

ACS Interdisciplinary Mini-Grants Final Reporting Guidelines

For Mini-Grants Awarded April 2006, October 2006, February 2007 & October 2007

**NOTE: A detailed written report is expected to be submitted by the Primary Faculty/Staff/Student contact within thirty (30) days of the end of the funding time frame. Final reports should be mailed and e-mailed to Marcia White, ACS, 1975 Century Boulevard, Atlanta, GA 30345 mwhite@colleges.org, (404) 636-9533 ext 18
Your report is due: November 1, 2007**

Please address the following points as guidelines for your detailed narrative report:

Name of Person Submitting Report David O. Ribble and Saber Elaydi

E-mail dribble@trinity.edu Phone 210-999-8363

Institution Trinity University

Title of Project **Developing a Laboratory Manual and Lecture Notes for Mathematical Models in Life Sciences**

Date(s) of Project June – August 2007

Amount Awarded \$2500

1. Original Goals and objectives

The PIs plan to write two manuscripts during the summer and part of the fall of 2007. The first manuscript is a laboratory manual that includes 12 laboratory experiments in biology and the second manuscript will be lecture notes on mathematical modeling in biology. Both manuscripts will be used in co-teaching the new developed course (Mathematical models in life sciences) which is a core course in the multidisciplinary minor titled Scientific Computing. The PIs, Elaydi from mathematics and Ribble in biology, have jointly developed the course and team-taught in fall of 2006. Mathematical models in life sciences embodies all the ingredients of a true and successful interdisciplinary collaboration. Its novelty is the introduction of laboratory experiments in a mathematically-oriented course and the team-teaching of it by a biologist and a mathematician.

2. If goals/objectives changed during the course of the project, please state the revised goals/objectives.

There have been no conceptual changes in our objectives, but we have decided to combine the lecture notes and laboratory instructions into one document/textbook.

3. In what ways were the goals/objectives met? Please give examples.

We have completed a substantial portion of our combined book that includes the mathematical theory and specific laboratory instructions to demonstrate the theory. We will continue to expand this book. The laboratory demonstrations include work with live organisms, something unique for this type of course. We also enrolled 7 students this fall, an increase from 2 the

previous year. We have also gained support from the Neurobiology Program to include this course in the major requirements, along with the Biology Department.

4. Describe the evaluation/assessment process used. Summarize the results of this process? Include any instruments used to evaluate/assess your project.

Our first assessment was to test if interest by students and other faculty increased. Enrollments (from 2 to 7) and interest from the Neurobiology program provide some sense of achievement. In the next few years we will also be monitoring the “Mathematical and Analytical” skills scores of the Biology Major Field Test to see if students who have taken this course score higher than those that have not taken the course. These data will not be available until next fall because only senior Biology majors take this exam.

5. If you were to redesign your project, what would you do differently and why? (What are the “lessons learned?”)

The facilities and physical lay out of the lecture and laboratory components proved more important than we imagined. In particular it is very helpful to have the lecture and the laboratory components in the same room. Moving back and forth from lecture to laboratory in a seamless manner would help considerably. Next year we plan on doing just this with the addition of laptops to the teaching laboratory so we can always meet in one space.

Also, the abilities of the students are critical in this type of course and influences how fast the material can be offered. In year one, the students were able to go through the material much faster. This year we slowed down considerably.

6. What are the next steps (follow-up) in your project?

We will continue to work on the textbook for this course in preparation for next fall. We have also discovered some interesting ideas related to calculating competition coefficients from real data and we plan on working up a paper for publishing from this work. Lastly, this collaboration along with others will form the background for a NSF Math-Biology proposal we intend to send to the National Science Foundation.

7. A complete financial statement, showing original budget (the breakdown of the amount awarded) and expenditures.

See below.

8. Where did you publish and/ or at which meetings did you present your work? How did you disseminate information at your institution and within ACS?

We will be presenting a workshop this summer (2008) at the annual CUR meetings. Our colleagues interested in Math-Biology intersections are fully aware of this collaboration. Furthermore, we made a presentation this past summer to all the students and faculty involved in HHMI research at Trinity.

9. Please include a statement that you give ACS permission to post your original proposal and a summary of your work on the ACS Interdisciplinary website <http://www.colleges.org/newmodels/interdisciplinary/index.html>.

You have our permission. David Ribble and Saber Elaydi

Send your report to:
Marcia White, ACS
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Atlanta, GA 30345
mwhite@colleges.org (404) 636.9533 ext 18



TRINITY UNIVERSITY

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**Associated Colleges of the South
Developing a Laboratory Manual and Lecture Notes for
Mathematical Models in Life Sciences
New Models Program
Final Financial Report
Trinity University Account Number: 26-1382037
For the Period 6/1-10/1/07**

	<u>Budget</u>	<u>Actual</u>	
Funds Received			2,500.00
Expenditures:			
Student Stipend Jun/Jul - Megan B. Sheffield	2,000.00	2,000.00	
Supplies for experiments	500.00	<u>477.54</u>	
Total Expenditures			<u>2,477.54</u>
Funds to be returned to ACS			<u><u>22.46</u></u>

I certify to the best of my knowledge and belief that this report is true in all respects and that all disbursements have been made for the purpose and conditions of the grant or agreement.



Mary R. Jump, Manager of Plant Fund and Grants

Date 10/31/2007