FY 2012 Annual Report of Research Office Activities

OFFICE OF THE SENIOR VICE PROVOST FOR RESEARCH
Advancing Excellence in Research, Scholarship, and Creative Activities

SEPTEMBER
2012
The UNH Research Office

FY 2012 Annual Report of Research Office Activities

Advancing Excellence in Research, Scholarship, and Creative Activities

The Office of the Senior Vice Provost for Research (The Research Office) provides leadership and services to support UNH faculty, students, and staff in their research, scholarship, and creative activities; facilitates cooperation between UNH and the business community; supports technology transfer and commercialization of UNH’s intellectual property; and communicates and promotes the breadth and depth of UNH research and discovery and the resulting impacts within and beyond the University.

The Research Office accomplishes its mission of advancing excellence in research, scholarship, and creative activities by providing the essential infrastructure and resources to support dynamic and growing research programs across all academic disciplines of UNH. The Research Office’s comprehensive goal is to increase and support external research funding and recognition of faculty and student excellence.

Advancing the UNH Strategic Plan

The Senior Vice Provost for Research (SVPR) reports to the University’s Provost (thus integrating research within the academic mission) and serves as a member of the Provost’s Council and the President’s Cabinet. Activities of the Research Office are guided by the Report of the President’s Blue Ribbon Panel on Research and the goals and initiatives of the University’s strategic plan: Breaking Silos, Transforming Lives, Reimagining UNH – UNH 2020.

The SVPR is the “point person” and Research Office units provide support for five of the ten Academic Initiatives of the UNH Strategic Plan:

- Commercializing UNH’s Intellectual Capital;
- Independent Research, Scholarship, and Creative Activity;
- Interdisciplinary Schools and Academies: Development of Schools of Marine Sciences and Ocean Engineering, Earth Systems Science, and Public Service and Policy;
- New Ventures Fund; and
- Research Leveraging: Advancing large-scale interdisciplinary research.

FY 2012 Activities

Commercializing UNH’s Intellectual Capital: The Research Office has an entire unit devoted to commercializing UNH’s intellectual capital: the Office for Research Partnerships and Commercialization. (See pages 12-15.) In addition, the SVPR supports the New Hampshire Innovation and Commercialization Center to accelerate companies which have the potential to stimulate economic development and create new jobs, provides support to faculty start-up companies, and through the New Hampshire Innovation Research Center, funds research and development activities between New Hampshire companies and faculty and students.

Independent Research, Scholarship, and Creative Activity: A new initiative was launched in FY 2012 to promote independent research activity with the National Institutes of Health (NIH). “UP-2-NIH” began with an
internal competition for funds to be used by selected researchers to complete collection of preliminary data or otherwise propel their research to the point at which a proposal could be prepared to submit to NIH. Two recipients of 2011 grants from the Argeris "Jerry" Karabelas ’74 and Eloise Meader Karabelas ’76 COLSA Faculty Development Fund joined the seven successful UP-2-NIH awardees to form an affinity group that will participate in seminars and workshops during Academic Year 2012-13 to position all nine to write highly competitive NIH proposals. The Research Development and Communications office will manage this program. UP-2-NIH will be repeated in the next several years to increase the overall number of NIH awards UNH receives.

**Interdisciplinary Schools and Academies:** The Senior Vice Provost for Research is working with faculty members involved in marine sciences and ocean engineering to develop a new interdisciplinary school that will help to organize UNH’s research, teaching and outreach strengths in these areas. Three doctoral programs (oceanography, ocean engineering, and marine biology) will be supported by the School in collaboration with academic departments across UNH’s colleges.

**New Ventures Fund:** The SVPR promotes New Ventures Fund activities, including the Research and Engagement Academy, for tenure-track, extension, and research faculty interested in enhancing their scholarly agendas through external funding. Led by Dr. Julie Williams, Senior Vice Provost for Engagement and Academic Outreach, and supported by the Research Development and Communications Office, the Academy is a semester-long learning community with seven interactive workshops about successful strategies with federal agencies and foundations and individualized coaching by faculty experts through the grant writing process. Other New Ventures activities include various “learning communities” which bring together faculty members who share an interest in a particular funding opportunity, such as the Early Career programs at the National Science Foundation or the U.S. Department of Energy, or an area of interdisciplinary study, such as humanities and culture or sustainable ecosystems.

**Research Leveraging:** The focus of the UNH Research Leveraging Initiative is to position interdisciplinary groups of faculty and other key research personnel to be competitive for major external grants that will advance new ideas and paradigms. In April, the SVPR hosted a mini-conference at which the eight teams receiving Research Leveraging Initiative awards in 2011 presented the results of their work to date, their success in securing extramural funding, and/or their plans to submit to agencies and programs. The teams’ topics covered a wide range of interests: Geosciences Education, Health Analytics, Sustainability Science Research, Biofuel Generation Using *Clostridial* Bacteria, Interdisciplinary Approaches to and Using Geospatial Technologies to Create Long-Term Models of Human-Environment Interaction, Societal Dynamics of the Maya Collapse, Indigenous & Rural Science Education, and Integrative Analyses of Neural Basis of Behavior. As of April 1, 27 proposals had been submitted to 18 different federal agencies and other sponsors’ programs and six awards had been received by five of the eight teams to support their research and scholarship, outreach and engagement activities. Nineteen more proposals were planned to be submitted before the end of calendar year 2012. More information about the Research Leveraging Initiative can be found on its UNH 2020 webpage. An evaluation of this Research Leveraging Initiative will be completed in 2013.

**Organization of the Research Office**

**Administrative and Service Units and Research Centers**
The Research Office is composed of a central administrative office and six service units: Research Development and Communications, Research Partnerships and Commercialization, Sponsored Programs Administration, Research Integrity Services, Research Computing and Instrumentation, and Environmental Health and Safety. It also serves as the administrative center for New Hampshire EPSCoR (Experimental Program to Stimulate Competitive Research). The OSVPR serves as principal investigator for the current EPSCoR project and provides overall direction for the program.
The Research Office also provides administrative oversight for a number of interdisciplinary research centers:

- Coastal and Ocean Technology Programs
  - the Atlantic Marine Aquaculture Center (AMAC)
  - the National Estuarine Research Reserve System (NERRS) Science Collaborative;
- Marine Program;
- Piscataqua Region Estuaries Partnership (PREP); and
- New Hampshire Sea Grant College Program.

An organizational chart for the Research Office is provided on page 35. A listing of unit staff can be found on pages 36-38. In addition to the reports that follow, individual unit and research center newsletters and publications can be found on the Research Office web site.

**Research Office Strategic Working Groups**

The SVPR created strategic working groups in 2010 to provide her with guidance on ways to improve and enhance Research Office activities to support the UNH research enterprise. Stakeholders from the faculty, Research Office staff, and members of the broader UNH and USNH communities, as appropriate, make up the membership. The current working groups and their chairs are:

- Research Development and Infrastructure (K. Cataneo & P. Messer)
- Intellectual Property/Tech Transfer/Commercialization (M. Sedam)
- Centers & Institutes (K. Gardner)
- Compliance and Risk Management (B. Manning & J. Simpson)
- Finance and Administration (T. Sawtelle & V. Sosa)

**UNH Research Council**

Additional guidance is provided by the UNH Research Council, an advisory body to the SVPR on matters pertaining to the support and advancement of excellence in research, scholarship, and creative activities at UNH. The Council provides a forum for communication and opportunities for collaboration among the Research Office, the colleges and schools, the research centers and institutes, and other key participants in the UNH research enterprise.

**FY 2012 Funding Profile**

FY 2012 was another highly successful one for UNH sponsored programs. Hearty congratulations and thanks are due to the numerous faculty and staff responsible for preparing proposals, and to all administrative staff who support the sponsored programs activities that are so important to UNH’s success.

Research and sponsored program awards to UNH in FY 2012 exceeded $117.7M. This level is comparable to the amounts received in FY 2011 and FY 2010 for these types of awards.

(In FY 2011, an additional award of $42M was received for Network New Hampshire Now, a public-private partnership project for which UNH has provided leadership. Distribution of these funds has enabled the partners to provide access to high speed internet, next generation wireless, and fiber access to those areas of NH previously without access to broadband — or where access was only available through dial-up or satellite services.)
Although federal awards made directly to UNH continue to represent the majority of sponsored program awards, their contribution has declined (51% in FY12 vs. 61% in FY11). Awards from other sources, such as the State of New Hampshire and other universities (5% and 13%, respectively), also include a substantial amount of federal funds “passed through” those sources to UNH.

Funds for research and scholarly activities were provided directly by 32 Federal agencies, as shown below. In addition, projects at UNH were supported by 25 State of New Hampshire agencies and offices, 30 other government entities, 191 US businesses and industry partners, 45 international partners, 274 non-profit organizations, and 103 other universities.

