

UVM, Research, and Scholarship

The University of Vermont has a strong record of achievement in research and scholarship and ranks as a Carnegie Research II university. Within each of our eight schools and colleges, faculty, students and staff are engaged in scholarly projects, the significance of which is acknowledged within the local, national, and, frequently, international communities.

Specific research projects within the University are defined by individual members of the faculty who carry the primary responsibility for initiating and conducting research programs. General areas of research emphasis are defined at the departmental, college, and University levels, typically through decisions that are made in the course of actions associated with faculty appointments, reappointment, tenure, and retention. In addition, administrative units frequently link fund-raising efforts to goals associated with current and future research directions. The availability of funds to support research in different areas affects the pace at which the University can move forward in different areas of scholarly endeavor.

Research is supported through a variety of mechanisms that are typical of a research university. These include external grants and contracts, faculty release time, sabbatical leaves, graduate and postdoctoral fellowships, construction and renovation of facilities, travel awards, colloquia, and symposia. University programs provide limited direct support and/or matching funds for equipment purchases, salaries, and research expenses. A full range of central services is provided to support research, including the University Libraries, Computing and Information Technology, Office of Sponsored Programs, Grant and Contract Accounting, personnel services, facilities maintenance, and others. Central services are also provided in all areas required for full compliance with federal and state law, for example in supporting and monitoring research involving radioactive substances, human subjects, and vertebrate animals.

Graduate and undergraduate students are actively engaged in research at UVM. Graduate programs are offered in a number of disciplines. The greatest proportion of doctoral programs is found in the sciences, while a wide range of masters and certificate programs are offered across the entire campus. The Graduate College approves courses for credit; the majority of these courses are also available to advanced undergraduates. Research opportunities are offered to undergraduates at all levels (including first-year students), and honors programs are available to those with a high level of motivation and achievement.

A significant number of University staff members contribute to our research effort. Technicians and postdoctoral scholars are actively engaged in primary research, while other personnel provide important support services, for example in the offices of Sponsored Programs and Grant and Contract Accounting.

The institution strives to conduct its research in an open environment in which the nature and results of UVM research are made available to the public to the maximum possible extent. The Office of Sponsored Programs and Vice Provost for Research closely examine proposals for sponsored research funding that restrict the public dissemination of the results of

University research. The University strongly encourages the communication of research results through scholarly journals and presentations, and through mechanisms that are more accessible to the public such as the news media, University publications, and the Worldwide Web.

Strengths of Research and Scholarship at UVM

Many UVM research programs are recognized nationally and internationally for their excellence. Students and staff correspondingly have a wide range of opportunities to engage in scholarly activities with members of our faculty, many of whom are renowned in their fields.

A primary area of research strength lies in the biomedical and life sciences, where substantial growth in sponsored research has occurred over the past decade. Several world-class research programs have been established, and research has been advanced via a number of new investigator-initiated research grants, substantial foundation grants, and new and newly renovated campus facilities. Strengths lie in the College of Medicine, College of Agriculture and Life Sciences, College of Arts and Sciences, and in the intercollegiate Department of Microbiology & Molecular Genetics.

There is also broad strength in the areas of environmental science and policy, centered within several administrative units, including the College of Arts and Sciences, School of Natural Resources, College of Agriculture and Life Sciences, College of Medicine, and in the cross-college Environmental Program. Further, the University has recently applied for designation as a Sea Grant institution, offering the possibility of enhanced federal funding in lake-related research.

The University has an admirable record in integrating scholarship and service. The Colleges of Education and Social Services and of Agriculture and Life Sciences are the homes of many, but by no means all, of these efforts. These two colleges provide a related, and very valuable, service in integrating scholarship into the community setting, and a wide range of scholarly programs have direct benefits to local, state, national, and international communities.

Undergraduate research is an important area of strength. Formal programs for supporting the faculty-mentored research efforts of undergraduates have been implemented. Some are available on a campus-wide basis (e.g. the University-funded SUGR/FAME¹ programs, and the Howard Hughes Medical Institute-funded Helix program for the biological sciences), while others are focused towards summer research in particular departments (e.g., Chemistry and Microbiology & Molecular Genetics).

