

Targeted Project / AY 2023 -2024

## Microencapsulated feeds to improve sustainability and efficiency in aquaculture

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**Research area:** Sustainable aquaculture

### Project outline:

Growth in aquaculture is crucial to meet global food demands. Our ability to increase production of land-derived foods is increasingly limited by scarce land and water resources, fish, seafood and algae are rich in bioavailable nutrients not easily found in terrestrial plant-based foods, and there are opportunities for aquaculture to provide all of the 177 Mt of additional animal-source food needed worldwide by 2050. Aquaculture can provide a low- carbon, sustainable, affordable substitute for terrestrial food sources, and demand is expected to continue to grow quickly.

However, current problems across the value chain are hampering the ability for aquaculture to grow efficiently and sustainably. From a production perspective, these include an overreliance on fishmeal and fish oil for feeds, suboptimal methods for breeding juveniles, and poor disease control. There is also a need for improved technologies to improve the palatability and appeal of aquaculture products to the consumers to drive demand.

This PhD project will leverage novel microencapsulated technology developed at the University of Cambridge which allow delivery of active ingredients to animals. Potential research applications of these feeds during the PhD include but are not limited to: trialling ingredients for synchronised stimulation of spawning in shellfish stock, delivery of chelating agents and antimicrobial compounds to reduce disease in fish and shellfish stock, and the delivery of nutrients to increase seafood value and improve the quality and flavour of seafood to consumers.

**BBSRC DTP main strategic theme:** Bioscience for sustainable agriculture and food