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## **Novel Cold-Adapted Lipase from Marine Plankton, *Salpa thompsoni***

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## NOVEL COLD-ADAPTED LIPASE FROM MARINE PLANKTON, SALPA THOMPSONI

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Antarctica represents a rich treasure trove for novel enzymes adapted to function under extreme environmental conditions. In a search for cold adapted lipases, we mined the gut transcriptome from one of the most efficient filter feeders in Antarctic waters, the tunicate plankton *Salpa thompsoni*. A full-length lipase was successfully identified and synthesised into a pet28a (+) cloning vector. This gene was then heterologously expressed into the Arctic Express cell line at 10°C for 24hours; producing the lipase 'PL002' with a molecular weight of 66kDa. His tag affinity chromatography (Ni<sup>2+</sup>-NTA) was subsequently used to purify the enzyme. Characterisation of the temperature profile of PL002 lipase will contribute to our understanding of cold-tolerant versus cold-adapted enzymes. Lipases have several applications within green chemistry, and we aim to use the novel lipase from Antarctic *S. thompsoni* as a catalyst for transesterification reactions producing odour compounds.

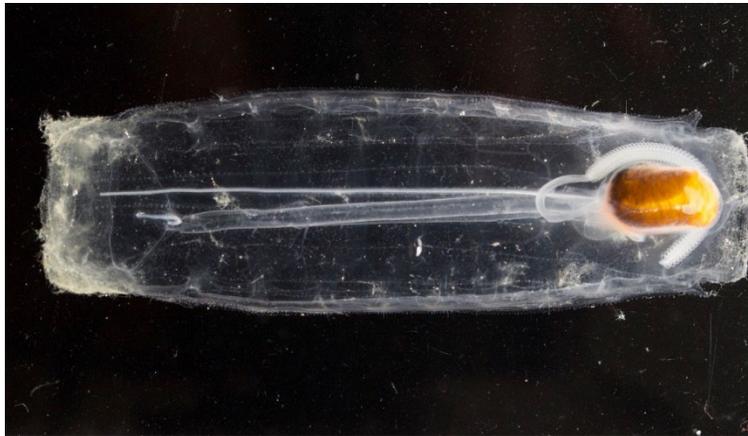


Figure 1 – *Salpa thompsoni* with yellow-brown gut expressing lipase (picture C.Held)