THE OHIO STATE UNIVERSITY

OFFICE OF RESEARCH

Strategic Plan

Office of Research
The Ohio State University
2012-2017

Strategic Planning at The Ohio State University

Supporting Faculty, Students, and the Structures that Foster their Success

Ohio State's future will be defined and driven by an unwavering commitment to our faculty, students and the structures—physical, administrative, curricular, and financial—that will foster their success. Such a commitment is founded in the overarching principles of the institution's vision, mission, values, and core goals.

VISION

The Ohio State University is the model 21st-century public, land grant, research, urban, community engaged institution.

MISSION

The University is dedicated to:

- Creating and discovering knowledge to improve the well-being of our state, regional, national and global communities;
- Educating students through a comprehensive array of distinguished academic programs;
- Preparing a diverse student body to be leaders and engaged citizens;
- Fostering a culture of engagement and service.

We understand that diversity and inclusion are essential components of our excellence.

VALUES

Shared values are the commitments made by the University community in how we conduct our work. At The Ohio State University we value:

- Excellence
- Diversity in people and of ideas
- Inclusion
- Access and affordability
- Innovation
- Collaboration and multidisciplinary endeavor
- Integrity, transparency, and trust

CORE GOALS

Four institution-wide goals are fundamental to the University's vision, mission and future success:

Teaching and Learning: to provide an unsurpassed, student-centered learning experience led by engaged world-class faculty and staff, and enhanced by a globally diverse student body.

Research and Innovation: to create distinctive and internationally recognized contributions to the advancement of fundamental knowledge and scholarship and toward solutions of the world's most pressing problems.

Outreach and Engagement: to advance a culture of engagement and collaboration involving the exchange of knowledge and resources in a context of reciprocity with the citizens and institutions of Ohio, the nation, and the world.

Resource Stewardship: to be an affordable public university, recognized for financial sustainability, unparalleled management of human and physical resources, and operational efficiency and effectiveness.

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Letter from the Vice President for Research

The Office of Research at The Ohio State University guides and facilitates the research enterprise of one of the largest and most comprehensive universities in the nation. Ohio State is one of only a few universities in the U.S. that, in a single location, houses 14 different colleges, including seven health sciences colleges and a college of agriculture. Ohio State's more than 63,000 students, 3,800 faculty, and 22,000 staff members are engaged in a breadth of research and discovery, teaching and learning, and outreach and engagement activities that is truly astounding. The research mission of the university is a central thread that brings together the teaching and outreach missions and is core to their success.

Ohio State researchers make remarkable discoveries every day, and their work is helping to solve some of society's biggest challenges. The university's planned investment in three Discovery Themes – Food Production and Security, Health and Wellness, and Energy and Environment – is an affirmation of the power of Ohio State's research to help overcome these challenges. Moreover, the basic science breakthroughs of the faculty, staff, and student researchers are paving the way for the new technologies of the future. The scholarly accomplishments of researchers in the arts and humanities offer new and relevant insights into the fundamental questions of human nature that nourish our need for cultural understanding and inform our insights into the future of humanity.

The fiscal concerns that plague the country and the world today have serious ramifications for university research. To continue to make advances that change today's world and ensure society's future will require universities, industry, and government to operate in partnership. Ohio State has already established a strong network of industry-university partnerships, and must build upon that foundation to create even deeper and more strategic alliances in the coming years. This activity not only facilitates the research efforts of investigators, but also yields benefits for industry and thus strengthens the economy of Ohio and the nation.

The fact that we operate on an increasingly global stage is also reflected in the research enterprise. Ohio State faculty engage in global collaborations that are supported and reinforced by the university's Gateways. Finding ways to facilitate and grow the international component of research is critical for finding solutions to the world's problems. Along with the steady increase in collaborations, both in industry and with universities around the world, comes an explosion of data. Mining this universe of available data and adding critical new data will produce the pieces that can solve the puzzle of major human diseases and new technologies. This effort will require outstanding facilities and research infrastructure commensurate with the excellence of our faculty.

Finally, the advances in technology and science that result from research discoveries have been accompanied by increasing regulation, oversight, auditing, and reporting requirements from federal and state sources. Ensuring compliance with the web of regulations, while continuing to facilitate faculty and student research efforts, has become an increasingly tricky balancing act, particularly in light of the "unfunded mandate" aspect of regulatory expansion. The Office of Research strives to hold these dual purposes always in mind as research support units work with researchers across campus, and to implement new regulatory requirements in ways that minimize the impact on research activities.

This strategic plan was developed in concert with strategic planning efforts by research support units within the Office of Research. The research centers that report to the Office of

Research have varying cycles of strategic planning that are dictated by their primary funding sources, and thus were not required to submit new strategic plans for this exercise. The research support unit strategic plans are appended to this document for reference (Appendix B).

This strategic plan lays out a blueprint for growing the research enterprise at Ohio State. The goals and objectives focus on two major themes. The first goal is increasing the competitiveness of Ohio State researchers through activities internal to the university. These areas include: facilitating interdisciplinarity and multidisciplinarity in research to take advantage of the breadth of expertise at this university, creating new centers, establishing a new proposal development center, establishing and maintaining outstanding core facilities to accommodate our growing numbers of research-intensive faculty, creating improved electronic resources for research support and reinforcing compliance oversight. The second goal is focused more external to the university and emphasizes the university's role relative to various outside constituencies. These activities include growing the portfolio of federally-funded research, expanding strategic partnerships with industry, and working to expand the assets of the Ohio Technology Consortium (OH-Tech).