Federal Agencies Providing Funding for UNH Projects in FY 2012

<table>
<thead>
<tr>
<th>Agency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC</td>
<td>Centers for Disease Control &amp; Prevention</td>
</tr>
<tr>
<td>DHHS</td>
<td>Dept. of Health &amp; Human Services (not NIH)</td>
</tr>
<tr>
<td>DHS</td>
<td>Dept. of Homeland Security</td>
</tr>
<tr>
<td>DOC</td>
<td>Dept. of Commerce (excluding NOAA)</td>
</tr>
<tr>
<td>DOD</td>
<td>Dept. of Defense</td>
</tr>
<tr>
<td>DOE</td>
<td>Dept. of Energy</td>
</tr>
<tr>
<td>DOI</td>
<td>Dept. of the Interior (excluding FWS &amp; USGS)</td>
</tr>
<tr>
<td>DOJ</td>
<td>Dept. of Justice</td>
</tr>
<tr>
<td>DOL</td>
<td>Dept. of Labor</td>
</tr>
<tr>
<td>DOT</td>
<td>Dept. of Transportation</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>FHA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>FWS</td>
<td>U.S. Fish &amp; Wildlife Service</td>
</tr>
<tr>
<td>HRSA</td>
<td>Health Resources &amp; Services Administration</td>
</tr>
<tr>
<td>NASA</td>
<td>National Aeronautics &amp; Space Administration</td>
</tr>
<tr>
<td>NEH</td>
<td>National Endowment for the Humanities</td>
</tr>
<tr>
<td>NIH</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic &amp; Atmospheric Administration</td>
</tr>
<tr>
<td>NSF</td>
<td>National Science Foundation</td>
</tr>
<tr>
<td>NTIA</td>
<td>National Telecommunications &amp; Information Administration</td>
</tr>
<tr>
<td>PEACE</td>
<td>Peace Corps</td>
</tr>
<tr>
<td>SBA</td>
<td>Small Business Administration</td>
</tr>
<tr>
<td>SMITH</td>
<td>Smithsonian Institution</td>
</tr>
<tr>
<td>STATE</td>
<td>Dept. of State</td>
</tr>
<tr>
<td>TREA</td>
<td>Dept. of the Treasury</td>
</tr>
<tr>
<td>USDA</td>
<td>Dept. of Agriculture</td>
</tr>
<tr>
<td>USED</td>
<td>Dept. of Education</td>
</tr>
<tr>
<td>USFS</td>
<td>U.S. Forest Service</td>
</tr>
<tr>
<td>USGS</td>
<td>U.S. Geological Survey</td>
</tr>
</tbody>
</table>
FY 2012 externally sponsored awards received by major UNH units are shown on the right.

**FY 2013 Initiatives Planned by the SVPR**

Despite the challenging budget environment, the SVPR is focused on enhancing opportunities to support research and scholarship, commercialization of intellectual property, and development of interdisciplinary schools at UNH in FY 2013. This year, the SVPR will:

- Sponsor a second year of the UP-2-NIH program focused on improving competitiveness for funding from the National Institutes of Health;
- Continue to support grant submissions and resubmissions related to the Research Leveraging Initiative, and support faculty participating in the Research and Engagement Academy;
- Create a University-wide strategy for public sharing of research data as required by federal agencies;
- Secure research analytics software to help UNH administrators and faculty better understand faculty research strengths and strategic competitiveness;
- Improve Sponsored Programs Administration strategies for supporting faculty and student research, including introduction of an electronic process for proposal routing;
- Develop and deploy an on-line compliance training and monitoring program for faculty, students and staff;
- Continue to lead the newly-awarded $20 million National Science Foundation EPSCoR Cooperative Agreement, *Interactions Among Climate, Land Use, Ecosystem Services and Society*;
- Provide support to five new start-up companies deploying UNH’s intellectual property; and continue to work to increase the annual invention disclosure and licensing rates;
- Implement a coordinated UNH strategy to increase private-public partnerships and the number of sponsored research agreements with business and industry;
- Working with interdisciplinary faculty members, support the development of an interdisciplinary minor in entrepreneurship; and
- Continue to operationalize a strategy with the Graduate School and the Fellowships Office to encourage and support applications by undergraduate and graduate students for research fellowships and other prestigious funding opportunities.
Research Development and Communications

Formed in January of 2010, Research Development and Communications (RDC) directly supports two of the ten UNH 2020 Strategic Plan Programmatic Initiatives: Independent Research, Scholarship, & Creative Activity, and Research Leveraging. RDC’s mission reflects its role in these initiatives. RDC helps faculty and other UNH researchers enhance their strategies and skills for grant seeking; facilitates development of multidisciplinary and institution-wide proposals; coordinates UNH responses to special funding and award programs; and promotes communication of UNH research and discovery activities to the general public, UNH, and the business community.

RDC’s activities and programs are guided in part by the Research Development and Infrastructure (ReDI) Working Group, an advisory committee composed of representatives from all UNH colleges, schools, and institutes, and key partners such as UNH Advancement, Information Technology, and Research Partnerships and Commercialization. In FY 2012, the ReDI Working Group focused on developing a Research Infrastructure Categories list and conducting an inventory of resources for these highest priority areas: faculty consulting services/specialized expertise; equipment/instrumentation; information technology hardware and software; library resources; and research networking tools.

RDC is staffed with two full-time employees and relies on a small cadre of graduate students to assist with proposal development, program execution, communications, and supporting administration. As evident from the achievements described below, RDC is necessarily efficient and extraordinarily effective, given its small staff size.

Developing Skills for Grant Seeking

Workshops and Seminars

UNH faculty and research staff members are provided opportunities to deepen their understanding of the sponsored research environment and grant seeking knowledge and skills through a variety of workshops and seminars hosted and/or presented by RDC.

During Academic Year (AY) 2011-12, RDC offered these workshops and seminars for 1st and 2nd year faculty:

- Excellence in Research, Scholarship, and Creative Activities; and
- Navigating UNH Research Office Services and Supports.

These programs were open to all UNH faculty and extended to postdoctoral fellows in AY 2011-12:

- Proposal Writing Strategies and Reviewer Feedback;
- UNH Cooperative Extension: Using Engagement and Outreach to Enhance Your Grant Proposal (new);
- NSF webinars to develop skills for writing educational research and development proposals (new);
- Funding Opportunities for New/Early Career Investigators;
- Finding Funding – Search Tools and How to Use Them;
- Research Computing and Cyberinfrastructure for UNH (new);
- Fulbright Programs to Foster International Scholarship;
- Survey, Evaluation, and Assessment Services at UNH (new);
- NIH’s AREA Program – Overview and Strategies for Success;
- Resources for International Scholarship (new);
- Strategies for Success with the U.S. Dept. of Energy Early Career Research Program;
- Educational Opportunities in Bioenergy at U.S. Dept. of Energy National Labs (new);
- Educational and Outreach Components in NSF Career Proposals (new); and
- NIH Faculty/Postdoc Education Loan Repayment Program (new).

RDC staff also participated in faculty and/or student development programs hosted by the UNH Provost’s Office, the Graduate School, and various departments of UNH’s colleges/schools. The 17 workshops and seminars that RDC presented in AY 2011-12 were attended by 142 faculty and postdocs, 90% of whom submitted proposals to sponsors in FY 2012. The average satisfaction rating from evaluations of all RDC FY 2012 programs was 4.5 out of 5.0 for attendees’ expectations and for attendees’ needs.

**One-on-One Support**

RDC provides a wide range of direct services to faculty and research staff to assist them with developing competitive proposals to sponsors, including: connections with federal program officers; planning activities for successful proposal writing and resubmissions; arranging for expert internal and external critiques of draft proposals; and strategies for increasing the likelihood of securing funding.

In FY 2012, RDC continued its proposal polishing and editing service designed to ensure that the submitted proposals present the project effectively and meet each sponsor’s formatting and content guidelines. Edits were performed by a team of eight graduate students trained by RDC staff. In some cases, the editorial staff also researched and provided “boilerplate” language and data required for certain solicitations. Response to these services remains overwhelmingly positive, as testified to by numerous e-mail messages from grateful customers.

RDC provided one-on-one support to over 200 individuals in FY 2012. The editorial team polished/edited 60 proposals, resulting in higher proposal scores and more awards. For example, in FY 2012, 10 proposals were submitted to the NSF CAREER program and 3 awards were received. (See sidebar.) This is an improvement from FY 2011, when only 4 proposals were submitted and just 1 award received. Another example: 2 acquisition proposals were submitted to NSF’s Major Research Instrumentation Program in FY 2012 – the maximum number allowed per organization. Both were funded – UNH’s first such awards since 2008. A final example: RDC’s editorial team supported proposals for two English department assistant professors, one of whom received a National Endowment for the Humanities (NEH) Enduring Questions grant and the prestigious Woodrow Wilson/Mellon Foundation Career Enhancement Fellowship and the other received the prestigious NEH Folger Shakespeare Library Fellowship (see panel below). This is unprecedented for the UNH English department. The quality of the proposals submitted with RDC assistance is undeniably superior, which is a necessity in the ever increasingly competitive external funding environment.
The Research and Engagement Academy, Learning Communities (LCs), and Affinity Groups

RDC assisted the Senior Vice Provost for Engagement and Academic Outreach (SVPEAO) in conducting the second annual UNH Research and Engagement (R&E) Academy in the spring of 2012. The Academy is designed to enhance faculty members’ scholarly careers by strengthening the quality and quantity of proposals submitted to external funders and to increase the disciplinary diversity of the faculty submitting proposals and receiving awards. Faculty members were nominated by their deans in the fall of 2011. RDC participated in the internal peer panel review of the 30 applications, resulting in the selection of 22 scholars for the 2012 R&E Academy. Each selected scholar committed to submit a competitive grant proposal to an external funder and to attend six workshops and receive guidance from an assigned “scholarly coach.” The twelve scholarly coaches were senior UNH faculty with established records of external funding and with the personal qualities and desire necessary to serve others. In addition to participating in all workshops, RDC staff provided one-on-one support as requested by the scholars throughout the spring semester and beyond. So far, 10 of the scholars have submitted 15 proposals; to date, 2 of those proposals have been funded for a total of about $100,000. From the 2011 R&E cohort, 15 have submitted 43 proposals, resulting in 16 awards totaling $4.6 million to date.

RDC collaborated with the SVPEAO to facilitate a number of LCs specifically for faculty in the humanities, the library, and the science, technology, engineering and mathematics (STEM) disciplines to develop strategies, knowledge about funders, and other grant seeking skills. In addition, RDC independently organized and conducted a competition for internal funding for the new initiative called “UP-2-NIH,” a program designed to improve UNH faculty competitiveness with the National Institutes of Health. Nine UNH faculty were selected in FY 2012 to be part of the UP-2-NIH affinity group, whose activities will take place in FY 2013.