The Vermont EPSCoR (Experimental Program to Stimulate Competitive Research) program has been highly effective at stimulating and supporting research on campus and throughout Vermont. EPSCoR has emerged as a thriving partnership between the University, other

¹ SUGR/FAME is an acronym for Stimulate Undergraduate and Graduate Research with Faculty Mentoring Areas of Emphasis: UVM, Research and Scholarship

Vermont institutions of higher education, the business community, the State of Vermont, and federal agencies (including the National Science Foundation, Department of Energy, and Department of Defense). Vermont EPSCoR has succeeded admirably in its goal of fostering the development of research programs within the state to the point where they become competitive in the national funding arena.

Strong University research and scholarship programs have additional benefits outside of the research arena. Examples include (1) economic development, (2) recruitment and retention of strong faculty scholars, (3) building additional strength and rigor in undergraduate and graduate programs, and (4) increasing cultural and international diversity of the community. In addition, the indirect cost reimbursements from sponsored research programs directly enhance the academic infrastructure on campus.

Barriers to Success

Many UVM faculty are frustrated with the lack of time and funding for research and scholarship, and feel the need for development of an academic climate more supportive of scholarship. The sources of this frustration are varied, and include the following: (1) diminishing external support for research in the arts and humanities; (2) the importance of tuition revenue to the University and its colleges, coupled with a history of coupling college resource allocations to enrollments; and (3) a perception that a lower general level of student preparation requires additional remedial efforts on the part of the faculty. In addition, the commitment to and success of research programs at UVM varies widely from department to department, partly due to differences in availability of funding, and partly due to cultural or attitudinal differences within the departments.

Financial resources are a dominant concern affecting research and scholarship. Specific issues include our ability to provide adequate startup funds for new faculty, competitive salaries for faculty, release time for research, and interim research funding for faculty who are temporarily without external support. The presence of a noncompetitive salary structure in some, but not all, units clearly inhibits recruiting and retention of faculty in those units.

Other research-oriented concerns include instances of inadequate communication and collaboration across administrative boundaries. Individual faculty members have been successful in forging fruitful collaborations that transcend these boundaries, but there are some cases where effective interdisciplinary cooperation has been inhibited by turf issues between administrative units. Such territorial disputes have proven to be enervating and demoralizing to campus scholars.

Graduate Education

Graduate studies are an area of concern across campus. These issues have been exacerbated by severe budgetary cuts that have been absorbed by the Graduate College, and there is widespread concern about the ability of the Graduate College to survive and be a strong voice for graduate education and scholarship. Many faculty and students are passionately

committed to graduate education, but many of them perceive support for graduate education among college and University administrators as weak. Following a national trend of fewer highly qualified applicants to graduate programs, there is concern that it will continue to become more and more difficult to attract high quality students to UVM's graduate programs. This concern is particularly prevalent in the sciences, where enrollment in a Ph.D. program typically requires a full-time commitment of five years for attainment of the degree. This is less of an issue in other areas of graduate education (e.g. Education & Social Services), where graduate students are able to effectively integrate careers and their scholarly programs.

Faculty in the arts, humanities, and social sciences have expressed concern that the shortage of external funding and UVM's lack of doctoral programs in those fields inhibit the progress of their scholarly work and may reflect a lack of appreciation of the value of their scholarly efforts.

There is also the perception among many in the UVM community that success in research and graduate education implies a diminished commitment to quality undergraduate teaching. Many faculty scholars disagree vigorously, and feel that quality research and undergraduate teaching are not just compatible but powerfully complementary. Nevertheless, a number of faculty are of the opinion that University policies promote undergraduate teaching at the expense of research, while others believe that the faculty salary structure promotes research at the expense of undergraduate teaching.

Opportunities for Exploration and Action

To the greatest extent possible, all activities at The University of Vermont should be conducted in a scholarly manner, and evaluated in a manner that considers the standards of scholarly work— identification of clear goals, adequate preparation, use of appropriate methods, generation of significant results, effective presentation, reflective critique, and ethical practice.

The most important factor that will shape the future of the University is our success in attracting and retaining outstanding faculty scholars. A substantial percentage of UVM's faculty is expected to retire over the next ten years, and a great deal of faculty recruiting activity can be anticipated. Every effort should be expended to ensure that all newly recruited and tenured members of the faculty are passionately committed to excellence in both teaching and research. We should make every effort to ensure and reward their success so that they will have long and productive careers at UVM.

Interdisciplinary research will continue to grow in importance. Indeed, much of the most dramatic research progress is being made in areas where interdisciplinary teams of researchers are collaborating. Our faculty and students will increasingly need to collaborate on projects that span traditional disciplinary and administrative boundaries. Mechanisms to foster effective collaboration across administrative boundaries must be developed and implemented. Our students should view UVM faculty and administrators as models of collaborative teams, in fields where such collaboration is appropriate.

