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Finding NEMO: The search for novel emerging modulators in the ocean

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Irish waters are teeming with marine life and have been used as a rich source of food for thousands of years. Food has evolved over this time to become something more than just a survival requirement. We now recognise food's importance in not only survival but also in our overall health and wellbeing. Functional food is a market which has experienced massive growth in recent years due to an ever expanding health conscious population. This has created a demand both nationally and internationally for new novel functional foods or food ingredients. And once again we are looking to Irish waters as a source of these to meet this demand. The seaweed Dulse, commonly found on the west and north coasts of Ireland and the north Atlantic fish Boarfish and Blue Whiting have been identified as potential sources of functional ingredients or NEMOs. Protein hydrolysates generated from these sources are being screened to assess their ability to modulate the immune response, particularly that of three key consumers; infants with food allergies, elderly people suffering inflammation and immunosuppressed high performance athletes. Our aim is to identify protein hydrolysates from these marine sources which can be easily added to the diets of these sufferers to prime their immune systems back to a more so called normal state. This is being achieved through a multi analysis *ex vivo* and *in vivo* based approach. Hydrolysates are screened on both dendritic cells and T cells, ensuring both the innate and adaptive immune systems are represented before potential candidates are brought into *in vivo* murine models. Through this method protein hydrolysates are being identified which can be developed as functional ingredients with proven benefits.

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