



IDAHO STATE BOARD OF EDUCATION

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February 15, 2011

Dr. Ken Cain
University of Idaho
P.O. Box 441136
Moscow, ID 83844-1136

FUNDING AUTHORIZATION

Dear Dr. Cain:

The University of Idaho, Department of Fish and Wildlife is authorized to expend up to \$33,848 toward expenses of the project entitled "Commercializing Specific Probiotic Bacterial Strains as Direct Fed Microbials (DFMs) to Improve Fish Health and Reduce Disease Related Morality at Aquaculture Facilities". The following information applies to these funds.

Amount of Grant: \$33,848
Project Title: Commercializing Specific Probiotic Bacterial Strains as Direct Fed Microbials (DFMs) to Improve Fish Health and Reduce Disease Related Morality at Aquaculture Facilities
Grant Number: IF11-016
Authorized Uses for the Funds: Project expenditures as outlined in the budget of the approved proposal
Fiscal Period in which funds will be expended: March 1, 2011 - June 30, 2012
Distribution of Funds: All funds for this grant will be distributed in one lump sum in FY2011. The Institution is responsible for accounting for the funds and insuring that the money is spent on the project according to the grant guidelines. Gene Merrell and Polly Knutson
Institutional Contact: June 1, 2011
Progress (Financial Burn Rate) Report Due to OSBE: September 1, 2011
December 1, 2011
March 1, 2012
Final (End-of-Project) Report Due to OSBE: June 15, 2011

The grants and contracts officer or the designated research officer at your institution is responsible for monitoring and assisting with the administrative management of the projects and ensuring that progress and final reports are submitted by the due dates given. Any request concerning this project must be submitted via email to Patty Sanchez.

The State Board of Education and this office forward their congratulations and wish grantees the best with their projects. If you have any questions, please contact Patty Sanchez at (208) 332-1562 or patty.sanchez@osbe.idaho.gov.

Sincerely,

Handwritten signature of Mike Rush

Mike Rush
Executive Director

cc: Doug Baker, Provost
Lloyd Mues, Financial VP

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:

During the first quarter of FY12 we have been making good progress to address the needs and objectives of this project. Following on from the previous graduate student, we have now moved another student (Tyson Fehringer) onto this project. We have begun coordination of scale up and storage activities and hope to begin large scale production shortly. During this period a number of presentations on this work and product trial data have been presented to many potential national and international stakeholders. One important meeting that was attended and material was presented at was the annual Aquatic Animal Drug Approval Partnership Program (AADAP). This meeting involves drug approval for fisheries and aquaculture and was attended by 17 scientists from the Food and Drug Administration. We presented at this meeting in an attempt to clarify requirements needed for registration or approval of probiotics as an aquaculture product. Following this meeting it was apparent that this product would be better if licensed and approved as a Biologic through USDA. We have therefore initiated laboratory trials to identify immune responses and cross-protection offered by our probiotics. Such trials will be important and allow us to license through USDA rather than FDA. One of our manuscripts was accepted for publication in the Journal of Fish Diseases, and the other was accepted and is now *in press* in the journal Aquaculture (considered very high impact in this field).

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 7th, 2011 and titled: "Probiotic Bacterial Strains and Method of Use to Decrease Mortality in Fish Due to Coldwater Disease"

4. Include funding burn rate:

\$4,220 was expended from July to Sept 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* (In Press)

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. 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*). 1st 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 10th, Launceston, Tas, Australia