

Markers show the Way Forward

Following on from the discovery of the location of a major gene (QTL) controlling resistance to IPN, LNS geneticists, working in collaboration with scientists at the Roslin Institute and the Stirling Institute of Aquaculture, have shown that this gene accounts for most of the variation in resistance to IPN. Individual fish will inherit variants of the gene from their mother and father. Those fish that inherit two favourable variants (++) are highly resistant to IPN whilst those with two unfavourable variants (- -) are highly susceptible. Fish with one resistant and one susceptible version (+-) of the gene show intermediate rates of survival when challenged with IPNV.

Survival in Landcatch salmon with differing variants of the gene

		Father's Variants	
		Resistant (+)	Susceptible (-)
Mother's Variant	Resistant (+)	(++) 91-100% survival	(+ -) 38-60% survival
	Susceptible (-)	(- +) 67-78% survival	(- -) 0-29% survival

This discovery was first used to select LNS broodstock in 2007 and has now been further developed to screen all parents of the eggs which will be offered for sale in the forthcoming season, so maximising the number of individuals which carry the gene for improved resistance to IPN. This method will also allow faster progress in the development of resistance to viral diseases in LNS's elite pedigree broodstock.

Marker Assisted Selection for disease resistance will be used in harmony with LNS's balanced approach to genetic improvement for robustness and other commercially important traits. At each generation, Landcatch Atlantic salmon are selected to make major improvements in growth and survival, with supportive improvements in other traits including low maturation. These improvements ensure that producers who use the Landcatch strain of salmon are farming a robust fish with a low production cost.

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