Even in the midst of the challenges to university research, it is tremendously exciting to survey the research landscape at Ohio State. New discoveries and innovations are everywhere, and the enthusiasm and passion of Ohio State's research community is palpable. Increasingly, research activities are emerging from departmental and college silos and occurring within collaborative networks that stretch across traditional boundaries, both within and outside the university. Collaboration and partnership are the watchwords for the future, and through these, solutions to our greatest challenges will surely be found.

It is a great honor to oversee Ohio State's magnificent research enterprise, and to support the university's faculty, staff, and students who make it possible.

Sincerely,

Caroline Whitacre
Vice President for Research

Office of Research Overview

The Office of Research (OR) guides, facilitates, and supports the research enterprise at Ohio State. The office's placement at the center of the university provides a unique view of the entire enterprise, to enable and champion multidisciplinary research initiatives. This placement also permits a realization of efficiencies in providing research support services to faculty and students. In performing these functions, OR oversees the activities of a number of multidisciplinary research entities, as well as the services provided as research support. The office's approximately 450 employees are distributed across two major types of units: 1) centers, institutes, facilities, and State of Ohio assets; and 2) research support units. The organizational chart included in Appendix A lists all of the units comprising the Office of Research. Those shown in white on the left side of the chart represent research support units, and those shown in gray on the right side of the chart represent centers, institutes, and facilities.

The centers, institutes, and facilities include:

- Centers (focused research activities)
  - Byrd Polar Research Center
  - Center for Lake Erie Area Research (Stone Lab)
  - Center for Emergent Materials
  - Center for RNA Biology
- Institutes (umbrella units that unify and support a broad research community)
  - Institute for Materials Research
  - Office of Energy and Environment
- Facilities (multi-user resources for faculty across the university)
  - Campus Chemical Instrument Center
  - Campus Microscopy and Imaging Facility
- State of Ohio Assets (OH-Tech) (units for which OR provides directional guidance and fiscal oversight)
  - Ohio Supercomputer Center (OSC)/Ohio Academic Resources Network (OARnet)
  - OhioLink
  - eStudent Services
  - OH-Tech Innovation Center

The research support units include:

- Office of Sponsored Programs (oversight of externally-funded grants and contracts)
- Office of Responsible Research Practices (oversight of human and animal subjects protection)
- University Laboratory Animal Resources (housing and veterinary care for research animals)
- Office of Research Compliance (conflict of interest, export controls, and scientific misconduct management)
- Industry Liaison Office (creation of new industry-university relationships)
- Undergraduate Research Office (undergraduate research opportunities; reports to OAA with dotted line to OR)

Strategic Scan

The External Environment

The unprecedented economic upheaval of the past few years has significantly changed the landscape for government investment at both the state and the federal level. Budgetary cutbacks at federal and state agencies, together with cuts in state funding to public universities, have created great challenges for university-based research. At the same time, efforts to revitalize the economy have also created new opportunities for universities to further their research agenda. Both the budget cutbacks and the new opportunities have been accompanied by ever-increasing regulatory and reporting requirements, while additional funding to offset the costs of these requirements has not been forthcoming. The current budgetary and regulatory climate places significant stress on university research. Nonetheless, the revitalization of the U.S. economy and the long-term future viability of our nation's economic, personal, and societal health and well-being are critically dependent on a vital and flourishing university research enterprise. In the words of Ohio State President E. Gordon Gee, "*The public research university has emerged as the nation's primary vehicle for the production of knowledge."* (October 4, 2007, address to the Ohio State Faculty Council.)

To achieve its strategic goals, The Ohio State University (OSU) must be positioned to participate to its fullest potential in new research initiatives and opportunities, and to overcome the challenges to conducting research in the current environment. Ohio State's success and commitment to excellence in research has led to its inclusion in the group of top research universities, as measured by the volume of sponsored research activity.

Ohio State researchers are making discoveries and creating new technologies that address society's critical issues, including identifying new and renewable energy sources, meeting the global demand for sufficient and secure food supplies, overcoming disease and maximizing health and well-being, and creating global economies that erase poverty and provide an enhanced quality of life.

The university's research mission to be a driver of new discoveries is entwined with its land-grant mission to facilitate economic progress for the State of Ohio and the nation. Ohio State's active participation in statewide initiatives such as the Third Frontier Program has created strong linkages with other universities and key industries in targeted technology sectors across the state, forming the infrastructure of an economic transformation of Ohio that will continue well into the future. Increasing emphasis on commercializing Ohio State discoveries to bring them into the public domain is also an integral component of this mission.

The research activities of our faculty lead to an extraordinary enrichment of the experience of our students that is realized at both the graduate and undergraduate levels. The research training provided to our graduate students creates the next generation of scholars well-prepared to advance knowledge and discovery. The extension of research opportunities to an ever-increasing group of undergraduate students adds a dimension of experience to the undergraduate education that simply cannot be duplicated in the classroom. These students learn the joy as well as the rigors of new discovery, and acquire skills of inquiry, evaluation, and communication that provide a foundation for the next phases of their careers and lives.

