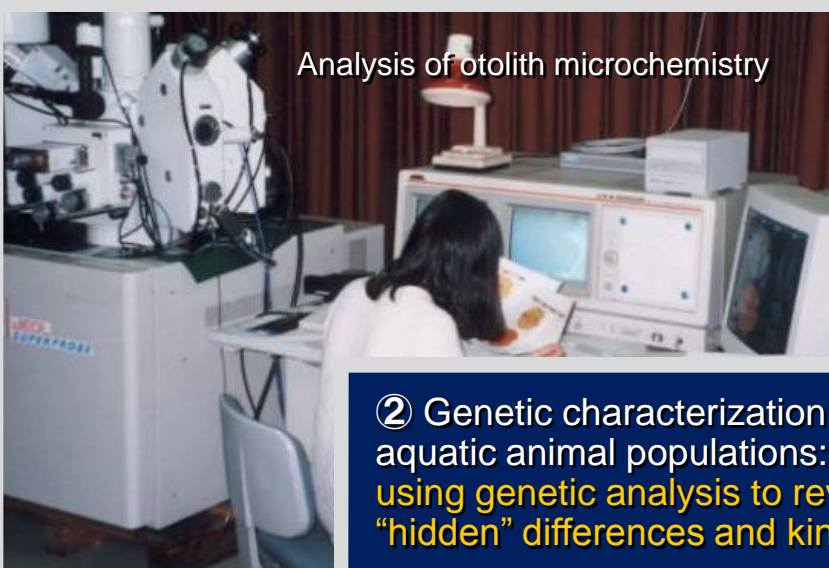
- ① Conservation of genetic diversity in aquatic organisms
- ② Fisheries, climate, and restocking effects on the genetic structure of natural populations
- ③ Risk assessment of epidemics among aquatic animals
- ④ Application of population biology concepts for disease prevention
- ⑤ Estimation of virus, bacteria, and parasite infection rates

Keywords:

Population biology, Population genetics, Restocking, Mathematical models, Epidemics, Infection risk, Prophylaxis



Analysis of otolith microchemistry



Japanese lobster
phyllosoma larvae

② Genetic characterization of aquatic animal populations: using genetic analysis to reveal "hidden" differences and kinship

- Phylogeny and relations of marine, estuarine, and freshwater species
- Genetic diversity of native fish populations

① Life history of aquatic animals: revealing the ecology and interactions of organisms

- Impact of exotic species on local populations
- Distribution and biology of native species
- Feeding of lobster phyllosoma larvae

③ Conservation of endangered species: guaranteeing the future of genetic resources

- Reproductive control in exotic fish species
- Use of fish germ cell transplantation
- Methods for cryopreservation of fish gametes and embryos

④ Climate change and fish reproduction: how global warming affects fish reproduction and demography of fish stocks

- High water temperature-induced germ cell degeneration and gonadal dysfunction in fish
- Mechanistic analysis of genotypic (GSD) and temperature-dependent sex determination (TSD) in fish
- Monitoring and forecasting TSD in the wild

Broad research ranging from physiological aspects at the individual level to their impact on demographic processes. Here are some examples:

⑤ Computer-based simulation: mathematical modeling of complex biological phenomena

- Effects of restocking on the population structure and genetic diversity of natural stocks
- Modeling of epidemics in fish farms and hatcheries
- Global warming effects on fish stocks



The pejerrey, a fish with marked temperature-dependent sex determination



Presentation of research findings in International Symposia