

# AQ-Vax

Aquaculture Focus

Novel & Effective Oral Vaccines & Therapeutics

Addresses major losses to disease



THE UNIVERSITY OF ARIZONA

**TECH LAUNCH  
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# Executive Summary

AQ-Vax has created a novel and proprietary Viral Vector Platform, designed to be:

- Easily customized to target most common pathogens in fish and crustaceans with vaccine or therapeutic payloads;
- Delivered as a spray coating for or in aquaculture feed, reducing injection labor costs and related losses from animal deaths/injuries;
- Baculovirus expression system for safe, replication-incompetent delivery;
- Cost-effective mass production due to minimal purification requirements.

*Patent pending: PCT application and national stage filings completed in 5 key regions.*

AQ-Vax is seeking to build a team and identify strategic partners to:

- Validate VNN oral vaccine in fish.
- Validate WSSV & APHN control in shrimp
- Complete experimental runs needed for salmonid vaccine approval in US & Canada
- Scale up production for initial commercial VNN oral vaccine entry

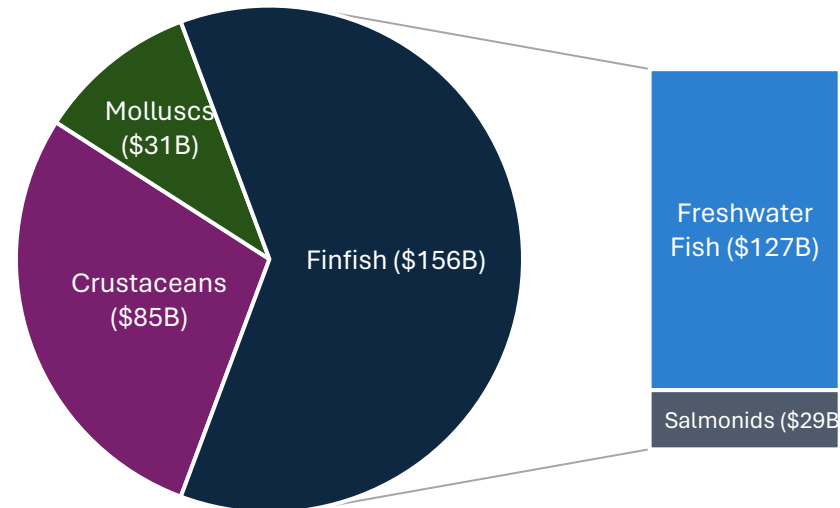


# Global Aquaculture Market

## The Blue Revolution

- Aquaculture has been hailed as a “revolution” in food production, helping to meet the growing needs of the world’s population.
- The global aquaculture market is >\$280B and is growing steadily at ~5% annually.<sup>1</sup>
- 1/2 of all aquatic foods now eaten by humans are produced by farming.<sup>1</sup>

Aquaculture Market 2021 (Total = \$281B) <sup>1</sup>



<sup>1</sup> Food and Agriculture Organization of the United Nations (FAO). 2024. *Fishery and Aquaculture Statistics – Yearbook 2021*. FAO Yearbook of Fishery and Aquaculture Statistics. Rome.



# Opportunity: Aquaculture Health Tech

Current prevention/treatment solutions are insufficient, resulting in:

- 10% economic losses annually due to viral, bacterial and parasitic infections
- Costly limitations on farm location/size/density
- Many diseases have not treatment or cure



Finfish

- Vaccines mostly limited to injectables requiring individual fish handling with high death/injury rates
- Vaccines focus on salmonid market due to premium price point leaving larger freshwater segment under-addressed
- Lack treatments for viral, parasitic infections (sea lice a major problem in salmonids)

## AQ-Vax Viral Vector Platform

- Safe delivery of vaccine OR therapeutic payloads for any pathogen with known antigenic components
- Suitable for oral delivery
- Low-cost for high volume mass production



Crustaceans

- Few tools to combat disease other than preventive management
- Antibiotic use possible for bacterial pathogens, but regulatory controls curtail usage