To continue Ohio State's solid progress toward achieving research eminence and bringing the full power of our intellectual capital to fuel Ohio's economic renewal will require strong

guidance from university leadership, as well as the commitment of resources to advance the university's research agenda and optimize research support services. Plans to expand strategic partnerships with other universities, federal sponsors, national laboratories, and industry collaborators are crucial to the success of this enterprise, as are investments in emerging research areas and support for new research centers and institutes. Increasingly, the problems that our researchers address are large and complex, and require solutions that integrate the efforts of scholars across disciplinary boundaries. The Office of Research is ideally positioned to foster these cross-disciplinary activities and to create research teams whose impact far exceeds the efforts of individual researchers or departments.

The national challenges to achieving research eminence come from several directions. First and most important is the availability of resources to support strategic research expansion and maintain research excellence. The fiscal environment at the state level has led to the erosion of unrestricted state support for research investments. This has been partially mitigated by economic development programs such as the Third Frontier, but these programs are highly targeted in a few technology sectors, and a recent shift in program direction places greater emphasis on bringing products to market and less emphasis on the fundamental research that makes product development possible. Increasingly, Ohio State, like other research universities, has had to look internally for funds to seed promising new research directions, to get them to the point where competition for external dollars is feasible. At the same time, the federal funding landscape has become increasingly restricted. Although a temporary alleviation came from American Recovery and Reinvestment Act (ARRA) stimulus funds to federal agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Department of Energy (DOE), when these funds are expended, it is clear that the increases in budget for these agencies were not permanent. As research funding opportunities become tighter, research universities must be highly focused in their investments, and must pursue alternative strategies to increase the competitiveness of their researchers.

A second area of challenge is an ever-increasing regulatory burden from federal, state, and other research sponsors and agencies. Oversight and compliance in fiscal aspects of research, including financial conflicts of interest, effort certification, approvals for financial transactions, and auditing continue to expand. In addition, regulations governing the conduct of research with human and animal subjects are increasing in both scope and detail. Increased controls on export materials, including intellectual property, on biosafety hazards, on stem cell and tissue research, etc., necessitate additional staff and faculty oversight resources. The process of ensuring compliance after the initial approval of research activity is also coming under increasing scrutiny. The corresponding bureaucratic burden on researchers damages productivity, and increases staff workloads to the breaking point. The university must work to find ways for researchers to navigate this increasing sea of regulation in the most streamlined way, in order to avert reductions in research productivity.

A final area of challenge for research universities is in creating the culture that nurtures and facilitates the multidisciplinary activity that will be required to achieve true research eminence. The breadth of research programs and disciplines at this university represents an extraordinary competitive advantage. The culture required to truly realize this potential will need to come from an alignment of goals in colleges, departments, and support units. In some colleges, this may mean alterations in what is viewed as acceptable activity in meeting promotion and tenure standards to include publications in journals not central to the discipline, multiple authorship and team research, and patenting, licensing, and other

entrepreneurial activities. Further, faculty awareness of opportunities in multidisciplinary research must be increased across the university. If these activities are viewed as valuable in the university reward structure, their desirability is increased. These activities should also become the focus of additional recognition at the university level.

The Internal Environment

Ohio State's Discovery Themes

Ohio State has selected three areas for intensive research investment and expansion over the next five years. These themes include Food Production and Security, Health and Wellness, and Energy and Environment. Each of these themes addresses a major societal challenge: the world currently faces and will continue to face enormous challenges in providing a sufficient supply of healthy, nutritious, and safe foods to support its growing population projected to top eight billion people by 2025; overcoming disease and promoting wellness in our communities is a constant in ensuring human survival and quality of life; and the need to provide increasing energy resources to a rapidly changing global community while simultaneously ensuring the quality of our environment and the preservation of our planet is a massive task. All of these issues are critical to humanity's future, and all require urgent solutions. Furthermore, all of these issues are complex, and their solutions will not be found in the efforts of solitary researchers in siloed disciplines; rather, each requires an interdisciplinary and multidisciplinary approach to achieve a viable solution. The breadth of these Discovery Themes individually, as well as the points of intersection among them, can be addressed from the vantage point afforded to the Office of Research, and thus OR will play a strong role in helping to guide their implementation. Accordingly, many of the initiatives described in this Strategic Plan are devised to support the activities that will fall within these themes. OR will partner with the colleges in recruiting and retaining the most eminent faculty researchers. Creating, maintaining, and expanding outstanding facilities and renowned research centers and institutes will serve to attract these faculty to Ohio State and will provide them with the tools, support, and colleagues they will need to advance the research agenda in the Discovery Theme areas. Our plans to increase the competitiveness of Ohio State researchers and grow our funding portfolio will help to propel the Discovery Themes to greater achievements. Plans outlined herein to continue to streamline and improve research support will reduce the bureaucratic load on these researchers and allow them to concentrate on the innovative research that will ultimately solve these pressing global issues.

Strategic Plan Primary Focus Areas

The Office of Research strategic focus areas are primarily aligned with the university core goal of Research and Innovation. However, in guiding and facilitating the university's research enterprise, we also address the core goal of Teaching and Learning, by providing an ever-expanding array of research and innovation opportunities for graduate and undergraduate students, as well as the core goal of Outreach and Engagement, by working with Ohio State's faculty and student researchers to translate their research findings into engagement with local, state, national, and global communities. In addition, the goal of ever improving our Resource Stewardship is one that we have always taken seriously. As the university's research expenditures have continued to grow, our staffing has not shown similar expansion. Rather, we constantly strive to find new efficiencies and deploy an increasing number of electronic solutions to our research support services, and we continue

to look for new ways to partner with research support staff in the colleges, to minimize redundancies in our efforts.