Limited Submission Programs

Federal sponsors increasingly are migrating towards limiting the number of proposals that may be submitted by a university in response to a specific funding opportunity announcement and expecting the university to select which proposal(s) to enter into the competition. During FY 2012, RDC continued its monthly e-announcements of limited submission programs (LSPs) by federal sponsors, and augmented this with non-profit sponsor deadlines in collaboration with the UNH Foundation/Advancement Office. Of the 22 federal LSP deadlines in FY 2012, 5 NSF programs required internal competitions due to high levels of interest: Partnerships for International Research and Education (PIRE), Sustainability Research Networks Competition (SRN), Major Research Instrumentation (MRI), Sustainable Energy Pathways (SEP), and Integrative Graduate Education and Research Traineeship (IGERT). Internal competitions involve preparation and announcement of internal guidelines, administering the review panel process (including the resources of expert UNH faculty reviewers), preparing and communicating review results, and assisting selected teams with their proposal submissions.

Research Leveraging Initiative

In the spring of 2012, RDC organized a mini-conference for the eight interdisciplinary awardee teams to present the results to date of their project and proposal work since receipt of the internal funding in 2011. RDC assists teams with their proposals upon request.

Working with Van Scoyoc and Associates (VSA)

RDC serves as a primary contact with VSA, an external federal relations firm engaged by UNH in January, 2010 to help better link faculty with current agency interests and funding opportunities. VSA works directly and through KBScience with RDC and the SVPR to coordinate an approach that will realize both short- and long-term benefits.
In addition to supporting individual faculty members, VSA/KBScience assists in developing large-scale, interdisciplinary proposals that capitalize on UNH’s research strengths.

Specific projects supported by VSA/KBScience this past year included these NSF programs: Major Research Instrumentation (MRI), Integrative Graduate Education and Research Traineeship (IGERT), Experimental Program to Stimulate Competitive Research (EPSCoR), and Partnerships for International Research and Education (PIRE). Department of Energy (DOE) Early Research Career proposals, connections to DOE’s national labs, and other DOE funding opportunities were promoted by KBScience.

**Communicating to the UNH Community and Beyond**

**UNH Research Web Site**

The UNH Research web site presents an overview of the research activity at UNH as well as the tools and services provided by all the Research Office support units in a single, user-oriented site created by using best practices for web design. The underlying principle of the site is to provide information as the user will look for it. Feedback since the site launch in March, 2011 has been very positive while providing some suggestions for improving usability and effectiveness.

In response to user comments, a “quick find” drop-down menu to increase the ease of locating more commonly used resources and a Research Spotlight panel that showcases recent research activities of faculty and graduate students were added to the homepage. In addition, navigation tips were developed to assist users.

In FY 2012, users from outside and within UNH used “Contact Us” 74 times to request information from the Research Office or provide feedback on the web site. Responses were provided by the Web Master.

Web site editors from each Research Office service unit continue to play a key role in the maintenance and enhancement of the web site. Monthly meetings of the editors and RDC staff (Web Master and the Director) have allowed for the exchange of ideas and lessons learned as well as contributing to the development of the staff members’ identities as web site editors within their units.

**Departmental and Broader UNH Communications**

During FY 2012, RDC launched a monthly Research Office newsletter to better connect the 90+ staff across the division with each other. The OSVPR Insider features include notes from the SVPR, office profiles, and interesting or unusual activities of individuals or offices. RDC also published the first Research Office Annual Report of its units’ activities in FY 2011 with a circulation to the USNH community.

**Communicating the Depth, Breadth, and Quality of UNH Research and Scholarship**

During FY 2012, RDC worked with University Communications and Marketing (UCM) to place various stories about UNH research excellence and accomplishments in the Campus Journal and UNH Today. RDC staff members participate in the UNH Communications Council, composed of the various college/school writers, editors, and webmasters in conjunction with the UCM staff.
Research Profiles for faculty working in each of the web site research areas were added to the web site: Agriculture & Biosciences, Business & Technology, Engineering & Physical Sciences, Health & Society, Marine & Ocean Sciences, Space, and Sustainability & the Environment. RDC plans to add other profiles for each of the areas in FY 2013.

RDC nominates outstanding faculty for prestigious external recognition or awards. Such nominations involve submission of a formal statement from UNH, recommendations from peers and other leaders in the nominee’s research field, a detailed career history, and representative scientific publications. In some cases, the nominee provides a proposal for research to be conducted with the award funds. In FY 2012, RDC nominated J. Brent Loy (plant biology and genetics) for the Christopher Columbus Fellowship Foundation Distinguished Agriscience Scientist Award; he was selected as one of just 3 finalists. Also, James Ryan (space physicist) was selected as one of 3 finalists for the Christopher Columbus Fellowship Foundation Homeland Security Award, and was invited to and attended the recognition ceremony at the U.S. Capitol in Washington, D.C.

Metrics

The National Organization of Research Development Professionals (NORDP) defines Research Development as a “set of strategic, proactive, catalytic, and capacity-building activities designed to facilitate individual faculty members, teams of researchers, and central research administrators in attracting extramural research funding, creating relationships, and developing and implementing strategies that increase institutional competitiveness.” When NORDP started in 2010, it had 30 members. Now there are over 500 members, including the UNH RDC staff. Research Development increasingly is becoming a standard practice at universities, in order to become and remain competitive, especially at the federal level.

Universities struggle with measuring the impact of their research development activities. It takes time to conceive of, implement, and test the efficacy of programs for faculty with different needs at different times of their careers. There usually is a long lead time between proposal submission and sponsor action, and most proposers aren’t funded on the first, or even second, try. Changing (mostly decreasing) federal agency budgets and changing program priorities decrease the likelihood of success. Nevertheless, RDC attempts to measure its impact in this dynamic environment.

It seems reasonable that a Research Development office should try to increase the absolute number of faculty writing/submitting proposals and increase the number of awards resulting from those proposals. (At some point, the right metric becomes increasing the percent of total eligible faculty, rather than the absolute number of faculty, submitting proposals and receiving awards.) And, because UNH’s strategic plan calls for support of independent research and scholarship, RDC strives to broaden participation in academic disciplines previously not participating in external sponsorship. The tables on page 11 contain relevant data from calendar years 2009-2011.

Availability of American Recovery and Reinvestment Act (ARRA) funding distorts the picture for calendar years 2009 and 2010, as more proposals were written with higher success rates for all universities. (Funding to UNH from other universities, which was all federal “pass through,” increased dramatically in ARRA years.) Also worth noting is that when awards are received, awardees don’t need to write more proposals for 1-2 years because they are working on the funded projects. Coupling the foregoing with federal budget decreases subsequent to ARRA and the fact that RDC began in January, 2010, it is too early to quantitatively measure the impact RDC has had at UNH. However, it is gratifying to see that the number of academic departments submitting proposals over this time period has modestly increased, as has the number of awards received by awardees. These perhaps reflect RDC’s increased efforts to involve more departments in seeking external funding and the fact that better proposals are being submitted. Qualitative feedback regarding RDC services suggests that the success ratios in more categories will increase over the next two years.
New UNH Proposals to and Resulting Awards from External Sponsors – Summary Data as of July 23, 2012

<table>
<thead>
<tr>
<th></th>
<th>CY2009*</th>
<th>CY2010*</th>
<th>CY2011***</th>
</tr>
</thead>
<tbody>
<tr>
<td># of New Submitted Proposals</td>
<td>830</td>
<td>780</td>
<td>727</td>
</tr>
<tr>
<td># (%) of New Submitted Proposals Awarded</td>
<td>372 (44.8%)</td>
<td>381 (48.8%)</td>
<td>321 (44.2%)</td>
</tr>
<tr>
<td># (%) of New Submitted Proposals Declined and Pending</td>
<td>458 (55.2%)</td>
<td>399 (51.2%)</td>
<td>406 (55.8%)</td>
</tr>
<tr>
<td>Total $ Requested in New Proposals</td>
<td>$433,041,554</td>
<td>$488,426,886**</td>
<td>$250,102,730</td>
</tr>
<tr>
<td>Total Awarded $ From Those Submitted Proposals</td>
<td>$73,975,689</td>
<td>$146,057,727</td>
<td>$40,119,108</td>
</tr>
<tr>
<td>Total Awarded as Percent of Total $ Requested</td>
<td>17.1%</td>
<td>29.9%</td>
<td>16.0%</td>
</tr>
<tr>
<td># PIs/PDs Who Submitted at Least One Proposal</td>
<td>358</td>
<td>339</td>
<td>318</td>
</tr>
<tr>
<td># (%) of New Submitted Proposals Awarded</td>
<td>458 (55.2%)</td>
<td>399 (51.2%)</td>
<td>406 (55.8%)</td>
</tr>
<tr>
<td>Total $ Awarded as Percent of Total $ Requested</td>
<td>17.1%</td>
<td>29.9%</td>
<td>16.0%</td>
</tr>
<tr>
<td># (%) UNH Acad. Depts. That Submitted New Proposals</td>
<td>46 (79.3%)</td>
<td>47 (81.0%)</td>
<td>48 (82.8%)</td>
</tr>
<tr>
<td># (%) UNH Acad. Depts. Receiving Awards from the New Proposals</td>
<td>1.72</td>
<td>1.73</td>
<td>1.81</td>
</tr>
</tbody>
</table>

Note: CY09 and CY10 were American Recovery and Reinvestment Act (ARRA) years
**Includes one proposal for $35.8m, one for $22.5m, and one for $65.9m.
***Pending proposals submitted during CY11 last quarter may be resolved by 10/1/12.

