

Innovative Research Solutions with Industry

Pharmaceuticals

CLIENT:
Algae Health

AREA:
Biotechnology



Facilitating commercialisation of new technology for production of nutritional compounds

Algae Health is a green biotechnology company which has developed an innovative, environmentally friendly and sustainable new technology for the production of nutritional compounds. The company is a high potential start-up based in Claregalway and has secured investment for the commercialisation of the product.

As a start-up company, Algae Health had little access to laboratory facilities and key scientific analytical resources when it initially approached Limerick Institute of Technology (LIT). It wished to partner with a research institution in order to address these challenges. LIT operate a Technology Gateway in collaboration with the Institute of Technology, Tralee – Shannon Applied Biotechnology Centre (ABC) – and this centre led the work with the company.

To provide the services required by Algae Health, Shannon ABC recruited a postdoctoral scientist with extensive micro-algal experience who was specifically dedicated to this project at LIT and facilitated access to the wider Shannon ABC scientific resources, including extensive analytical capabilities.

These resources led to Shannon ABC screening and identifying specific micro-algal strains capable of commercial bioactive production and identifying optimal culture reaction conditions for maximal bioactive production and recovery. To further the progression of the project Shannon ABC received two unique proprietary pilot scale photobioreactors on site from the company. Shannon ABC developed standard operating procedures for the transfer of results from



Proprietary Pilot Scale Bioreactors used in the project

laboratory scale reaction conditions to the large scale industrial reactors. Shannon ABC and Algae Health Ltd then operated the large scale reactors for a period of over 18 months, addressing technical processing issues and optimising tank conditions. Funding was secured from the Enterprise Ireland Innovation Partnership programme for this 2-year project. The company provided 20% of the costs as well as working very closely with the research team and providing the bioreactors noted above to facilitate the process and method development, as well as subsequent technology transfer. →

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→ A range of tasks were completed during the project including:

- Development of core process and technology required for progress of the company;
- Scalable supercritical fluid extraction process for extraction, purification and enrichment of target molecules;
- Transfer of technology and knowledge to Algae Health;
- A cost-benefit analysis identifying the cost effectiveness of the commercial process when compared to traditional photobioreactor cultivation of microalgae for high value products;
- Direct in-line quantification methods using Liquid Chromatography Mass Spectroscopy.

By providing access to a dedicated post-doctoral scientist, the project allowed the identification of the best micro-algal strains for commercial production. It also facilitated the optimisation

of media formulations and growth protocols in a scalable cost effective manner. In this way the research partnership led to the identification and implementation of a number of solutions to key technical challenges. It developed processes to commercially and competitively produce bio-active molecules from micro-algae on a pilot scale. These solutions have improved bio-active yields as well as improving the cost effectiveness of the production system.

Algae Health Ltd have now secured €950,000 investment to commercialise the product, with the outcomes from the collaboration with Shannon ABC playing a key role in this regard. Shannon ABC also facilitated the involvement of Algae Health Ltd as a consortium partner in a EU Framework 7 funded project. This project, focused on sustainable production of Biologically Active Molecules of Marine Based Origin (BAMMBO), is worth a total of €4.2 million. ■

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Eddie McHugh

Managing Director,
Algae Health

“Working with Shannon ABC has been vital to the commercialisation of our company. Their laboratory cultivation skills enabled us to develop the technical knowledge to scale-up to pilot tanks (1000 litres). Throughout the project they always kept a commercial focus on the research which resulted in the very positive completion of this project. On the back of the results from the refinement of our technology, Algae Health has been able to secure €950,000 of commercialisation funding and we now employ 5 people with plans for 23 employees within the next 3 years. I would like to sincerely thank Shannon ABC for their on-going support and look forward to continuing to work with them in the future.”



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