**Clare Boothe Luce Scholars program – Rationale and Request**

**I. Background**

**A. Overview of Undergraduate Science Education and Research at Williams College**

 Undergraduate research opportunities at Williams are exceptional, because *all* research is conducted with undergraduates. Students can participate in research projects as paid assistants during the academic year and the summer, and for academic credit during the January term and as part of a senior honors thesis. Approximately 170 students (~8% of Williams’ enrollment) are on campus conducting research during the summer of 2012. Seventy-five of these students, including 18 women, are conducting research in the departments targeted in this proposal: astrophysics, computer science, geosciences, mathematics/statistics, and physics (“T5” fields).

 Williams’ student research program is structured progressively, introducing students to research as assistants on faculty projects, fostering their development as independent researchers on honors theses, and providing opportunities for students to disseminate their work in presenta-tions on campus, as co-presenters at professional conferences, and as co-authors on faculty papers. In the class of 2011, 44 students (including 12 women) wrote senior honors theses in science. In the 2010/11 academic year, 10 students (including five women), presented their research at professional conferences, and 30 students (including 13 women) served as co-authors on faculty articles. From 2007 to 2012, the NSF awarded graduate fellowships to 38 alumni (from the classes of 2002 to 2011). Twenty of those fellowships (53%) were awarded to women, but only four of those 20 were awarded in T5 fields.

**B. Student Achievements and Challenges in Target Majors**

 In the past 10 years (the classes of 2002 – 2011), 228 women graduated with majors in T5 disciplines (including 10 with double majors). These women represent approximately ***4.4% of*** ***all graduates*** in those classes, ***14.2% of*** ***all science majors*** completed in those years, and ***28.1% of*** ***all students majoring in T5 fields***. A summary of all T5 majors and women T5 majors, in the classes of 2002 to 2011, is presented here:

**Field Total T5 Majors Total Women T5 Majors % Women T5 Majors**

Astrophysics 44 17 39%

Computer Science 151 22 15%

Geosciences 91 41 45%

Math/Statistics 447 138 31%

Physics 113 20 18%

**Total 846 238\* 28%**

 *\*Includes 10 double majors.*

Of these 228 women graduates, 28 (12%) appeared as co-authors on faculty papers; 11 (5%) were co-presenters at conferences; 59 (26%) conducted honors thesis research; and 4 (2%) received NSF graduate fellowships. To the best of our knowledge, 17 of these women have earned their doctorates in astrophysics (3), computer science (2), geosciences (4), math/stats (6), and physics (2). Nineteen more are enrolled in Ph.D. programs in astrophysics (3), geosciences (5), math/stats (6), physics (2), and engineering (3). Included among their graduate schools are: Berkeley, Brandeis, Brown, Cal Tech, Cambridge, Carnegie Mellon, Columbia, Cornell, Harvard, MIT, Michigan, Princeton, Stanford, Washington, Wisconsin, and Yale.

 Despite some growth in the number of majors in the T5 departments, we believe that Williams faces an ongoing challenge regarding the retention of female students through the introductory course sequences and into the major. Our data indicate that, over five years, women account for an average of 42% of the enrollments in the introductory course sequences for the T5 departments. However, on average, women account for only 29% of T5 majors. Our goal is to achieve a better gender balance in these fields by increasing the number of female majors.

**C. Programs to Promote the Participation & Success of Women in Science**

 Williams is committed to helping all students succeed in their chosen academic course. Close faculty-student mentoring and interaction is critical to this process and is facilitated through formal student advising and a campus culture that encourages informal and frequent contact between students and their professors. Within the sciences, these contacts are further enhanced by the strong ties that develop between faculty and students in both academic and research labs. Individual academic departments also pursue these goals through faculty and student initiatives.

 To ensure that Williams students are taught by a diverse and representative faculty, the college is committed to recruiting and hiring women in majors where they are traditionally underrepresented. Williams ensures pay equity for women and allows tenure clock adjustments for pregnancy and maternity leave. Twenty years ago (1992/93), Williams had 33 regular faculty, including four women (12%), in T5 fields. By 2002/03, the number of T5 faculty had grown to 38, including eight women (21%). Now, there are 42 tenure-track faculty in T5 departments and 10 (24%) are women, including two of three new appointments made for 2012/13.

**II. Request**

 For many students, the opportunity to be involved in research is key to their decision to attend Williams. Once here, the students’ research experiences often influence their decision about a career in science. The majority of our summer research students are rising seniors. We want our most promising women students to have this critical research experience earlier in their academic careers and, therefore, we have chosen to focus our proposal on providing research opportunities to women who are rising juniors. We want to give them an earlier start in the process of thinking about themselves as scientists, designing their own research projects, and preparing for graduate school.

 We propose to use a grant from the Henry Luce Foundation, as well as college funds, to establish a Clare Boothe Luce research scholars program at Williams. For each research scholar, our plan calls for a Luce grant to fund: a 10-week research appointment during the summer before the junior year; research supplies and equipment; and attendance at a professional conference. We believe that a conference experience is a critical component of the research experience, especially for students coming from small departments. It will give students from these backgrounds a chance to see the work of other women scientists and to understand the breadth and excitement of research in their field. Williams College will fund: a second summer of research for each scholar who elects to do a senior honors thesis; visits to campus by CBL professors to lecture about their research and to meet Williams’ CBL research scholars; cohort-building activities for scholars and faculty; and discussion sessions with Williams alumnae currently in graduate school. We request CBL sponsorship of these 24 research scholars from the fall of 2013 through the summer of 2016. Williams’ support for the program and scholars will run from the fall of 2013 through the summer of 2017.