New UNH Proposals to and Resulting Awards from External Sponsors by Sponsor Type as of July 23, 2012

<table>
<thead>
<tr>
<th></th>
<th>CY09 # of New Proposals</th>
<th>CY10 # of New Proposals</th>
<th>CY11 # of New Proposals</th>
<th>CY09 $ Awarded From New Proposals</th>
<th>CY10 $ Awarded From New Proposals</th>
<th>CY11 $ Awarded From New Proposals</th>
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<tr>
<td>Federal Agencies</td>
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<td>369</td>
<td>331</td>
<td>$46,526,138</td>
<td>$101,448,580</td>
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<td>NH Government Agencies</td>
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<td>75</td>
<td>72</td>
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<td>$8,784,243</td>
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<tr>
<td>Other Universities</td>
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<td>100</td>
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<td>25</td>
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<td>727</td>
<td>$73,975,689</td>
<td>$146,057,727</td>
<td>$40,119,108</td>
</tr>
</tbody>
</table>

Note: CY09 and CY10 were American Recovery and Reinvestment Act (ARRA) years

Plans for FY 2013

- In addition to providing support to the AY 2012 - 2013 Research and Engagement Academy and established Learning Communities, RDC will create a curriculum, implement, and provide support for the UP-2-NIH affinity group.
- An Annual Report of UNH Research Excellence will be launched.
- Internal competitions for Limited Submission Programs with wide UNH interest (such as the MRI and IGERT) will be promoted earlier in the process.
- RDC will collaborate with the UNH Graduate School and the UNH Fellowships Office to promote external funding opportunities and successful proposal writing strategies for graduate students and postdoctoral fellows.
- Infrastructure resources, as identified by the ReDI Strategic Working Group, will be added to the Research Office web site.
Research Partnerships and Commercialization

The Office for Research Partnerships and Commercialization (ORPC) is responsible for managing, leveraging, and licensing UNH’s intellectual assets. ORPC facilitates the transfer of UNH research results to the public by partnering with commercial enterprises in relationships of mutual advantage, while retaining the ability to pursue traditional academic pursuits of publishing and open dissemination of research results. The responsibilities of ORPC have the three main areas of focus described below.

Managing and Commercializing Intellectual Property: Commercializing UNH’s intellectual capital is one of the ten points in the UNH Strategic Plan and is an ORPC priority. UNH faculty are required to assign rights to intellectual assets created during their employment (excepting exempted scholarly works) to UNH. ORPC evaluates invention disclosures based on UNH research and funds the protection of these ideas via patents, copyrights, and (occasionally) trademarks. UNH’s investment in research represents the original “seed capital” that starts ideas down the pathway to commercialization. Staff licensing managers market technology to companies with similar research interests, seeking to license UNH intellectual assets in exchange for upfront consideration, a commitment to develop the technology, and downstream royalties on the use of UNH intellectual property. ORPC also is responsible for all start-up company formations based on UNH intellectual assets, and structures start-up licenses to maximize the possibility of success.

To ensure that ORPC casts a net wide enough to leverage UNH’s intellectual assets, the office works closely with local organizations that are similarly interested in seeing technology-based economic development thrive, including the Green Launching Pad, New Hampshire Innovation Commercialization Center, Idea Greenhouse, and NH Small Business Development Center. As an informal advisor, ORPC also helps other institutions in the University System of NH address issues related to intellectual property. ORPC staff have worked with both Keene State College and Plymouth State University to ensure that valuable opportunities can be licensed, and to develop localized policies for governing and protecting intellectual assets.

UNH InterOperability Laboratory (IOL): As of November 1, 2011, the UNH IOL reports to the ORPC Executive Director. The UNH IOL is a neutral, third-party entity dedicated to testing data networking technologies through industry collaboration. In existence since 1988, the lab has fostered multi-vendor interoperability while preparing students for careers in industry. The UNH IOL has grown steadily into one of the industry's premier independent proving grounds for new technologies, with a focus on quality assurance. Testing is conducted in the lab's 32,000+ square foot facility, which houses a multi-million dollar array of test equipment and the latest devices from member companies. In return for these devices and their support, members are entitled to high-caliber interoperability and conformance testing against other vendors' devices.

The UNH-IOL has made great strides in working with the College of Engineering and Physical Sciences (CEPS). The lab directly supports CEPS programs by engaging in new collaborative initiatives to encourage and attract incoming students. Such initiatives include participation in High Technology Day, UNH Tech Camp, Introduction to Industry (I2I) Computer Science program, and the Computer Science Advisory Board. The UNH IOL also has supported the Computer Science and Electrical Engineering departments by hosting activities and tours for prospective UNH students during CEPS open houses and at any other time requested. The UNH IOL supports CEPS students directly
by employing them in a “real world” engineering work environment and augmenting their education with experience unobtainable in the classroom.

In FY 2012, the UNH IOL published four white papers and had employees speak at 14 industry events. The lab currently operates 27 distinct consortia in seven technology areas (Enterprise, Core/Telco, Access, Storage/Datacenters, Precision Timing, Consumer Electronics, and High Performance Computing).

NH Innovation Research Center (NHIRC): NHIRC is a matching grant program that connects New Hampshire companies with expertise at research universities to solve scientific or technical problems. Established in 1991 and funded by the NH Legislature, the NHIRC is administered by ORPC on behalf of the State.

The NHIRC has awarded more than $6 million in state funds to support research for 129 companies in New Hampshire and boasts leverage of nearly 15:1 on state dollars, including a major component of the NH’s NSF EPSCoR program. Since its inception, NHIRC is responsible for creation of 600 NH jobs and its awardees have received more than $26 million in federal Small Business Innovation Research awards and over $900 million in follow-on capital.

In FY 2012, the NHIRC was subject to a 60% reduction in funding from the state. In response, the Center adjusted its allocation of resources and chose to focus on promoting the federal SBIR (Small Business Innovation Research)/STTR (Small Business Technology Transfer) grants programs. In partnership with the NH Small Business Development Center, the NHIRC has funded NH Inspires Innovation, a program that provides basic SBIR/STTR overviews and specific training on preparing grant applications to the National Institutes of Health, the National Science Foundation, the Department of Defense, and the Department of Energy. The program has been received very well, has trained over 50 individuals and companies in its first six months, and is tracking proposal development and growth by trainees.

FY 2012 Accomplishments

FY 2012 was the first full fiscal year under the leadership of Executive Director Marc Sedam. Although the reimagining of the commercialization program is in no way complete, the results in FY 2012 show that UNH is on the right path.

ORPC has made a concerted effort over the past year to broaden its capabilities and capacity to handle an increase in disclosures. To that end, Tristan Carrier was hired to manage technology from both the UNH IOL and CEPS. Tristan has an undergraduate degree in biomechanical engineering and is a recent graduate of the UNH School of Law. Since Tristan’s arrival in January, both disclosures and engagement by the UNH IOL and CEPS have improved.

Similarly, UNH always has had disclosures in the area defined as NIPRA (non-intellectual property related assets, which generally means anything other than a patent). ORPC made a strategic decision to provide additional support in this area in an effort to ensure that technology transfer and commercialization are embraced by all areas of campus. Tim Willis was hired on a contract basis in March and has made a significant contribution by establishing simpler and more thorough guidelines for protecting copyrights and trademarks. ORPC expects Tim to become a permanent staff member in FY 2013.
Disclosures: UNH set a new record in FY 2012 with 32 disclosures -- more than double the number in FY 2011. As important as the total number of disclosures is, the breadth and depth of disclosures are of equal import. New disclosures have come from all areas of campus and across all disciplines. ORPC has invention disclosures from creative works, new trademarks, copyrightable works, and classic inventions.

Intellectual property: ORPC filed nine patent applications in FY 2012, seven of which were patent applications based on new invention disclosures. Several copyrights were registered in the U.S. Patent and Trademark Office, and six new trademarks were filed. These trademark filings were very important, as several of them were for key UNH marks that are expected to generate new revenue streams (e.g., the wildcat paw, University seal, Operation Hat Trick).

Licensing: ORPC completed nine new license agreements for UNH technology in FY 2012, remaining constant with FY 2011. Licenses tend to be a lagging indicator of success, as disclosures must be made and evaluated prior to protecting the intellectual property (IP). Only after the IP is protected does ORPC seek licensees. Overall, the process from first disclosure and license signature can take 6-18 months. ORPC anticipates both the number of licenses and licensing revenues to begin to increase significantly starting in FY 2014.

ORPC executed additional UNHCEMS licenses in FY 2012, bringing the total number of executed licenses to 17 for this web-deployed software to manage universities’ chemical inventories.

Revenues: Royalty income increased 10% over FY 2011 to a total of $347,942 in FY 2012

Partnership with UNH Law: Although technology transfer at UNH is more analogous to a consulting firm than a law firm, experience with legal issues is helpful. In FY 2012, ORPC became the first organization on the Durham campus to create a formal internship program with the UNH School of Law (formerly Franklin Pierce Law Center). Each year ORPC chooses two students to perform a year-long rotation in the office. Students work full-time in the summer and commute to the Durham campus to work approximately 10 hours per week during the school year. Under the mentorship of ORPC licensing managers, interns are given increasing levels of responsibility, including prior art searching, evaluation of technology, and suggesting commercialization strategies. This added capacity is a great benefit to both ORPC and the students, with the students getting “real world” exposure to technology transfer.
Outreach and Recognition Activities: ORPC continued its popular Innovation Catalyst Seminar Series, held monthly to promote discussion between UNH faculty and the local business community. An average of 40 people attended each month to learn about the latest topics in commercialization. Building on the Seminars, but focused internally, ORPC launched UNH’s inaugural Inventors’ Dinner and established the annual UNH Innovator of the Year award. The Inventors’ Dinner was an invitation-only event for faculty and student recipients of issued patents or those who disclosed ideas to ORPC for the first time. ORPC hosted over 60 of UNH’s faculty innovators (and their department and college leaders) — a great success.