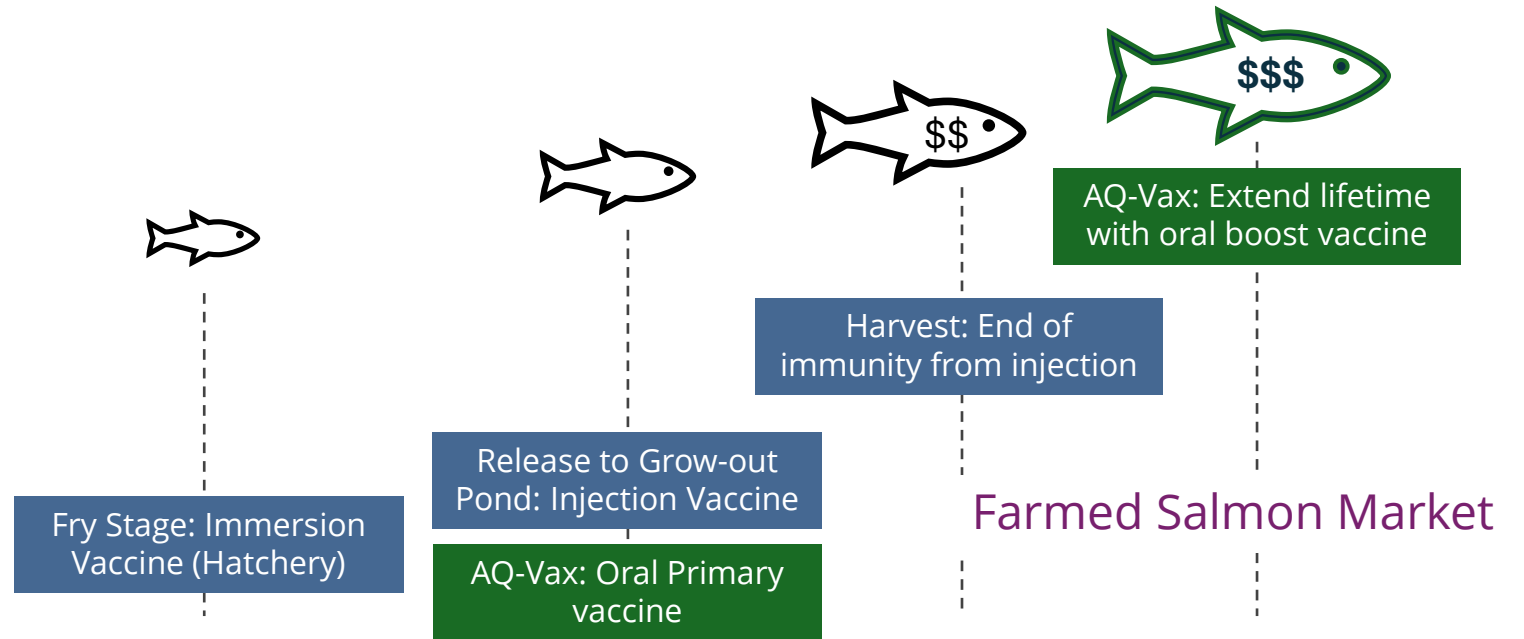
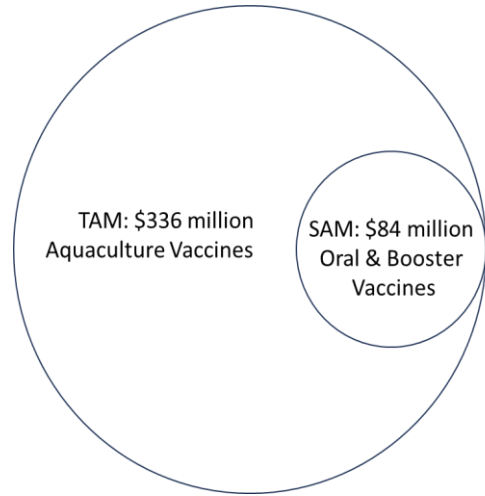
- Safe delivery of therapeutic agents for common pathogens, including White Spot Disease and other viral infections

# AQ-Vax Platform Advantages

- Platform vaccine technology
  - Customizable for any pathogen with known antigenic components
- Reversion impossible
  - No RdRp coding region
  - No recombination to generate infectious virus
- Platform therapeutic RNA technology
  - Deliver therapeutic RNA (e.g., by RNAi or gene editing)
  - Inhibit wide variety of pathogens
- Aquatic viral backbone
  - Broad specificity
  - Widely applicable to aquaculture
  - Viral capsid promotes systemic immune system on oral delivery
  - Viral capsid protects payload and improves stability for oral delivery
- Baculovirus-based production
  - Easy regulatory approval
  - Adjuvant for vaccine use

|  | <b>AQ-Vax Solution</b> | <b>Injection Vaccine</b> |
|--|------------------------|--------------------------|
| <b>Requires individual fish handling</b> | <b>No</b>              | <b>Yes</b>               |
| <b>Suitable for any size fish</b>        | <b>Yes</b>             | <b>No</b>                |
| <b>Low-Cost Production</b>               | <b>Yes</b>             | <b>No</b>                |
| <b>Easily Customized</b>                 | <b>Yes</b>             | <b>No</b>                |
|  |                        |                          |

## Fish Vaccine Market Opportunity



Clear regulatory path: Enter/expand salmon vaccine market with oral vaccine

## Shrimp Therapeutics Market Opportunity

- Huge and unpredictable losses
- Periodic outbreaks of viral disease
- Constant pressure from bacterial pathogens
- No current treatment options

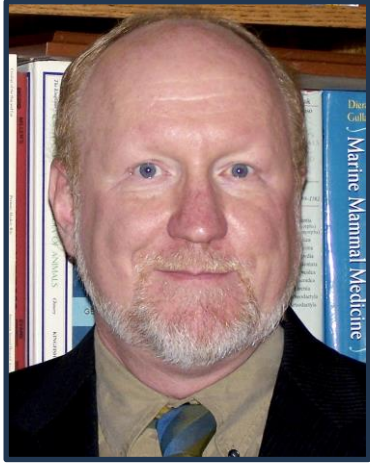


AQ-Vax: Treat viral infections

Farmed Shrimp Market

Pressing need for therapeutics to prevent catastrophic losses

# Team



## **F. C. Thomas Allnutt, PhD**

- **AQ-Vax Co-Founder & Acting CEO**
- **President & CSO of NuLode LLC**
- **Previous management positions at Martek Biosciences, Advanced BioNutrition, Phycal, and BrioBiotech**



## **Arun K. Dhar, PhD**

- **Inventor & AQ-Vax Co-Founder**
- **Professor and Director of Aquaculture Pathology Laboratory at University of Arizona**





# Thank You

## Contact Information:

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