The Office of Research strategic plan has seven areas of specific focus:

1. Facilitating interdisciplinarity and multidisciplinarity in the research enterprise
2. Growing the portfolio of federally-funded research
3. Expanding our partnerships with industry
4. Establishing and maintaining outstanding core facilities and physical infrastructure
5. Realizing the potential of the assets within OH-Tech
6. Creating a suite of integrated electronic resources for research support
7. Reinforcing compliance oversight and audit responsiveness

Each of these specific foci is described in the following section.

Succeeding in Our Strategic Focus Areas

In this section, we describe initiatives that address the seven strategic focus areas. All of these initiatives support the overall university goal of Research and Innovation, but they also secondarily address the goals of Teaching and Learning, Outreach and Engagement, and Resource Stewardship. In addition, all of the initiatives will function to support the university's investments in the Discovery Theme areas. Because of the interconnected nature of our operations, initiatives described in one focus area will often serve to enhance activities in other focus areas. These initiatives are described below.

1. Facilitating Interdisciplinarity and Multidisciplinarity in Ohio State's Research Enterprise

As the university moves forward with implementation of the Discovery Themes, it will be critical to foster collaborations and interactions among researchers organized in multidisciplinary teams. Each of these themes represents a broad-based area of challenges and issues, and the solutions to the problems posed by these themes will require the efforts of researchers who can reach beyond traditional disciplinary boundaries. The Office of Research is well-positioned to help with the tasks of engaging faculty and students in these new efforts.

We have already seen two trends that accompany this move toward multidisciplinary and interdisciplinary work. First is the publication of research results in outlets that might not be the prescribed "top-tier" journals of traditional disciplines, but instead in journals that reach a more broadly-based audience. Second is the trend toward team science, which is also increasingly found within disciplines, particularly in biomedical research. Both of these trends can create difficulties for younger faculty who are seeking tenure in traditional academic units. Ways to recognize and reward the participation of individuals in team science efforts, as well as ways to evaluate contributions in outlets outside of disciplinary boundaries, must be sought. Ohio State's colleges are beginning to address these concerns, but there is still much to be done to transform the culture within some of our academic disciplines. The Office of Research has already worked with several colleges in beginning discussions about modifying promotion and tenure documents to reflect a positive valuation of multidisciplinary scholarship.

To optimize the success of the Discovery Theme investments, it is important to leverage both the breadth and the depth of Ohio State's research enterprise. One way to mine the university's capabilities is through tools that showcase our expertise. Three tools currently in use at the university can provide valuable input to this process. First, Research in View, the university's tool for creating and maintaining promotion and tenure dossiers, can serve as a useful database of university expertise. Second, Academic Analytics, a program that assesses the activities of individuals and departments relative to national or selected peer norms, can provide a look at where the university may wish to build capacity. Finally, the InfoEd SPIN Suite provides access to national and global funding opportunities from the federal government, state agencies, and private foundations, as well as offering a way to access researcher expertise via keyword searches. All of these tools can play a role in helping to form the faculty groups that can effectively attack the problems posed within our Discovery Theme areas.

Finally, it is anticipated that, as new working groups come together, new university research centers and institutes will be formed. Although the most successful centers are formed in a

bottom-up fashion from the interests and engagement of faculty researchers, the Office of Research can facilitate their formation, growth, and sustainability.

Four initiatives are planned for Facilitating Interdisciplinarity and Multidisciplinarity:

a. National conferences on Discovery Theme topics. Ohio State has hosted several national conferences in the past few years, on the topics of transportation, space research, energy research, personalized health care, climate, and the environment. We plan to continue, in partnership with colleges and existing research centers and institutes, to host meetings over the next five years, with a focus on Discovery Theme topics. The goal of these conferences is to engage faculty on these issues, but valuable additional benefits arise in the exposure of faculty and students to national leaders in these areas, and promoting the visibility of our research programs. Our plan is for Ohio State to host at least three such conferences over the next five years.

b. Workshops and networking follow-up activities to national conferences. Although conferences like the ones proposed above serve as effective conversation-starters, it is imperative not to let momentum stop afterwards. The Office of Research will work with colleges and research centers/institutes to sponsor follow-up workshops and networking opportunities for faculty to facilitate the formation of new multidisciplinary research groups.

c. Development of new ways to leverage research and productivity databases. The Office of Research will partner with Institutional Research and Planning and other groups within the university to provide ways for researchers to find expertise across the broad expanse of the university. Using tools such as Research in View, Academic Analytics, InfoEd SPIN, and other products either currently used at Ohio State or at other institutions, we will offer training to faculty and staff on how to mine the databases most effectively to find colleagues who can enhance a new research effort.

d. Creation of new research centers and institutes. As faculty working groups coalesce around topics within the Discovery Themes, the Office of Research will work with interested groups to form new research centers and institutes, assisting them in finding the necessary space, fiscal, and equipment resources essential for their success. The goal is to create three new university-level research centers over the next five years.

