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**Title of the project: Germ cell transplantation in zebrafish**

**Abstract**

Germ cell transplantation in fish is a powerful biotechnique to produce germline chimeras and offers many possibilities for the fast seed production of commercially valuable species, genetic resource preservation of endangered species, and shortening the generation time. This approach comprises three different crucial procedures: 1) Production of germ cell-free recipients, also known as sterilization of host, 2) Germ cell isolation and enrichment, and 3) transplantation of enriched germ cell into the sterilized host followed by final assessments of germline chimeras and the donor-derived gametes. In this project, we will mainly use zebrafish (*Danio rerio*) for germ cell transplantation and perform intraspecific transplantation. We will use vas::EGFP transgenic zebrafish as donors and wildtype AB zebrafish as host. Sterile recipients will be using antisense morpholino oligonucleotides designed for zebrafish dead-end mRNA (*dnd*-MO). Injection of dnd-MO prevents the formation and migration of embryonic stem cells to the gonadal anlagen at an early stage of embryonic development. Post-injection, the recipient embryos will be monitored for six days until hatching. On the day of transplantation, spermatogonial cells will be isolated from the adult testis by density gradient centrifugation with Ficoll and transplanted into the sterile larvae monitored every day under a Fluorescent microscope to see the incorporation of donor germ cells. We will also work on single PGC transplantation using zebrafish.

**Methods**

* Microinjection of morpholino to the early-stage zebrafish embryo
* Single PGC transplantation from transgenic zebrafish to AB line zebrafish
* Spermatogonia isolation and transplantation into the larvae

**Expected results.**

We aim to produce germline chimeras through PGC and spermatogonia transplantation in zebrafish.