Thought Leadership: ORPC employees are expected to be leaders in the technology transfer field, participate in professional organizations, and identify technical areas for growth. In FY 2012, ORPC employees participated as invited speakers in seven events and webinars. The Executive Director also now has a regular column in the New Hampshire High Tech Council newsletter in which timely issues related to commercialization and industry relations are discussed with a wider audience. These efforts have increased the profile of both ORPC and UNH locally, regionally, and nationally, further assisting ORPC’s efforts to commercialize UNH’s intellectual assets.

Administration and Staffing: ORPC’s intellectual property database implementation was completed in FY 2012; the data quality control review will occur in early FY 2013. This comprehensive system gives faculty and other project managers, as well as university administrators, the capability to see UNH intellectual property data and understand how ORPC is positively affecting their college or department. Staff size was increased from three in FY 2011 to five in FY 2012. Additional staff are expected to join the ORPC in FY 2013.

Plans for FY 2013

- Continue the excellent progress in disclosure rate;
- Increase licensing revenues by at least 25%; and
- Create 2-3 startup companies: Obliterase, a startup working on secure data erasure of hard drives, will be launched early in FY 2013. Other companies in the area of emergency planning, consumer products, and UNH’s first non-profit startup are in the planning stages.
Sponsored Programs Administration

Sponsored Programs Administration (SPA) supports Principal Investigators (PIs); facilitates both pre-award and post-award processes; and mediates among the interests of the institution, sponsors, and the faculty. SPA’s Grant and Contract Administrators provide assistance with budget development and compiling the components of proposals, are responsible for the actual submission of proposals, and exercise signature authority on behalf of the University in accepting grant and contract awards. SPA’s Financial Research Administrators are responsible for a range of activities associated with financial management and compliance, including: billing and financial reporting, cash and receivables management, effort reporting certifications, award closeout, and audit coordination. SPA administrators are experts in the regulations and policies of UNH’s sponsors, the government, and the University.

Proposals, Awards, and Expenditures

SPA assisted UNH PIs in submitting 832 proposals during FY 2012, requesting $270M in external support.

During FY 2012, SPA established 637 awards within UNH’s grants management and financial systems accounting for nearly $118M of external support.
Improving the Sponsored Programs Infrastructure

Along with Research Integrity Services (RIS), SPA engaged the UNH Survey Center to conduct an ongoing customer satisfaction survey. After four quarters of sampling:

- 96% of SPA/RIS customers were satisfied with the knowledge level exhibited by SPA/RIS staff;
- 95% of SPA/RIS customers were satisfied that SPA/RIS staff understood their needs;
- 94% of SPA/RIS customers were satisfied with the helpfulness of SPA/RIS staff; and
- 93% of SPA/RIS customers were satisfied with the service they received from the SPA/RIS staff.

Like similar units at other institutions, SPA must adapt to an increasingly complex research environment. Decreases in funding at every level, combined with an increased number of proposal submissions and growing administrative and compliance burdens, signal the need for transformation. Addressing these challenges provides an opportunity to consider the organizational structures and practices that serve the University research community and adapt them to meet the changing requirements of the research environment.

The Research Office’s Finance and Administration Working Group (FAWG) was charged with providing advice, guidance, and implementation support to address process improvements for grants management at UNH. With the leadership of Co-Chairs Victor Sosa (SPA) and Tina Sawtelle (COLSA), the FAWG reported its findings to the Provost, Vice President for Finance and Administration, and Senior Vice Provost for Research in FY 2012. FAWG’s report is serving as the basis for a Six Sigma review of the grant management lifecycle at UNH during FY 2013.

The core principles and values of this review remain:

- Cost effectiveness and efficiency;
- Shared stakeholder responsibility;

Total sponsored programs expenditures grew 10% to reach $138 million during FY 2012.

These figures represent a slight increase in proposal submissions, albeit at a lower dollar volume. Similar to the award data, they suggest a normalization of activity following the FY 2010 and FY 2011 impacts of the American Recovery and Reinvestment Act of 2009 (ARRA). ARRA awards will continue to be reflected as increased sponsored expenditures through September 30, 2013 when ARRA funded projects are, with limited exceptions, expected to be completed.
• Explicit delegation of responsibility, authority, and accountability;
• Services located as closely to the PI as possible;
• Financial compliance at the point of expenditure;
• Integration of support between centralized and distributed offices; and
• Training that ensures requisite skills.

Toward Electronic Proposal Processing

SPA, along with Research Computing and Instrumentation, worked in FY 2012 to implement an electronic process to prepare proposals and route them through the University for necessary approvals before submitting them, system-to-system, to sponsors. Regrettably, the vendor UNH uses for its electronic grants management system was unable to deliver the version upon which the UNH implementation is based, and the schedule for this initiative has been extended into FY 2013.

Outreach and Training

Recognizing that Principal Investigators are responsible for most aspects of sponsored research, including compliance with institutional policy and federal regulation, the Research Office is committed to providing information to help them succeed. This year, SPA developed Essentials for Project Directors/PIs, a series of guidance documents to familiarize PIs with 10 essential sponsored program administration and compliance topics. Each document includes a brief explanation of the topic, guidance on how to comply, and Web links to campus resources and additional information.

The topics covered are:

- Cost Principles
- Administrative Costs
- Revenue - Gift vs. Sponsored Program
- Subrecipient vs. Vendor Agreement
- Cost Sharing
- Cost Transfers
- Effort Certification
- Financial Conflict of Interest in Research
- Research Involving Humans, Vertebrate Animals, & Biological Materials
- Equipment

Documents for the first 9 topics have been completed and posted to the Research Office web site. The document for the 10th topic, equipment, has been delayed due to the transfer of responsibilities for asset management from the Controller’s Office to the Vice President for Finance and Administration.

Financial Management Activities

Financial Research Administrators in SPA prepared financial reports and submitted invoices to sponsors, managing an average of $15 to $20 million in University receivables in FY 2012. There have been minimal write-offs of receivables as a result of the collection efforts of SPA staff working with Investigators and their support teams.

<table>
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<tr>
<th>SPA Transaction Activity Volume - by project</th>
<th>FY 2009</th>
<th>FY 2010</th>
<th>FY 2011</th>
<th>FY 2012</th>
</tr>
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<tr>
<td>Invoices submitted</td>
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<td>1994</td>
<td>1877</td>
<td>1854</td>
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<tr>
<td>Cash transactions on letters of credit</td>
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<td>8918</td>
<td>9690</td>
</tr>
<tr>
<td>Financial reports submitted</td>
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<td>328</td>
<td>326</td>
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<tr>
<td>Total</td>
<td>10,407</td>
<td>10,785</td>
<td>11,121</td>
<td>11,897</td>
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</table>
The Financial Research Administrators in SPA coordinate project closeouts as well as audits by the University’s independent audit firm and by sponsors. The annual federal grants audit, referred to as the “A-133 Audit,” resulted in no findings in UNH sponsored programs for FY 2012. These audit results are a positive indicator of collaborative work on cost compliance across UNH. Financial Research Administrators manage areas important to maintaining cost compliance with sponsor requirements and University policies, including time and effort reporting, cost transfers, matching and indirect costs. During FY 2012, 520 projects were closed out. SPA manages record retention according to sponsor requirements.

Export Controls

During FY 2012, SPA provided assistance to:

- 6 departments that applied for export licenses;
- 3 departments that developed Technology Control Plans;
- 7 departments that provided certifications regarding the release of controlled technology or technical data to nonimmigrant workers; and
- 22 departments that performed specific restricted party screenings.

SPA continues to implement the federal government’s guidance regarding the harmonization of the U.S. State Department’s International Traffic in Arms Regulations with the U.S. Department of Commerce’s Export Administration Regulations. Combining these two complex systems has raised concerns over preserving licensing exemptions that universities rely upon. However, to date, groups such as the Association of American Universities and Council on Governmental Relations have helped maintain a workable regulatory structure. Still, SPA expects to revamp its export compliance program in the near future in order to satisfy the changing requirements.

Plans for FY 2013

- Represent the Research Office in the Six Sigma review of the sponsored program lifecycle;
- Begin planning to update UNH’s Export and Embargoes Management System;
- Explore ways to improve UNH’s engagement with Business and Industry; and
- Complete development and testing of the electronic proposal routing and submission process.
Research Integrity Services

As a land-grant institution, UNH is accountable to New Hampshire residents and to the University community to ensure the ethical and safe conduct of research and scholarly activity. Integrity is fundamental to excellence. As an institution of higher education that prides itself on extensive research endeavors and the involvement of undergraduates and graduate students in research projects, UNH has an obligation to teach and actively promote integrity in research and scholarship.

Research Integrity Services (RIS) staff contributes to excellence in research and scholarship by providing services to the UNH community in the following programs and, in collaboration with units across the institution, promoting and fostering an institutional culture of integrity in research and scholarship:

- Humane care and use of vertebrate animals, and operations of the UNH Institutional Animal Care and Use Committee (IACUC);
- Protection of human subjects in research and operations of the Institutional UNH Review Board for the Protection of Human Subjects in Research (IRB);
- Responsible conduct of research (RCR) and scholarly activity program, and operations of the Responsible Conduct of Research and Scholarly Activity Committee; and,
- In conjunction with the Office for the Senior Vice Provost for Research (OSVPR), financial conflict of interest in research and operations of the UNH Disclosure Review Committee (DRC).

RIS is staffed by a full-time Director and Administrative Assistant.

The Animal Resources Office (ARO), a unit within RIS, is staffed by a 65% FTE Director (also UNH’s Attending Veterinarian) and a full-time technician. The ARO:

- Provides technical support, consultation, and training for faculty, staff and students using/caring for animals at UNH;
- Provides veterinary services for animals used/cared for by UNH faculty, staff and students;
- Assists UNH project directors with development of protocols for animal use;
- Oversees UNH animal facilities to ensure compliance with federal, state, and institutional standards; and
- Oversees the UNH controlled substances program.

