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Gifts & Grants

Kevin Cool
Colby College

Take This to the Lab

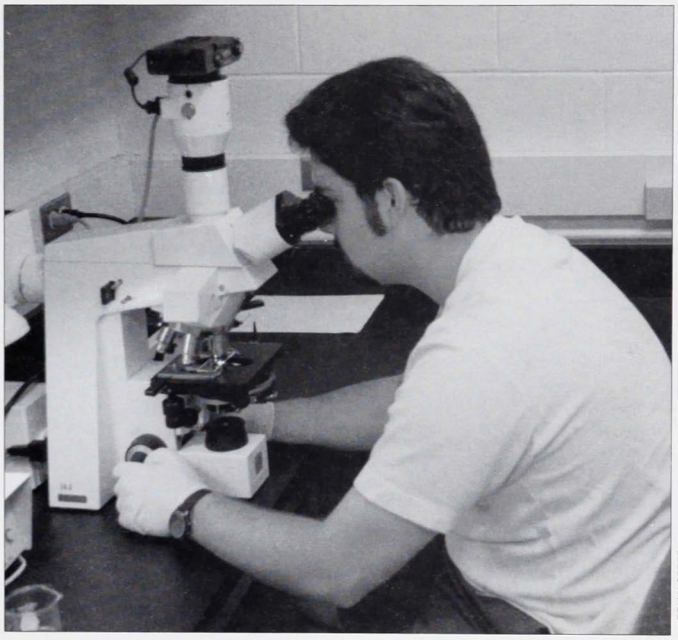
Half-million-dollar NSF grant bolsters research in the sciences

By Kevin Cool

Colby's robust program in the sciences got another adrenaline injection recently when the National Science Foundation granted half a million dollars to the College for the continued expansion of student research opportunities.

The NSF's Award for the Integration of Research in Education (AIRE) provides funding over a three-year period to make curricular enhancements and to build research components into upper-level science and math courses as well as courses that fulfill distribution requirements for all Colby students. Teaching fellows will be hired in biology, physics, chemistry and environmental science to provide mentoring for students in research situations and to free existing faculty to develop new courses with enriched research opportunities. "We are excited about this NSF award and the possibilities it provides for our undergraduates," said F. Russell Cole, Oak Professor of Biological Sciences and project co-director (with Dean of the Faculty Edward Yeterian) for Colby's AIRE grant. Cole said the grant recognizes Colby's many accomplishments in the sciences during the last decade as well as plans for future innovation.

According to Cole, Colby's AIRE proposal was a natural extension of the College's 1991 "Plan for the Sciences," whose theme was "education through research." That plan focused more attention on interdisciplinary learning and emphasized research in regular classroom work. Since adoption of the new curriculum the number of students majoring in the sciences has doubled, and since 1993 more than 600 students have conducted research alongside Colby faculty. Research is an intrinsic part of science study in a liberal arts setting because it "promotes hands-on and collaborative learning and fosters analytical and critical thinking skills," said Cole.



BRIAN SPEER

Equipping students like Craig Jude '99 (shown above using an epifluorescence microscope) to conduct research was a crucial part of Colby's Plan for the Sciences that helped attract NSF funding.

One of the keys to the success of Colby's AIRE proposal, according to NSF officials, was its plan to foster cross-disciplinary study of the sciences and to bring research opportunities to courses for non-science majors. All Colby students must take at least two science courses, including one with a laboratory component. In so-called "distributional" courses, interdepartmental linkages and smaller student-to-teacher ratios will allow for further integration of research. With the support of the AIRE grant, courses like The Physics of Everything, which deals with modern technology, and The Elements, a course on atomic physics, can be redesigned to add laboratory components. With the help of the NSF funds, hands-on research—building a robot in the Robotics course, for example—will become the norm in courses throughout the science division.

The AIRE money also will allow "new, cutting-edge experiments" that deepen research projects for upper-level science students like Catherine Garland '99. She has worked with Physics Professor Murray Campbell to analyze the composition of stellar dust—analysis that can determine the origin of stars. Garland already is doing work typically reserved for graduate-level study and has twice presented her findings at the national American Astronomical Society. She is gaining valuable experience in both the techniques and tenacity necessary to succeed as a research scientist. "I've learned that I love research; I know now that that's what I want to do for a career. And it also has taught me the importance of organization and self-motivation; a project like this takes years to complete," she said.

The application of the NSF funds, on top of an already thriving program, creates synergy by enhancing the teaching of science for all students while also strengthening departmental offerings for majors, Cole says. NSF Acting Deputy Director Joe Bordogna agreed, saying that the AIRE grants "help create a discovery-rich environment where institutions and their students can benefit from making research an essential component of the school curriculum."

Other possible uses of the grant money include stipends for faculty from all divisions to develop interdisciplinary courses that include both scientific and research components; a cross-campus seminar on issues in the sciences; an expansion of Colby's Partnership for Science Education program with local schools; workshops for faculty; a Web site devoted to research; and an annual poster session during which students from all disciplines can present research findings.

Competition for the grant was keen; more than 140 colleges applied and just 10 were funded. ♦