2. Growing the Portfolio of Federally-Funded Research

Even the most optimistic projections of the federal budget for research and development over the next several years anticipate a static or even shrinking level of federal resources allocated to research activities. We have already seen this shrinkage in the form of single-digit percentage pay lines at federal agencies such as NIH and NSF, and there is no reason to assume that this trend will not continue, at least for the next several years. Although universities, including Ohio State, gained a temporary reprieve in the form of ARRA funding, it cannot be assumed that similar vehicles will be created in the near future. Nonetheless, it is our goal to grow Ohio State's federal funding portfolio.

Because the strongest correlate of federal research awards is the number of proposals submitted by an institution, it might simply be assumed that we could solve this challenge by having researchers write more proposals. We do believe that there is some additional capacity for increased proposal submission across the university, but this effort alone will not achieve the success we desire. There is clearly a limit to the amount of proposal-writing faculty can pursue, especially given the necessity of performing the research that has already been funded and the importance of providing high-quality instruction and mentorship for our students. Some relief for faculty will be realized by the creation and implementation of enhanced electronic tools for research administration and compliance, to reduce the bureaucratic burden created by federal and state regulations. Efforts to create these electronic tools are described in a separate section below.

The points outlined above make it clear that our investigators need to write "smarter" proposals, i.e., higher-quality efforts that effectively address the needs outlined in agency Request for Proposals (RFPs). The provision of writing and editing assistance, as well as enhanced pre-award assistance with budgets and grant "boilerplates," can help to improve the quality of grant submissions. Efforts here can also have an incremental impact. However, even with this assistance, it is unlikely that the efforts of individual researchers will permit us to achieve a significant increase in our federal portfolio.

One area in which Ohio State has underperformed in past years, particularly given the breadth and excellence of our research enterprise, is in winning large federal awards, typically involving federal research centers. A few notable exceptions to this statement are Ohio State's Comprehensive Cancer Center and the Center for Clinical and Translational Science, both funded by NIH; the Center for Emergent Materials, funded by NSF; and the College of Education and Human Ecology's i3 grant, funded by the U.S. Department of Education. In several of these efforts, a core group of faculty engaged the services of proposal assistance entities, which helped to maintain focus, ensure optimal presentation of university capabilities, and mandate responsiveness to the RFP. For one recent effort, the $100M Health Resources and Services Administration (HRSA) award to the Wexner Medical Center for construction of the new radiation oncology unit, those services were extremely valuable.

An on-site Proposal Development Center, dedicated to facilitating the preparation of large, collaborative, and team-focused awards, could be a valuable asset in helping Ohio State to achieve the goal of an increased portfolio of federal research funding. The model for such a center comes from Battelle, whose Proposal Development Center has overseen the preparation of grant proposals to realize awards in the hundreds of millions of dollars. Battelle is poised to assist us in using that model to create our own center, with the help of Ruth Ann Hendrickson, who directs the Battelle center.

Finally, it is clear that simply preparing a response to a new RFP after it is released does not place us in an advantageous position for winning an award. Much of the work of research teams is time and labor intensive, and requires many months of groundwork to create the internal and external collaborators that make the ideal research team for any particular solicitation. It is imperative that Ohio State gain better advance intelligence about impending grant solicitations well before they are issued. To this end, placing individuals in Washington whose job is to frequent the agencies and gain this advance knowledge can provide an immediate impact on large proposal efforts. It is important that Ohio State researchers be actively involved in the agency policy discussions that lead to the development of new programs, and to be at the table when new RFPs are crafted. In this

way, Ohio State can impact the direction of research initiatives at federal agencies and ensure that our researchers will be competitive in seeking awards.

Four initiatives are planned to address Growing the Portfolio of Federally-Funded Research. All of these initiatives are undertaken in collaboration with the colleges. It should also be noted that these initiatives will enhance our efforts to implement the university's Discovery Themes:

a. Writing and editing assistance for individual researchers. The availability of resources for writing and editing assistance to faculty researchers varies widely across colleges. A few colleges (e.g., Veterinary Medicine) provide staff resources for this purpose, while other colleges (e.g., Optometry) retain a paid consultant to assist faculty with proposal preparation. In addition, some colleges (e.g., Public Health) offer funds to solicit external review of new proposals if faculty wish to seek it. The Office of Research, in partnership with interested colleges, will pilot a writing/editing assistance effort and measure its effectiveness in improving grant submission outcomes. If successful, we will then expand this model to other areas of the university to provide these resources more broadly across the research enterprise.

b. Establishment of a Proposal Development Center at Ohio State. We have already begun to work on this initiative, with the collaboration of Battelle, to create a version of their Proposal Development Center within Ohio State. The emphasis within this center would be on early recognition of proposal RFPs being formulated within federal agencies. This center will be staffed by individuals who will work with core teams of faculty researchers to focus efforts on specific large federal awards. Our center would be incubated within the Battelle center for the first year, to permit staff to learn best practices from the Battelle team, and then transferred to the university. The staff would include project managers, business developers, capture managers, editors, and graphic designers, who could fine-tune faculty research ideas to make them as responsive as possible to the particulars of a RFP.

