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News Release

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Salmon breeding to benefit from gene study of disease resistance

Farmed Atlantic salmon production could be boosted by the discovery of a genetic marker associated with resistance to a potentially devastating virus.

Scientists say their research into Pancreas Disease, caused by a salmonid alphavirus, will help salmon breeders to select fish with greater resilience to this infection.

Their goal is to reduce losses and improve standards of welfare in the salmon farming industry.

Gene discoveries relating to a different viral disease – infectious pancreatic necrosis – are already saving the UK industry around £26 million each year.

Scientists led by the University of Edinburgh's Roslin Institute looked at commercial Atlantic salmon stocks that had survived an infection of salmonid alphavirus.

They found that half of the observed variation in resistance to the disease could be explained by genetic factors that are passed from one generation to the next.

One particular part of the salmon's genetic make-up is responsible for almost a quarter of this variation.

This genetic marker – called a QTL – is now being added to genetic tests that are used to help select the best fish for use in breeding programs.

Pancreas Disease is one of the most problematic infectious diseases of farmed Atlantic salmon and is responsible for major economic losses to salmon farmers in the UK and Norway.

Outbreaks of the disease have a significant impact on the welfare of farmed salmon and can be fatal.

Vaccines are available that are partially effective against salmonid alphavirus. Management techniques can also help to minimise the spread and impact of the infection.

Scientists say the ability to breed fish stocks that are more resistant to the virus would significantly improve efforts to control the disease.

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Dr Ross Houston, of the University's Roslin Institute, said: "Based on these results, it is possible to take a small sample of fin tissue from a salmon, study its DNA and make accurate predictions on whether it is likely to produce offspring that have high resistance to salmonid alphavirus. Breeding from fish that are more resistant has the potential to make a significant positive contribution to controlling disease outbreaks."

The study is published today in the journal *Heredity*. The research formed part of the project of PhD student Serap Gonen at The Roslin Institute. It included scientists from the research institute Nofima, Akvaforsk Genetics Centre and the Norwegian University of Life Sciences. The salmon breeding and production companies Marine Harvest and SalmoBreed AS were also partners in the research.

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