Accomplishments in FY 2012 and Goals for FY 2013

Humane Care and Use of Vertebrate Animals Program

The IACUC reviewed 58 initial applications, a 23% decrease from FY 2011. The portfolio of active protocols overseen by the IACUC was 134 at year’s end, a 7% increase from the previous year end.

Program highlights for the year included:

- Developed *Media Guidelines for Activities Involving Vertebrate Animals*;
- Initiated response to new requirements of the 8th edition of *The Guide for the Care and Use of Laboratory Animals*; and
- The U.S. Department of Agriculture annual inspection in April resulted in no findings.
During the year, the ARO:

- Conducted a needs assessment of current animal users;
- Completed collaborations with Salient Surgical Inc. (now Medtrons, Inc.) and CPEX Pharmaceuticals;
- Continued to provide support to various COLSA and COLA projects; and
- Helped UNH formally adopt a new Controlled Substances Program, overseen by the ARO.

Major ARO projects for FY 2013 include:

- Respond to new requirements of the 8th edition of The Guide for the Care and Use of Laboratory Animals;
- Update the UNH Manual for the Care and Use of Vertebrate Animals at UNH;
- Continue to provide technical and service support for UNH projects;
- Start a new collaboration with Medtrons, Inc.; and
- Initiate service agreements with two new regional companies.

Human Subjects Protections Program

The IRB reviewed 286 initial applications and 112 modifications to existing protocols, a decrease of 2% and an increase of 12% from the previous year, respectively. Regarding review levels for initial applications, 58% were at the Exempt level, 33% at the Expedited level, and 9% at the Full Board level. The number of active protocols that the IRB oversees was 978 at fiscal year’s end, an increase of 16% from FY 2011.

Program highlights for the year included implementation of a Web-based human subjects protections training module to satisfy the training requirement for IRB applicants.

Responsible Conduct of Research and Scholarly Activity (RCR) Program

FY 2012 accomplishments under the auspices of this program included:

- Automated the tracking of the RCR Web-based modules;
- Offered one section of GRAD 930: Ethics in Research and Scholarship with 19 enrollees;
- Developed and delivered seminars for the Graduate School’s new doctoral student RCR training requirement, with approximately 90 participants;
- Offered three seminars to meet NSF’s RCR training requirement, with 71 participants; and
- Reached approximately 1,000 faculty, staff, and students with presentations on RCR topics.

Major projects for FY 2013 include:

- Oversee a review and update of the RCR Web-based modules; and
- Offer seminars for the Graduate School’s doctoral student RCR training requirement, and to meet NSF’s RCR training requirement.
Financial Conflict of Interest in Research Program

The RIS Director and OSVPR Director of Finance and Administration jointly manage this program. The following was accomplished during FY 2012:

- Populate the DRC BlackBoard site with current and archival materials;
- Draft a new UNH policy to respond to revised Public Health Service (PHS) financial conflict of interest in research regulations; and
- Draft new procedures and documentation for the revised PHS regulations.

Major projects for FY 2013 include:

- Implement procedures to respond to the new PHS regulations;
- Obtain institutional approval of a UNH policy on Financial Conflict of Interest in Research for PHS-Funded Projects; and
- Develop and obtain institutional approval of an Institutional Financial Conflict of Interest in Research policy.

Other Activities

The following are activities in which RIS staff members were involved during FY 2012 that fall outside the work conducted within the aforementioned program areas:

- Participated in the OSVPR Compliance and Risk Management (CRM) working group;
- Participated in a Health Insurance Portability and Accountability Act (HIPAA) working group; and
- Served as member of a NEASC Standard 11 committee.

The following are activities planned for FY 2013:

- Propose changes to the UNH policy on Misconduct in Scholarly Activity;
- Work on developing a compliance and training tracking database; and
- Explore commercialization opportunities for a compliance matrix, a training and compliance tracking database, and the Web-based RCR training modules.
Research Computing and Instrumentation

The mission of Research Computing and Instrumentation (RCI) is to provide information technology (IT) and instrumentation support to the sponsored research community at UNH and to collaborate with higher education, industry, and government to create innovative technologies designed to address important social, environmental, and economic needs.

RCI is involved directly in three of the ten programmatic initiatives of UNH 2020. The examples that follow illustrate how RCI’s staff works in support of the strategic plan.

Commercializing UNH’s Intellectual Capital

- RCI developed the UNHCEMS® chemical environmental management system that generates $100,000 in licensing revenues for UNH each year. A new initiative is underway to ramp up the marketing of this software nationwide.
- RCI engages regularly with the private sector to collaborate on new initiatives. One current initiative involves working with a local company to develop a product for secure data destruction.
- RCI, in conjunction with the National Oceanographic and Atmospheric Administration (NOAA), developed ERMA®, the common operating platform used by federal agencies in the 2010 Deep Water Horizon Oil Spill. The technology subsequently has been included in successful project proposals to the National Science Foundation (NSF) and efforts are underway to license this technology for use by state agencies.

Independent Research, Scholarship, and Creative Activity

- RCI provides information technology support to streamline proposal development, electronic proposal routing, post award grant management, and effort certification. The goal is to simplify the process of submitting proposals and increase the efficiency of managing those proposals that are awarded.
- RCI provides assistance to principal investigators regarding the computing and instrumentation aspects of their grant proposals, including data management and sustainability plans, budgets for data systems, instrumentation, and support.

Research Leveraging Initiative

RCI developed a specialized network to secure sensitive and restricted data for the UNH Center for Health Analytics, one of the eight projects funded by the UNH FY 2011 Research Leveraging Initiative. The network architecture has been expanded and now is available to the research community.

Efficiency

In the fall of 2010, the Research Computing Center (RCC), University Instrumentation Center (UIC) and Research Information Technology (RIT) were merged, forming the Research Computing and Instrumentation (RCI) Center. As a direct result of this reorganization, several structural changes were implemented to address organizational effectiveness and financial stability. Results of the changes can begin to be seen in FY 2011 data. FY 2012 data indicate continued financial stability.

Financials: Following the FY 2011 creation of RCI, a new budget structure was created for RCI that began in FY 2012. The RCC/RIT budgets were combined, while the UIC budget remained separate. Over 46% of RCI’s total
The operating budget of nearly $2.4M is generated through cost recovery efforts, including strategic initiatives to actively collaborate with industry and capitalize on UNH’s intellectual property and commercialization opportunities.

**Effectiveness**

Service Level Agreements (SLAs) are available for UNH departments and centers that use RCI services. The SLAs provide a written description of the services provided, responsibilities of each party, and an explanation of the costs associated with the services. The SLAs are negotiated annually to ensure that the services provided align with the needs and expectations of the researchers.

Strategic alliances are identified to ensure that the IT efforts pursued by RCI are consistent with UNH’s overall strategy. Periodic meetings are held with leadership of UNH Advancement, the Institute for the Study of Earth, Oceans and Space (EOS), the NH Institute for Health Policy and Practice, the College of Engineering and Physical Sciences (CEPS), and UNH Information Technology (Chief Information Officer, IT Security, Project Management, Enterprise Computing Group).

Both the RCC and UIC budgets are a combination of central and auxiliary funds. The central funding comes from the OSVPR budget and the auxiliary funds are generated from fees for service. Formal rates are calculated each year for SLAs, hourly personnel rates, and instrumentation use.

**Indicator 1: Annual Revenues**

Some of the work done by RCC in FY 2010 was not accounted for until FY 2011, resulting in FY 2010 year end deficits. If FY 2010 and FY 2011 are combined, RCC increased annual revenues from FY 2009 at an average of 35% each year.

Royalty revenues were earned through licensing of the RCC UNHCEMS® product to other universities. Royalty revenues to RCC increased by 6% from $48,500 in FY 2009 to $51,300 in FY 2011.

RCC revenues from external sources (sources originating from off-campus) are highly variable but have shown an increase recently. From FY 2009 to FY 2010, external revenue rose by more than 100%. From FY 2010 to FY 2011, external revenues rose by more than 125%. Year-end positive reserves in FY 2011 and FY 2012 made it possible for RCI to institute a plant fund for the maintenance and expansion of the Lenharth Data Center.

The UIC recouped 33% of its operating budget through revenues in FY 2009. In FY 2011, it recouped 27% of its operating budget. Revenues dipped by 27% from FY 2009 to FY 2011. A marketing plan was developed and is being implemented with the goal of reversing this trend.

**Indicator 2: Proposal Engagement, Number of Grants Submitted**

RCI has initiated a process to engage proactively in the proposal development process. By RCI working with the PIs in the proposal development stage, support for RCC and UIC expertise and project efforts can be included in the proposed project budget.

In FY 2012, RCI was included in seven major grant submissions, four of which were awarded: two Major Research Instrumentation grants (PIs W. Kelley Thomas and Joachim Raeder), an Informal Science Education grant (PIs
Eleanor Abrams and Michael Middleton), and an NHIHPP grant entitled, “DHHS NH Health Information Exchange Planning and Implement Project.”

**Indicator 3: Efficiencies metrics to begin FY 2013**

- Number of people served (internal/external);
- Number of departments or entities served (research/academic/administration/external);
- Number of UNH computers supported (within data center/within offices); and
- Number of RCI disclosures filed with ORPC.

**FY 2012 Achievements and Activities**

The Sheepdog utility, created by RCI Associate Director Robert Anderson, provides an automated, unattended controlled shutdown procedure of the Morse Hall Lenharth Data Center in the event of a power or cooling failure. RCI aspires to expand this real time, mobile-friendly utility to other USNH data centers with an ultimate goal of pursuing commercialization opportunities.