Extramural funding for UVM research is increasing and will continue to do so, especially in the biomedical, physical, environmental, and behavioral sciences. Little additional funding is likely to become available in the arts and humanities. Faculty in all fields need to actively seek extramural support, even if the size and number of grants in their area is modest. Mechanisms to facilitate faculty success in research and scholarship need to be developed and implemented.

Each academic unit must also be committed to steadily improving its success in scholarship and research. Chairs and senior faculty must be strongly supportive of research, and must accept more responsibility for building an academic environment that is supportive of scholarship. Although the needs of junior faculty require particular attention, resources and programs to support the career development of all faculty members are needed.

To accomplish these and other programmatic goals, funds must become available for investment in the UVM research enterprise. The University fund-raising agenda should explicitly include goals directly tied to our research and scholarship efforts — undergraduate research, facilities, faculty development, startup funds, and seed money. Faculty require discretionary funds to develop and maintain their scholarly programs. Indirect cost reimbursement and distribution needs to change in such a way that we are investing more in our research programs and in the infrastructure that directly supports research. Progress towards these goals could be substantially improved through the development and implementation of a plan through which indirect cost reimbursements become separated from the UVM General Fund. This is certain to be difficult because these funds amount to 10 million dollars annually.

Enhancement of the University's research efforts has an important and direct linkage to our goals of improving the learning environment and increasing rigor in the undergraduate student experience. A coordinated, campus-wide effort to boost undergraduate research (perhaps modeled on the Helix program in the biomedical and life sciences) could have a dramatic affect on the campus intellectual climate. In addition, a focus on undergraduate research would closely integrate with existing and evolving undergraduate honors programs.

Our graduate programs must be carefully evaluated and modified as necessary to build optimal strength. In this regard, the review system recently instituted by the Graduate College represents an important step forward. UVM scholars have historically been comfortable with small, department-centered graduate programs, but there is a national trend towards broad programs that provide students with access to a greater range of research and educational opportunities and with an emphasis on interdisciplinary collaboration. Coordination of graduate programs in related fields is needed; small departments and graduate programs need to collaborate or merge to achieve critical mass. There appears to be an emerging opinion that Ph.D. programs in the biomedical and life sciences should be coordinated and/or consolidated to form an interdisciplinary "umbrella" program from our relatively large number of small, departmentally-focused programs.

There are strongly divergent opinions on campus regarding whether the Dean of the Graduate College should have the time and authority to be an effective agent for program improvement, or whether these functions should devolve to the Colleges. In 1997, the deans of the University recommended major reductions in the Graduate College budget. Implementation of these cuts has resulted in significant cost savings, but there are concerns among the faculty that these changes will have a negative impact on the quality of programs and our ability to evaluate and restructure programs. In addition, the issues of graduate student support (especially GTF allocation) and faculty participation in the graduate programs are serious and potentially contentious. Considerable dissatisfaction has resulted from the fact that a rational system of GTF allocation was proposed by a recent task force but never implemented.

The issues of technology transfer and intellectual property policies remain partially addressed, and needs to be brought to completion. The College of Medicine has invested in and brought about a highly effective process for technology transfer, and further enhancements are in the planning stage. Separately from the College of Medicine, the University has also made significant strides in improving technology transfer operations, although a number of issues remain to be resolved. It is clear that numerous opportunities exist for research and scholarly endeavors that reach outside the University and link UVM to community, industrial, and government concerns. In forging these alliances, appropriate care must be exercised to retain faculty independence in research, and University policies regarding such endeavors need to be updated. UVM's intellectual property policies are far below norms for research universities in the US, and a concerted effort must be mounted to develop and implement a set of policies that encompass the full range of current intellectual endeavor at UVM.

Access to information is a serious issue that bears directly on the University research community. Current information concerning research programs, funding, and the significance of scholarship at the university should be readily accessible to the campus and external communities, preferably via the Web. University information technology systems should provide broad campus access to external resources. Some promising programs are underway, such as increasing access to online journals and databases.

Summary

Although there are a large number of significant issues revolving around research and scholarship, there is strong belief that our future is very bright. This University is in the enviable and relatively unique position of being able to offer our students and faculty a tremendous breadth and depth of high quality research programs. We envision the continued nourishment and development of a campus community of scholars whose work has critically important consequences for our local and global communities.