c. Federal agency specialists for research development. The Office of Research is partnering with the College of Engineering to create positions for two individuals to work with federal agencies to identify program priorities for the future. One individual, based in Washington, DC, will enhance Ohio State's visibility, helping with the appointment of OSU faculty to strategic planning and other agency efforts at which new programs are conceived, and also provide valuable advance information about upcoming solicitations in a timeframe that would allow researchers to form the necessary teams and recruit the collaborators that will enhance our success rate in winning large awards. The other individual will be based in Ohio, but will work with DOE, the Department of Defense (DOD) and the Air Force Research Laboratory (AFRL). These individuals will work closely with the staff in the Proposal Development Center, to ensure that proposals are indeed targeted on the specific interests of federal agencies in new program releases. If successful, this model will be expanded to include other similar individuals to address the needs of the various parts of Ohio State's research community.

d. Improve utilization of external proposal development services. Our colleges have effectively used services such as ITECS, a firm that provides proposal development services, to create winning proposals. ITECS was particularly effective in assisting several Ohio State teams in preparing winning proposals for the Third Frontier's Ohio Research Scholars Program. Rather than contracting with ITECS in a one-off fashion, we have been in conversations with them about more comprehensive contracts to assist with proposals that are not as large as the ones envisioned for the Proposal Development Center, but still of substantial size. We will determine the appropriate model for obtaining maximum impact and maximum efficiency from working with ITECS, and implement that model.

3. Expanding Partnerships with Industry

Ohio State has been recognized for some time for its strength in the area of university-industry partnerships. This effort has been greatly facilitated by the state's Third Frontier Program, which during its first ten years provided incentives to industries and universities to engage in collaborative activities. This program did much to create the industry-university network of collaborations that forms the infrastructure of a successful economic region. However, the recent shift of focus of this program to short-term commercialization rather than a five to seven year research and development timeframe has largely eliminated the university's research role in the program. Nonetheless, it is apparent that growing our partnerships with industry is critical to future success in solving global problems, and that enhancing these partnerships also provides invaluable experiences for students and increases their attractiveness to employers. Thus, we must redouble our efforts to create new relationships with industry and expand and enhance existing partnerships.

In December 2008, the Office of Research launched the Industry Liaison Office, designed to provide a "front door" to industries seeking to find a way to connect with Ohio State researchers, and a way to help researchers find industry connections. Initially staffed with one individual, the Industry Liaison Office has grown to include additional staff focused on engineering, agriculture, medicine, public health, and arts and sciences. In four years, the office has created more than 500 new or renewed relationships with industry, and tracks the development of these relationships from initial contact through successive stages up to a funded project or successful licensing agreement. The success of this office argues for further expansion as we seek to engage increasing numbers of faculty in interactions with industry.

Analysis of our current relationships with industry reveals that these interactions are not identical. Rather, there are many ways in which the university works with industry, and it will be important going forward to develop a comprehensive model that encompasses all these types of interactions and identifies the best practices for each type of interaction. For each type, it is necessary to determine the needs of industry and the university, as well as the desired achievements, and to ensure that these needs and wishes are addressed. Because these partnerships can alter the direction of research efforts, it is also necessary to evaluate them in the context of the strategic goals of colleges and units. The types of engagement include industry use of university labs and facilities in fee-for-service arrangements, industry contracts for a specific problem related to a product need, broader collaborative research arrangements in industry-sponsored contracts, participation in consortium arrangements, licensing of university intellectual property, and new startup companies.

In a few cases, our partnerships with industry have been much broader and more comprehensive. The Honda-OSU Partnership, in place for over two decades, serves as one outstanding example. This partnership has funded research projects, course offerings, internships, endowed professorships, and facilities in the College of Engineering. This partnership has now expanded beyond the boundaries of engineering with the recently-opened Driving Simulation Laboratory, which engages faculty from arts and sciences and the health sciences. Plans are currently underway to create an advanced manufacturing enterprise in collaboration with Honda. The benefits of this partnership have been significant for both Honda and Ohio State. Similar strategic partnerships are in the formative stages with General Motors and Boeing Corporation.

The creation of new partnerships that emulate certain aspects of the Honda-OSU partnership is important for the future of the university's research enterprise. Entities such as Battelle, Procter and Gamble, and other corporations could produce synergies for both partners, and we will work to create and nurture these new partnerships. In each case, it is imperative to determine what the "win" for each side should be, and to ensure that these partnerships are structured to meet the expectations of both sides.

Six initiatives are planned to address Expanding our Partnerships with Industry:

a. Continue to grow the role of the Industry Liaison Office to serve the entire campus community. The rapid growth of new industry relationships attests to the success of the Industry Liaison Office in helping researchers connect with industry partners. Additional capacity in the office to provide more expansive coverage in the health sciences should reap similar benefits. In addition, increasing the visibility of the office among faculty is needed. We will work to set up opportunities for faculty across the university to learn more about how the staff in the ILO can help them connect with industry.

b. Create and maintain rosters of core facilities and capabilities. The Industry Liaison Office staff has requested information that they can provide to potential industry partners about Ohio State's core facilities. Ideally, a master roster can be created, which then can be customized to particular types of corporate interests, so that potential partners can gain a better sense of how Ohio State could be an asset to their efforts. Requests have also been made for a list of OSU core capabilities. Databases such as Research in View and Academic Analytics can be used to generate customized expertise lists. Tools such as these can assist the Industry Liaison Office in representing the university to external partners. The Office of Research will work with the Industry Liaison Office to create a mechanism for these requests to be fulfilled.

