

# Idaho Incubation Fund Program

## Quarterly Progress Report Form

<b>Proposal No.:</b>	IF11-016
<b>Name:</b>	Kenneth Cain
<b>Name of Institution:</b>	University of Idaho
<b>Project Title:</b>	COMMERCIALIZING SPECIFIC PROBIOTIC BACTERIAL STRAINS AS DIRECT FED MICROBIALS (DFMs) TO IMPROVE FISH HEALTH AND REDUCE DISEASE RELATED MORTALITY AT AQUACULTURE FACILITIES

**Information to be reported in your progress report is as follows:**

1. Provide a summary of project goals/milestones for the period just completed, accomplishments for the period just completed, and plans and goals for the coming quarter:

During this period we completed an experiment to determine if feeding of C6-6 is able to induce the production antibodies reactive to *Flavobacterium psychrophilum* or increase other immune parameters. Results show that there is no increase in antibodies reactive to *F. psychrophilum* in fish fed C6-6 prior to challenge. There was also no difference in antibody levels between fish administered the probiotic and control fish after being challenged with *F. psychrophilum*. The antibacterial enzyme lysozyme was also unaffected by the feeding of C6-6. It was found that concentration and storage of probiotic strains in fish oil results in a drastic reduction of viability after a short time and is not appropriate for long term storage. However, we were able to successfully concentrate and freeze dry C6-6 with only minor losses in viability. Experiments are ongoing to optimize the freeze drying process and minimize viability losses. Large scale production of C6-6 using laboratory fermentors is set to begin this period. Production will start in a 2.5 liter fermentor and then move to a 10 liter fermentor once conditions have been optimized. We will also conduct a laboratory challenge with *F. psychrophilum* in which fish will be fed either C6-6, C6-8 or an equal mixture of the two probiotics. This will allow us to determine if mixing the probiotics has an increased ability to reduce cold water disease. We have confirmed that C6-6 is capable of *in vitro* inhibition another common bacterial pathogen *F. columnare*. During the coming quarter we will determine if C6-8 has the same ability, and investigate the *in vitro* effectiveness of both probiotics against various strains of *F. columnare*.

2. Provide a summary of budget expenditures for the period just completed:

Funds have been expended on student salary, materials and supplies, and fee for service in relation to lyophilization of probiotics.

3. List patents, copyrights, plant variety protection certificates received or pending:

A patent application is to be filed by April 4<sup>th</sup> to protect both probiotic strains for use to reduce disease incidence in fish.

4. List invention disclosures, patent, copyright and PVP applications filed, technology licenses/options signed, start-up businesses created, and industry involvement:

5. Include funding burn rate:

A total of \$6,345.18 has been spent during from January through March 15<sup>th</sup>.

6. Any other pertinent information: