

DEPARTMENT OF MATHEMATICS

VIGRE Funding Report

(due 30 days after semester of support)

Semester/Summer and Year:

Summer 2008

Name: Mark Robertson-Tessi

List the graduate courses you have taken this semester (including independent studies), your grades, and the instructors:

Course	Title	Grade	Instructor
None			

List the title, date and location of any talks you have given, either here or elsewhere:

None this period

If you are working on your dissertation, include a one paragraph description of your research progress. If you have not yet begun dissertation research, describe your progress toward finding a dissertation topic and advisor and beginning that research.

I have completed the basic model of Tumor-Immune interactions, including finding all parameters in the literature. I have produced some results with the model. I wrote a significant portion of my dissertation. I am analyzing results from my model.

List publications, if any.

None this period.

Check all activities you completed during the funded period:

Academics:

- Independent Study
- Oral Comprehensive Exam
- Commence Thesis Research
- Conference attendance
- Conference participation
- Complete PhD

Professional development and outreach:

- AP Calculus Visit
- High School Workshops
- Undergraduate Research Project
- Undergraduate Research Seminar
- Super TA
- Mentoring junior graduate students for the qualifying exams
- RTG (help organize)
- Research Seminar (help organize)

Other (please specify)

Worked on material for the Applied Math Laboratory

Attach a brief statment about your academic progress and professional development during the period of support.

Vigre Semester report
September 12, 2008
Mark Robertson-Tessi

In the summer semester, I continued my dissertation research. I began to produce and analyze results from my model of tumor growth. This research was primarily in conjunction with my advisor Dr. Alain Goriely of Math, and Dr. Ardith El-Kareh of Physiology. The model was initially an expansion of a few existing models in the literature, but after consulting with a colleague in Immunology (Dr. Emanuel Akporiaye) and surveying the immunological literature further, we took a new tack by incorporating some recent results on regulatory T Cells. Previous models had dealt with tumor cell inhibition of immune system effector T cells directly. New research suggests the importance of regulatory T-cells cannot be ignored.

I wrote significant portions of my dissertation over the summer, including the sections on the biological basis, the equations, and the parameters.

My integration work which continues into the fall semester involves working with the Applied Math Lab to produce some supporting documents for the Lab.

In the fall I will take a complex analysis course, the Biomath seminar, and dissertation research units. I will focus on obtaining more results from the model I have been building, analyzing the equations, and continuing to write my dissertation. With assistance from Drs. Goriely and El-Kareh, we have a set of questions which we feel that a working model can answer. These questions address the ability of the immune system to tackle a tumor, and also the magnitudes of the various suppressive effects.