Vaccine for the Aquaculture Pathogen *Aeromonas hydrophila*

**Overview**
Fish such as tilapia, carp and catfish that are farmed in warm water conditions are highly susceptible to Motile Aeromonas Septicemia (MAS). This disease particularly affects large, mature, market-ready fish, resulting in significant economic losses for farmers. The MAS outbreak in the southeastern US has led to average losses of close to $2MM per year. A vaccine has been developed that protects against the highly virulent US and Chinese *Aeromonas hydrophila* strains and is effective as a live attenuated or a killed vaccine.

**Advantages**
- Protects as either a live attenuated or killed vaccine
- Demonstrated cross-protection against multiple *Aeromonas hydrophila* strains
- May provide greater cross-protection than vaccines using conventional strains

**Description**
*Aeromonas hydrophila* is the causative agent of MAS. Highly virulent strains of *Aeromonas hydrophila* have emerged recently in China and the southeastern US. Current treatment options include antibiotics such as Terramycin and Remet-30, both of which require pre-slaughter withdrawal times and can only used to treat MAS, not prevent it. This vaccine was derived from the virulent US strain and has been shown to protect against both the US and China virulent strains. Efforts are underway to test cross-protection against strains from other countries as well. Vaccine delivery by intraperitoneal injection has been used but other delivery methods could also be employed. The vaccine strain has a deletion in the gene ymcA that is responsible for production of the capsule (polysaccharide coating) that is very unique to this virulent *Aeromonas hydrophila*. This causes attenuation of virulence and is expected to enhance cross-protection following vaccination. The vaccine does not contain any antibiotic resistance gene (it is markerless) which can aid in regulatory approval.

**Status**
- Pending PCT and US patent applications have been filed
- Protection against *Aeromonas hydrophila* strains has been shown in tilapia and catfish

**Licensing Opportunities**
- This technology is available for exclusive or non-exclusive licensing
- Joint development opportunities include funded research or a joint venture

**References:**
- mBio May/June Vol 5(3), e00848. ([link](#))

**Safety and Efficacy of the ΔymcA Vaccine Strain.** (Left) Channel catfish with skin necrosis due to an *Aeromonas hydrophila* infection. (Right) Survival of catfish following vaccination with ΔymcA. Catfish were challenged 21 days after vaccination with ΔymcA, Saline, or were not challenged.