COMPARING THE IMMUNE FUNCTION OF TRIPLOID AND DIPLOID CHINOOK SALMON (*ONCORHYNCHUS TSHAWYTSCHA*): CAN WE MAKE TRIPLOID SALMON IMMUNOCOMPETENT?

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Capture fishery production peaked in 1993 and thus the increasing demand for human consumption of fish can only be met through aquaculture. In North America, Atlantic salmon farming dominates aquaculture, but on the Pacific coast of Canada there has been an increasing interest in culturing native species such as Chinook salmon. A major problem in aquaculture is the decrease in flesh quality upon maturation, which can begin prior to fish reaching market size, resulting in large financial losses. One way to combat this problem is to triploidize the fish, which prevents maturation altogether. Sterile triploid escapees also pose no ecological risk to wild stocks. Although the induction of triploidy is a simple process that does not appear to influence fish development or size, triploid fish suffer increased mortality and disease susceptibility when compared to their diploid counterparts. The resulting increase in gene number and/or dosage experienced by triploids may lead to clonal deletion of more T cells during development in comparison to diploids, which may present as decreased immune function. In an effort to quantify T cell numbers, our lab is developing polyclonal antibodies to Chinook salmon CD3. To further explore the effect of gene dosage and allelic diversity on disease susceptibility, MH class II alleles from triploid and diploid families were compared after disease challenge with *Vibrio anguillarum*. As the induction of triploidy has the potential to increase productivity of salmonid aquaculture worldwide, understanding the observed disease susceptibility could lead to more robust stocks of salmon.

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