c. Pursue more comprehensive strategic partnerships with selected industry targets. Comprehensive strategic partnerships, which have both breadth and depth, provide benefits to both parties and enable activities that could not be possible by either entity alone. Ohio State's partnership with Honda is just one example of how such partnerships have enriched universities across the nation. We will work with the Industry Liaison Office and the colleges to pursue additional strategic partnerships in a variety of areas, and will continue to work to define the nascent partnerships with Battelle, General Motors, Boeing, and Procter and Gamble.

d. Establish Innovation Forums. The ILO holds meetings for individual companies to introduce them to relevant OSU technologies. While this has been useful in some cases, it is quite time-intensive for researchers. The Office of Research proposes to utilize the model of an Innovation Forum**.** These forums will be focused around specific themes and will showcase OSU technologies and capabilities. Our goal is to have one industry forum per year in each of the Discovery Theme areas. There is the potential to work with industry groups like BioOhio, PolymerOhio, etc., in putting on these forums. A list of Strategic Capabilities (mentioned above) would be an important take-away from these forums.

e. Invigorate the SciTech Campus. Today the SciTech campus is comprised of about 30 companies, from early start-up companies in the incubator to established commercial ventures. With the recruitment of a new leader of TechColumbus, the partnership between OSU, TechColumbus and the other companies on the SciTech campus can be re-envisioned. The Office of Research proposes to change the name of SciTech to the OSU Research Park, in order to clarify the mission of this locale. In addition, the leadership of SciTech, now only a part-time president, needs to be a full-time position, held by a leader experienced in economic development. This individual, in partnership with Columbus 2020, will need to focus on marketing the region and its capabilities with the goal of maximizing the west campus land and its proximity to OSU.

f. Communicate a more complete model of industry-university engagement. As mentioned above, there are many ways in which industries can connect with the university. These connections are often managed by different points within the university (e.g., internship programs are managed within colleges, licensing activities are managed by the Technology Commercialization Office, sponsored research arrangements are managed by the Office of Research, corporate giving is managed within University Development). This is entirely appropriate, but it is likely that opportunities for leverage are being overlooked. A model in which these different points in the university better communicate about all of the possible connections could promote a better understanding of the entire ecosystem of university-industry engagement, and could possibly create synergies among these connections that would benefit all. The Office of Research will work with all of these groups to create a unified and comprehensive model, and to communicate it to deans and faculty.

4. Creating and Maintaining Outstanding Core Facilities and Physical Infrastructure

Ohio State has a broad array of user facilities and core infrastructure that provide valuable equipment and services to support research activities across the campus. Although it is well recognized that outstanding facilities can serve an important role in recruiting and retaining top faculty, the university has never created a long-term plan for ensuring that these facilities remain cutting-edge and competitive. One consequence of this has been duplication and redundancy in laboratories across campus; further, some of our core user facilities have fallen behind the pace of technology, housing aging equipment that does not serve faculty needs. The state of our core facilities is not commensurate with a top tier research university.

The certainty of fiscal constraints for at least the near-term future suggests that we should be more thoughtful in our approach to core facilities. It is increasingly clear that a model of shared laboratories and shared facilities is not only fiscally prudent, but also creates new opportunities for collaborative research that might not occur otherwise. Ohio State needs to offer outstanding facilities for the recruitment of new faculty in the Discovery Themes, and to promote a collaborative, shared-use model of facility interaction for the future. Moreover, we need to find ways for existing facilities to operate cooperatively, share best practices, and minimize redundancy.

One recent example of a successful faculty recruitment was that of Vicki Wysocki, the Ohio Eminent Scholar in Chemistry and internationally known proteomics expert. She is also the new director of the Campus Chemical Instrument Center (CCIC). Under her direction, the biomedical research community and the chemistry research community have the potential to be brought together in a common user facility for proteomics, mass spectrometry, and nuclear magnetic resonance (NMR), which may lead to new collaborative activities. An investment in capital equipment for the CCIC by the Office of Research and the College of Arts and Sciences through Dr. Wysocki's hire served as a valuable tool in recruiting this outstanding researcher to Ohio State.

Other core facilities offer opportunities to industry partners to solve problems. The Nanotech West facility provides such opportunities to the materials industry. Still other facilities offer services to faculty and external partners that share certain similarities, such as the Campus Microscopy and Imaging Facility (CMIF) and the Center for Electron Microscopy and Analysis (CEMAS). Although CMIF's user base is more biomedical, and the CEMAS user base is more focused in engineering, opportunities to provide a more comprehensive set of services to users can be found in collaborative activities by the two centers. Other facilities fall into a category of necessarily centralized services, such as University Laboratory Animal Resources (ULAR). Maintenance of ULAR facilities in top shape is necessary not only to recruit and retain outstanding faculty, but also to meet increasingly stringent regulatory requirements from federal oversight agencies.

In an era of reduced federal funding for establishing and supporting core facilities, as well as reduced state capital funding for building and renovation, we must be increasingly strategic in seeking the necessary funds for outstanding cores. We must strive for cost containment and efficiency in operation, share best operational practices, generate informed business models, and establish collaborations not only across the university, but also with local partners such as Battelle and Nationwide Children's Hospital, with statewide partners at other state universities, and with regional partners in the Midwest (Committee on Institutional Cooperation).