RCI achieved its FY 2012 operational goal of increasing RCI visibility and awareness. The RCI Communications and Marketing Plan was completed and implemented. This included the design and display of several RCI-related posters, implementation of an RCI newsletter, and creation and disbursement of several handouts highlighting various services and accomplishments. As a result, RCI gained 6 new customers in FY 2012.

RCI hosted two open houses in FY 2012. An open house to showcase the newly renovated Lenharth Data Center took place in September of 2011; an open house for the newly renovated University Instrumentation Center offices and labs in Parsons Hall took place in January of 2012. Both events were well attended by on- and off-campus customers and colleagues.

RCI hired a new full-time employee using funds allocated from a multi-year grant awarded to the UNH-based New Hampshire Institute for Health Policy and Practice. This employee is responsible primarily for developing and supporting software for the Medicaid Electronic Health Records incentive program in support of the Centers for Medicare and Medicaid Services federal initiative.
The University Instrumentation Center underwent an external review in addition to an internal review by a Faculty Advisory Committee. At the close of FY 2012, recommendations for the UIC were submitted to the Senior Vice Provost for Research for review.

**FY 2013 Outlook**

RCI’s focus for FY 2013 will be to increase its efficiency and effectiveness in the following areas:

- Organize the UIC into instrument-centered or thematic “cores,” including Imaging, Genomics and Bioinformatics, and NMR. This structure will improve services to the research community while meeting the growing expectations of funding agencies such as the National Science Foundation;
- Provide pre-proposal support to researchers related to IT needs. This includes establishing templates for data management and sustainability plans and providing consulting services for the design, procurement and support of the IT systems necessary for individual research projects;
- Improve post-award support to researchers through formal Service Level Agreements for system and network administration, security, software development and data center resources;
- Facilitate proposal development and proposal management processes through the use of IT enterprise systems (InfoEd, Banner Finance, and Banner HR). This effort will use a master IT Plan to identify and prioritize projects for each of the OSVPR service units; and
- Explore commercialization opportunities such as:
  - Sheepdog
  - ERMA® (Environmental Response Management Application)
  - UNHCEMS® (UNH Chemical Environmental Management System)
  - NEAT (Utility for Secure Data Destruction)

**Conclusion**

RCI has undergone significant changes in the last two years, resulting in a clear understanding of its role in the research enterprise and commitment to success. An institutional investment of $700,000 in 2011 for renovations to the RCI data center (Lenharth Data Center, located in Morse Hall) provides improved resources that not only benefit existing research conducted at UNH, but strengthen proposed new projects as well.

RCI fosters an entrepreneurial environment that often sparks creativity, resulting in innovations that benefit both individual research efforts and UNH as a whole. Its goal is to remain a lean and agile organization, capable of responding quickly to the needs of the institution while continuing to increase its revenue in diverse and sustainable ways.
Environmental Health and Safety

Mission

The UNH Office of Environmental Health and Safety (OEHS) provides leadership, resources, and services to create, maintain, and assure a safe and healthful working environment for all members of the University and its surrounding community through programs of information and education, review and monitoring, technical consultation, and provision of direct services. OEHS is responsible for developing and implementing programs to ensure compliance with applicable state and federal health, safety, and environmental regulations, and campus policies on environmental health and safety. OEHS also is a valued partner in the implementation of the brick and mortar investment goals of the UNH Strategic Plan.

UNH uses a number of mechanisms to ensure the campus is meeting the elements and objectives of its health, safety and environmental compliance programs. These include outside audits, regulatory inspections, technical committee oversight, OEHS program review and USNH EH&S Council review. In FY 2012, third party reviewers conducted audits of the UNH Integrated Contingency Plan, Radiation Protection Program, Refrigerant Management Plan and the Emergency Planning & Community Right to Know (EPCRA) Tier II requirements. OEHS staff reviewed the recommendations and incorporated them into its plans and programs.

Efficiency

Over the last three fiscal years, OEHS has worked with campus stakeholders to carry out external review and strategic planning for OEHS. The external review invited outside experts to examine the existing UNH environmental health and safety management system and suggest how OEHS can best position itself to prepare for environmental health and safety management initiatives and programmatic requirements that the campus will need to address in the next five to ten years.

A recurring theme throughout the review was that OEHS should evolve into an organization that manages laboratory, environmental management, and occupational health and safety risks in a proactive, systemic, and compliant manner.

The strategic plan initiative was a response to the OEHS external review initiative. It will help OEHS anticipate and articulate future programmatic needs, explicitly examine current staff assets and capabilities, and make recommendations to the SVPR about expected needs regarding programs, staffing and management structure.

Key Indicators for OEHS

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<tr>
<th>Indicator</th>
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<td>Chemical containers on campus</td>
<td>39,308</td>
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<tr>
<td>Pounds of chemical waste disposed</td>
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<td>Feet of fluorescent light tubes disposed</td>
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<td>Pounds of batteries disposed</td>
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<td>Cubic feet of biohazardous waste disposed</td>
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<td>Laboratory fume hood inspection reports</td>
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<td>Active hazardous waste satellite accumulation areas</td>
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<tr>
<td>Sealed radioactive material sources</td>
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<td>Electrical transformer inspection reports</td>
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<td>Biological safety cabinet inspection reports</td>
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<td>Hazardous waste small quantity generator reports</td>
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<tr>
<td>Biosafety level 2 laboratories</td>
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<td>Radioactive material sealed source leak tests</td>
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<tr>
<td>People trained in 2011</td>
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**Staffing:** The external reviewers recommended that OEHS hire four additional staff members to address the current and future regulatory requirements and needs for the campus -- two positions for the Laboratory Safety and Environmental Management Division (LSEMD) and two positions for the Occupational Health and Safety Division (OHSD). In August 2009, OEHS hired an Engineering Technician II for the LSEMD. With the departure of the OEHS Assistant Director in 2011, OEHS restructured the LSEMD and recruited a full-time Biological Safety and Security Officer (BSSO). The BSSO organizes and administers the UNH Biological Safety and Security Program, the Infectious Waste Management Program, and the Bloodborne Pathogen Exposure Control Program. The restructuring eliminated the need for the second FTE recommended by the external reviewers.

To assure that OEHS can provide the necessary services to meet regulatory mandates, the management organization was reviewed and positions were restructured, allowing several functions of the OHSD to be moved to other OEHS divisions or to be shared with other campus departments. The restructuring efforts included:

- Transferring the Bloodborne Pathogen Exposure Control Program responsibilities to the OEHS Biological Safety/Security Officer;
- Transferring the recordkeeping responsibility for student, faculty, and staff occupational health and safety training to the OEHS Administrative Assistant;
- Sharing the UNH Animal Handler Medical Surveillance program responsibilities between OEHS and Research Integrity Services; and
- Relinquishing fire and life safety responsibilities to the Facilities Division, and the UNH Police and Durham Fire Departments.

This reorganization will allow OEHS to address program areas that were identified as deficient by the external reviewers by the addition of just one FTE to the OHSD.

**In-sourcing:** UNH relies on outside consultants for various industrial hygiene tasks that include noise monitoring, chemical exposure assessments, and indoor air quality sampling. Routine assessments for chemical exposure monitoring or indoor air quality sampling can range in cost from $1,000 up to and, on occasion, exceeding $3,000. Depending on the specific circumstances, assessments may not be conducted by outside consultants in FY 2013. Instead, OEHS will perform many of these tasks with the tools and equipment it currently has. By eliminating consulting fees, operating groups will need to fund only analytical fees for samples collected, allowing OEHS to further enhance its services to the UNH community.

**Effectiveness**

**Loss Reduction:** OEHS has collaborated with Human Resources and UNH’s Workers’ Compensation insurance carrier to monitor and address areas at UNH where accidents occur frequently. By focusing on these areas, and offering retraining if necessary, OEHS has been able to help UNH reduce its total number of accidents, reduce the cost of claims, and reduce its insurance premiums. In Calendar Year 2011, the savings were approximately $350,000 for the University.
Chemical Inventory and Hazardous Waste: In 2009, OEHS implemented a hazardous material minimization program to reduce the quantity and/or toxicity of hazardous materials purchased, stored or disposed of as hazardous waste. Minimization efforts contribute to positive environmental and financial outcomes for the campus. OEHS targeted source reduction strategies that reduce or eliminate the quantity of hazardous waste generated through laboratory process modification, such as micro scale experiments and chemical recycling equipment. While the inventory of hazardous materials increased by 6% for 2009-2011, the volume of hazardous waste generated fell by 21% for the same period.

UNH Compliance Status: The ‘traffic light summary’ on pages 30-31 shows the regulatory compliance status for UNH from 2000 - 2011. There are 61 environmental health and safety regulatory compliance programs that apply to UNH. In 2000, UNH had just 8 programs; by 2011, all 61 compliance programs were in place.

Biological Safety Program: UNH continues to be in full compliance with the National Institutes of Health (NIH) Guidelines for Research Involving Recombinant DNA Molecules. The Institutional Biosafety Committee is effective in evaluating protocols submitted by researchers.

Parsons Hall Renovation Project: OEHS is working with renovation project stakeholders and building occupants to identify and resolve safety issues related to newly constructed laboratories. Existing laboratories required extensive and timely removal of hazardous materials and chemicals. The Chemistry Department presented Unsung Hero Awards to the OEHS Hazardous Waste Coordinator and Hazardous Waste Specialist in appreciation of their hard work and dedication to the Parsons Hall renovation.

OEHS Mitigation Fund: The mitigation fund supported more than 20 projects of various degrees of necessity and urgency. These included asbestos abatements, chemical exposure monitoring, PCB exposure monitoring, and code compliant electrical upgrades. Vent kits were installed for fume hoods in Morse Hall that alarmed regularly and inaccurately measured face velocity for the hoods.


