

FLORIDA STATE UNIVERSITY
2007 FSU YOUNG SCHOLARS PROGRAM
June 10 – July 21, 2007

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I. Brief description in layman's terms of the specific research project for the student(s). List specific activities in which the student(s) will be involved. This information will be sent to the students, who will rank the top six projects that most interest them. **Students rely heavily on your description when selecting their choices, please be as accurate as possible.**

The aim of the project is to crystallize one or two biological enzymes like lysozyme and trypsin under different conditions of enzyme concentrations, drop size and salt concentrations and relate them to the quality of the crystals they produce. The project will involve the following steps:

- 1) Specific laboratory skills in handling liquids, biological samples and liquid nitrogen.
- 2) Preparation of buffer solutions, enzyme samples and crystallization plates.
- 3) Setting-up crystal trays with enzyme samples and salt solutions.
- 4) Optical examination of crystal trays using a light microscope and recording results.
- 5) Flash cooling of crystals in liquid nitrogen and storing of samples.
- 6) Examination of crystals using x-ray diffraction instrument and recording results.
- 7) Drawing conclusions based on the observations

It is expected that Steps 1-3 can be completed during the first three weeks, Steps 4 and 5 can be completed during the fourth week, Steps 6 and 7 during the fifth week leaving the last week for final analysis presentation of the results.

Please note that crystallization procedures for these enzymes are already known. Flash cooling procedure is a standard technique. The correlation between various conditions and the resulting crystal quality is not fully known and will be the part that the student will research and learn.

II. Please indicate whether computer skills will be useful to the student and if so, what software or language skills would be appropriate.

Proficiency with Microsoft Windows environment is sufficient for achieving most of the project goals. Linux environment skills will be introduced if the student is willing to learn.

III. Many students find working in small groups to be a very positive experience. Please indicate the number of students you would be able to accept into your laboratory. 1 or 2

IV. The research will be carried out:

- A. Entirely in my laboratory [X-Ray Suite & Wet Lab](#)
- B. In both laboratory and field _____
Marine environment _____
Fresh water environment _____
Terrestrial environment _____
- C. Location of Laboratory _____
- D. Under the direction of a grad student or post-doc? _____
(Name: _____)

Return this form to Robin Smith (smith@bio.fsu.edu) OR Dept. of Biology
Mail code 1100