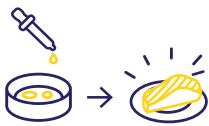


Demand for seafood products is expected to grow substantially in the coming years, but overfishing and harmful fishing practices have damaged fragile marine habitats, destabilized ocean ecosystems, and severely depleted global fisheries. Aquaculture has expanded rapidly to help meet demand but has generated a host of new environmental risks, and many desirable species are simply not amenable to farming.

Creating a Cell Line Repository for Seafood-Relevant Species



Cell-based seafood presents a novel solution: delivering the products that consumers want with a fraction of the environmental burden. However, virtually no funding has been expended in the development of cell-based seafood. Cell cultivation from species of fish, crustaceans, and mollusks is seldom performed in cell biology research labs, so scientific literature and materials in this area are sparse. In particular, the absence of cell lines derived from commercially relevant aquatic species presents a major barrier for cell-based seafood research and development.



The proposed research will address a critical obstacle that is hampering the development of high-quality, sustainable cell-based seafood products: lack of publicly available relevant cell lines and protocols. This work exhibits tremendous potential to benefit both commercial innovators and academic researchers.

1x
project scope

\$280,000 budget—provides centralized storage and maintenance of 10-15 cell lines.

- All cell lines will be characterized and fully genome sequenced.
- These will include three brand-new iPSC (induced pluripotent stem cell) lines.
- Protocols for differentiating the iPSC lines into muscle cells will be developed.

5x
project scope

\$1.25M budget—everything in the 1x scope plus this:

- Construction of a researcher portal to assist collaboration
- Creation of 10 more iPSC lines (to a total repository size of 20-25 cell lines)
- Development of serum-free media to accompany the cell lines
- Development of a secondary method for differentiating iPSC lines into muscle cells that is more suitable for food applications

10x
project scope

\$2.5M budget—everything in the 5x scope plus this:

- Exploratory research to begin filling knowledge gap in cell-line development for marine invertebrates, such as shrimp and octopus
- Additional 10 iPSC lines (to a total repository size of 25-30 cell lines)



Timeline to completion: two to five years, depending on the project scope