

Supercharging aquaculture

James Cook University has officially launched its new research hub that will use advanced genetic techniques and artificial intelligence to boost northern Australia's aquaculture industry.

The Director of the new Research Hub, Professor Dean Jerry, said \$4.9 million of funding from the Australian Research Council through their Industrial Transformation Research Program has helped establish the ARC Research Hub for Supercharging Tropical Aquaculture through Genetic Solutions.

“The hub will apply modern genetic, selective breeding and artificial intelligence approaches to dramatically improve the productivity of farming four important northern Australian aquaculture species, namely barramundi, pearl oyster, grouper and marine red-algae,” said Professor Jerry.

He said the four species are either most of the major species currently farmed in tropical Australia, or are emerging species with great potential to be farmed in the North and generate new economic opportunities.

The research hub will partner with Mainstream Aquaculture Group, Cygnet Bay Pearls, The Company One, Sea Forest, the Australian Genome Research Facility and the University of Queensland.

“Our partners already have in place world-leading breeding programs or are starting programs that reduce the risk of disease or increase productivity, or they are involved in the production of bioactives that suppress methane production in cattle, as in the case of marine seaweed,” said Professor Jerry.

He said the hub will work with each of the industry partners and apply traditional and cutting-edge genetic solutions to selective breeding programs that supercharge the productivity of farming these species.

“The capability offered by JCU and UQ researchers is complemented by the Australian Genome Research Facility, which will assist in the development of genomic technologies along with helping to understand the role bacterial microbiomes play in the production systems.

“We’ll also be applying Artificial Intelligence and Machine Learning for the first time to predict the likelihood of disease events on a farm by bringing together complex environmental, bacterial microbiome, farm management and genetic data streams,” Professor Jerry said.

Professor Jerry said at the conclusion of the program, all partner organisations will be conducting world-leading, advanced aquaculture breeding programs for their particular species.

“They’ll have a better understanding of how to lower the risk of farming through using genetics to limit the impacts of disease and have tools at their disposal to better manage their production systems to return as much genetic value as they can in the species they farm,” he said.

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