Exposure Monitoring: OEHS provides technical assistance and advice on issues of chemical hazards that can contribute to exposure risks, including those in laboratories, or as the result of chemical release incidents, noise, heat, and hazardous building materials. OEHS has conducted exposure monitoring for a variety of contaminants, including oil mist, ozone, hydrochloric acid, mercury, methyl tertiary butyl ether and polychlorinated biphenyls.

Chemical Reduction: With the cooperation of the Department of Molecular, Cellular, and Biomedical Sciences, OEHS has reduced the quantity of legacy chemicals on campus (primarily in Rudman and Kendall Halls) by 3241 containers in the past year. This represents a 22% reduction.
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Biohazardous Waste: OEHS staff worked with the New Hampshire Veterinary Diagnostic Lab to revise the way biohazardous waste is removed from UNH. The three-fold benefits are cost, ease of use, and ergonomic improvements, because OEHS staff will no longer be required to transport the waste to Rudman Hall.

Major Projects for FY 2013

On-Line Compliance Tracking: OEHS is working with RCI and RIS to implement a Web-based tool for principal investigators and administrative managers to know if they are in compliance with the laws, rules and regulations in their area of research. Researchers will be able to see what requirements apply to them and anyone working under their supervision, including students. They will be able to view licenses, protocols, permits, and facility inspection reports, as well as required training frequency and due dates.

Communication Plan: OEHS will develop a strategy to communicate emerging environmental health and safety regulations that affect the University community in a standardized manner.

UNHCEMS Marketing: The UNH Chemical Environmental Management System (UNHCEMS) has been used at UNH for more than a decade. It also has been adopted by 16 other colleges and universities who learned of the system mostly by word of mouth. OEHS, RCI, and ORPS will continue efforts to make UNHCEMS a visible and attractive choice for higher education compliance.
New Hampshire Experimental Program to Stimulate Competitive Research (NH EPSCoR)

NH EPSCoR is a statewide program supported by targeted grants from federal funding agencies to increase research capacity in areas critically important to state economic growth. An organizational chart is shown on page 33.

The University has received two National Science Foundation (NSF) EPSCoR Research Infrastructure Improvement (RII) awards ($7.78 million, 2007-2011; $20 million, 2011-2016). UNH received grants from NSF EPSCoR and its National Institutes of Health counterpart program (IDeA) to build a high-speed internet network between the USNH institutions and Dartmouth College ($2.872 million combined, 2008-2012). In addition, NSF EPSCoR has provided partial support (known as “co-funding”) to UNH investigators receiving awards from other NSF directorates. The National Aeronautics and Space Administration, the Department of Energy, and the Department of Defense EPSCoR programs also have awarded grants to UNH investigators, and UNH receives a subaward from Dartmouth’s under its NIH IDeA Networks of Biomedical Research Excellence (INBRE) project. The net total to UNH since New Hampshire became an EPSCoR state in 2004 (total awards less subawards to partners) is estimated at $35,583,771.

The Research Office is the administrative home for the NSF EPSCoR program; SVPR Jan Nisbet serves as principal investigator for the $20 million NSF RII award.

NH EPSCoR Mission: The New Hampshire EPSCoR mission is to advance the state’s competitiveness in science and engineering by strategically investing in research infrastructure, promoting education in the STEM disciplines, and fostering partnerships with technology-based businesses that enhance job creation and economic development.

Relevance to UNH Strategic Plan: NH EPSCoR is aligned with the UNH Strategic Plan in many ways. It has partnered with the NH Inclusive Excellence by helping to launch the NH Inclusive Communities web site, sponsoring the 2012 NH Inclusive Excellence Summit, and broadening representation in the sciences, mathematics and engineering through initiatives from kindergarten through faculty hiring.

NH EPSCoR also is focused on research competitiveness. It is building infrastructure across the state that is used by the research community, and is working to leverage the investment to make UNH and NH more competitive for federal research funding.

Efficiency

Run almost completely with federal funding, the NH EPSCoR program has leveraged these funds to increase awards to UNH and other NH institutions (see below). The program also has been successful in building physical, human, and cyberinfrastructure for on-going competitiveness for the state in its education, research and economic development missions.

Effectiveness

2007-2011 NSF Award Outcomes: A 2007 National Science Foundation EPSCoR Research Infrastructure Improvement award of $7.78 million to UNH funded a four-year project entitled “Enabling Technologies for Scientific Innovation Through Sensor Development.” The NSF award provided funds for:

(1) The installation of a thermal-vacuum chamber at UNH and a small spacecraft plasma instrumentation facility at Dartmouth, which have enabled the institutions to participate in NASA missions requiring the development of sensor-
based instrumentation for small space satellites and have advanced scientific discovery related to the magnetosphere;

(2) A wind tunnel at UNH to enable the study of turbulent boundary layer dynamics, which factor across a broad spectrum of disciplines in environmental, atmospheric and marine sciences, plasma physics, energy-related technologies and engineering fluid dynamics; and

(3) Significant upgrades in nanoscale science surface measurement and materials deposition facilities at UNH and Dartmouth materials science laboratories, which have led to the discovery of a stable derivative of nonacene, creating a compound that holds promise in the manufacture of flexible organic electronics such as solar cells, solid state lighting and radio frequency identification tags.

The improvements in facilities and instrumentation have increased research capacity significantly at both UNH and Dartmouth. During the project period, faculty involved in the EPSCoR program received 31 awards totaling nearly $52 million, of which 75% funded NASA missions. A major impact of the EPSCoR grant is the formation of spin-out companies. One of these, Innovacene, Inc., aims to produce high-quality, low-cost white lighting products using organic light-emitting diode (OLED) technology that was developed at UNH. A technology developed in a partnership with Foss Manufacturing, of Hampton, NH, received FDA approval. Patent applications were filed in three other research and commercialization partnerships with NH companies. Thirty-nine articles were published in peer-reviewed scientific journals.
The 2007-2011 NSF Award also supported the development of the NH EPSCoR program, which has laid the groundwork for a statewide effort to promote STEM education and recognize the importance of science and engineering to the state’s economic development, most notably the development of the state’s first Science and Technology Plan. This award has supported the development of a statewide Inclusive Excellence Plan, an initiative to broaden participation in higher education and specifically in the STEM disciplines. The annual EPSCoR conferences provided an opportunity for faculty from the two systems of higher education – the USNH System and the NH Community College System – to meet and discuss shared areas of research interest. In addition, two statewide collaboratives have been formed – one for STEM educators and one for college research administrators. NH EPSCoR has supported training of K-12 teachers in informal summer research opportunities in nanotechnology, as well as scholarships for students from rural, first-generation families to attend summer science camps.

2011-2016 NSF Award Year 1 Outcomes: The NSF RII Track 1 project, “Interactions Among Climate, Land Use, Ecosystem Services and Society,” was funded as a cooperative agreement on September 1, 2011 for $20 million with an expiration date of August 31, 2016. A team of researchers from UNH, Dartmouth College, St. Anselm College, and Plymouth State University bring together expertise from the physical, biological and social sciences to carry out the project. Environmental data will be collected from a statewide network of land-based and aquatic sensors, an aircraft remote sensing system to measure changes in the forest cover, and measurements made by citizen scientists and students monitoring water quantity and quality. Environmental data will be combined with data about housing and demographics; models based on this information will help policy makers determine the tradeoffs among different land uses, and will inform the development of strategies to adapt to the challenges of changes in land use and climate variability.

This is a statewide project with multiple partner institutions. Several components of the research and education plans are still under development. The research and education teams are led by UNH faculty, who in the past year collectively submitted or collaborated on 44 proposals for additional funding totaling nearly $25 million for related research.

In Year 1, 76 personnel at UNH have received support from this award, including 24 faculty, 13 technical support staff, 3 post-doctoral associates, 11 graduate students, 12 undergraduates, and 13 non-technical support staff.

Conclusion

As a result of UNH’s leadership of the NH EPSCoR program, federal grants totaling more than $93 million have been received by institutions of higher education in the state to build on existing research strengths and broaden competitiveness through the development of human capital (a highly skilled science and engineering workforce), cyberinfrastructure (high-speed Internet and computing resources), physical capital (facilities and instrumentation for scientific experimentation and testing), and social capital (an interactive network between UNH and other NH institutions of higher education, and NH stakeholders, policy-makers and citizens).

EPSCoR projects, by virtue of their multi-disciplinary and inter-disciplinary nature, catalyze new relationships between scientists and educators in the state which strengthens and builds the academic research culture. A key component of the EPSCoR programs, to build the STEM education pipeline, should result in more articulation agreements and increased enrollment at UNH by 2020.
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Pete Lester  
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Karen Maria  
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UNH Research
http://www.unh.edu/research

Reports and newsletters published by the OSVPR units and programs
http://www.unh.edu/research/newsletters-and-reports

Atlantic Marine Aquaculture Center (AMAC)
http://marine.unh.edu/research/amac.html

Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)
http://ciceet.unh.edu/

National Estuarine Research Reserve System (NERRS) Science Collaborative Marine Program
http://nerrs.noaa.gov/ScienceCollaborative.aspx

NH EPSCoR
http://www.epscor.unh.edu/

NH Innovation Research Center
http://www.nhirc.unh.edu/

NH Sea Grant College Program
http://www.seagrant.unh.edu/

Piscataqua Region Estuaries Partnership (PREP)
http://prep.unh.edu/

UNH InterOperability Laboratory
http://www.iol.unh.edu/

Report of the President's Blue Ribbon Panel on Research
http://www.unh.edu/research/sites/unh.edu.research/files/docs/OSVPR/Blue%20Ribbon%20Panel%20Report

Research and Engagement Academy
http://www.unh.edu/engagement/research/academy.html

UNH in 2020
The University's New Strategic Plan: Breaking Silos, Transforming Lives, Reimagining UNH
http://www.unh.edu/strategicplanning/

Academic Initiatives: http://www.unh.edu/strategicplanning/academic-initiatives

UNH Research Council
http://www.unh.edu/research/research-council