

# Idaho Incubation Fund Program

## Quarterly Progress Report Form

Proposal No. IF11-016  
Name: Kenneth Cain  
Name of Institution: University of Idaho  
Project Title: 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:

To further pursue issues with regulatory authority and approval for probiotics, we have completed laboratory trials to determine if administration of C6-6 is able to increase immune response parameters or induce the production of cross-protective antibodies. Following the initial feeding portion of the study fish were challenged with cold water disease to determine if there is a decrease in the time required to mount a protective immune response or if such a response is enhanced due to administration of probiotics. Results from these experiments are currently being analyzed, and if a response is demonstrated then USDA licensing approval will be sought. We are currently setting in the process of production scale up and should begin large scale production shortly. Along with scale up experiments we are examining ways to effectively concentrate and store the probiotic once large scale production has begun. Recent presentations at the US trout farmer's annual meeting and the Northwest Fish Culture Conference have generated more interest in these products. Discussions are underway with multiple companies about possible patent licensing from a global perspective.

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

Budget expenditures were primarily for salary, travel, and supplies.

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

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

Invention disclosure filed for C6-6 and C6-8 in March 2011.

Provisional Patent application filed on April 7<sup>th</sup>, 2011 and titled: "Probiotic Bacterial Strains and Method of Use to Decrease Mortality in Fish Due to Coldwater Disease"

4. Include funding burn rate:

\$6,122 was expended from September through November 2011

5. Any other pertinent information:

**Publications:**

Burbank, D.R., Shah, D.H., LaPatra, S.E., Fornshell, G. and Cain, K.D. Enhanced resistance to coldwater disease following feeding of probiotic bacterial strains to rainbow trout (*Oncorhynchus mykiss*). *Aquaculture*, 321, 185-190

Burbank, D.R., LaPatra, S.E., Fornshell, G. and Cain, K.D. Isolation of bacterial probiotic candidates from the gastrointestinal (GI) tract of rainbow trout and screening for *in vitro* inhibitory activity to *Flavobacterium psychrophilum*. *Journal of Fish Diseases* (Accepted)

**Presentations:**

Cain et al. 2011. Identification of specific Autochthonous probiotics capable of enhancing resistance to bacterial coldwater disease. Northwest Fish Culture Conference, Victoria, BC Canada (Invited talk) December 6-8.

Cain et al. 2011. Identification of specific Autochthonous probiotics capable of enhancing resistance to bacterial coldwater disease. US Trout Farmers and Idaho Aquaculture Association annual conference, Twin Falls, ID (Invited talk) September 29-Oct 1.

Cain et al. 2011. Identification of specific Autochthonous probiotics capable of enhancing resistance to bacterial coldwater disease. Pacific Northwest Fish Health Protection Committee (PNFHPC) meeting, Portland OR. (Invited talk) September 21-22.

Cain et al. 2011. Identification of specific Autochthonous probiotics capable of enhancing resistance to bacterial coldwater disease. AADAP meeting Bozeman, MT August 1-4.

Cain et al., 2011. Assessing probiotic use for the control of *Flavobacterium psychrophilum* in rainbow trout (*Oncorhynchus mykiss*). 1<sup>st</sup> Australasian Scientific conference on Aquatic Animal Health. Cairns, QLD Australia (Invited talk) July 5-8

Burbank, D.R., LaPatra, S.E., Fornshell, G. and Cain, K.D., 2011. Assessing probiotic use for the control of *Flavobacterium psychrophilum* in rainbow trout (*Oncorhynchus mykiss*). Eastern Fish Health Workshop. (Invited talk) March.  
Cain, K.D. 2011. Research overview and update. University of Tasmania. February 10<sup>th</sup>, Launceston, Tas, Australia