

**Fish in vitro biology: another piece of the puzzle for the aquaculture of New Zealand native species *Chrysophrys auratus*.**

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*Chrysophrys auratus* (Australasian snapper) is one of the most abundant teleost species in the in-shore waters of New Zealand. Commercially, the in-shore snapper fishery is one of the largest and most valuable in New Zealand contributing NZD\$86 million per annum to GDP, and employing over 700 people. Snapper are also one of the most in-demand recreationally caught fish in New Zealand. To ensure sustainability of this sought-after species, snapper stocks are managed within the Quota Management System (QMS).

The New Zealand Institute for Plant and Food Research Limited started a genomics-assisted selective breeding programme in 2016 to investigate the suitability of snapper as an aquaculture species. The establishment of a strong broodstock, combined with high-throughput genotyping and phenotyping of selected individuals in a three generation pedigree, has led to a greater understanding of the teleosts life cycle, from hatching larvae through to optimising nutrition for adults. As part of the breeding programme a high-quality snapper genome has been assembled. Regions in the genome associated with commercially important traits have been identified, leading on to the selective breeding of high-quality fast-growing individuals.

We are currently working on the development of cell lines from snapper to support research into the captive breeding of the species. In this presentation we will discuss the growth of cells extracted from various tissue types, with a specific focus on gill cells. We will present sequence data distinguishing snapper of New Zealand and Australian origin, and show where the snapper gill cells fall in this differentiation. Finally, we will discuss applications of cell lines as a research tool for the breeding and further development of new species for aquaculture.