Four initiatives are planned to address Creating and Maintaining Outstanding Core Facilities:

a. Compile a comprehensive list of Ohio State core facilities and multi-user laboratories. We have already begun to prepare a list of core facilities across the university, and will work to update this list. This list will also benefit the Industry Liaison Office as they meet with industry representatives to form new industry-university relationships.

b. Establish a regular form of meeting/communication of core facility directors. In order to achieve operational efficiencies, regular communication among facility directors is needed. The Office of Research will establish a regular venue for

such interactions, where best practices, new software products, and potential collaborative efforts can be explored. This has already begun with the purchase of new shared software for scheduling of appointments and billing for services.

c. Continue discussions with Battelle, Nationwide Children's Hospital, and other partners about directions for shared facilities. The Office of Research will work with colleges and regional universities, as appropriate, to initiate conversations with external partners to determine what types of shared equipment and facilities make the most sense and provide the most benefit to all parties.

d. Complete plans for, and begin construction of, a replacement facility to house large animals from Wiseman Hall and the vivaria currently in Graves and Postle Halls. Wiseman Hall, which houses ULAR's large animal vivarium, is in poor condition and has not been deemed worthy of renovation. We have completed a feasibility study for a new building that will house the Wiseman vivarium as well as the vivaria in Graves and Postle Halls. The Office of Research will work with other stakeholders, such as the College of Medicine, to secure the necessary funding to proceed with construction of this new facility.

5. Realizing the Potential of Assets within OH-Tech

Ohio State serves as the fiscal agent and overseer for a number of State of Ohio assets. These include the Ohio Supercomputer Center (OSC), the Ohio Academic Resources Network (OARnet), OhioLink, and eStudent Services. All of these entities can point to impressive accomplishments in assisting researchers and educators across the state. With the recent co-location of all of these groups at Ohio State, there is an opportunity to envision new ways in which these separate entities can work together to facilitate new initiatives and programs that leverage their collective strengths. A new structure brings these separate entities together within OH-Tech. A plan has been prepared for integrating these groups together and creating a new Innovation Center to house new joint ventures, where past successes can be built upon and used to support future initiatives.

OARnet provides 1,850 miles of network backbone, broadband connectivity, virtualization software and telepresence to support research and innovation throughout Ohio. OARnet's current capacity of 10 gigabits per second (Gbps) will be increased to 100 Gbps on December 13, 2012, when connections to 13 cities throughout the state will be made. This increased capacity will place Ohio in the lead nationally for speed and extent of connectivity. The power of this network is that connections can be made between higher education institutions, research institutes, medical centers, and the industry sector. OARnet headquarters at Ohio State and its connection nationally to Internet 2 places OSU in a unique position for national prominence in networking.

OSC, now in its 25th year of operation, offers advanced high performance computing and educational resources for academic research and industrial innovation, supporting scientific discovery, digital manufacturing, and computational science curriculum and training. OSC serves State of Ohio institutions in the University System of Ohio as well as Case Western Reserve University and the University of Dayton, although the largest user is OSU. OSC has been involved for several years in a program called Blue Collar Computing, which assists small and medium-sized businesses in using supercomputing for modeling and simulation purposes. This initiative led to the National Digital Engineering and Manufacturing

Consortium funded grant from the Economic Development Association ($2.1M) for outreach to industry and commercial clients. OSC and OARnet were administratively merged in mid-2012, returning to the situation that existed prior to 2008.

OhioLink provides statewide access to library holdings of Ohio's public colleges and universities, some private institutions, and the State Library of Ohio, including library catalog, research databases, and other academic resources. This entity is the envy of other states and allows for effective annual negotiations with vendors on journal pricing for nearly 18,000 electronic journals and 100 research databases. OhioLink, which has 90 member institutions, joined the OH-Tech consortium in November 2012 with OSU serving as the fiscal agent. Also a member of the OH-Tech consortium, eStudent Services develops and promotes the use of advanced telecommunications and distance education initiatives to advance higher education access, degree completion, workforce training, and professional faculty development.

In September 2011, all of these entities were brought together under one umbrella for the purposes of leveraging the strengths of each organization and for efficiencies through a shared infrastructure and consolidated operations. These entities report to both the Ohio Board of Regents and to Ohio State through the Office of Research. This has worked very well and has allowed a strengthening of all entities.

Three initiatives are planned for Realizing the Potential of OH-Tech Assets:

a. Establishment of an Innovation Center. While the linking together of OSC/OARnet, OhioLink, and eStudent Services is valuable, it was recognized that an important research component was missing. The creation of an Innovation Center would allow all research applications to be brought together and would facilitate cooperative efforts between institutions throughout the state. At present, there are research projects located mainly in the Ohio Supercomputer Center, but with the transition to 100 Gbps networking capacity throughout the state, new and unique research opportunities become available. Other institutions, including the University of Cincinnati, Case, and Ohio University, along with OSU, are prepared to invest in this new entity which will be virtual in its early stages.

b. Ramping up the Ohio Supercomputer Center. While OSC is recognized on campus as a valuable research tool by researchers in basic physical science, engineering, materials, and medicine, and currently is actively involved in about $12M in federally-sponsored research, the potential is much greater. The Governor's Office has become interested in utilizing the resources of OSC for local and statewide economic development and has consulted with Battelle for advice on this endeavor. The Office of Research proposes to expand the proposal-writing and outreach capabilities within OH-Tech to focus on supercomputing applications and linkage with major industry.

c. Continue the integration of OH-Tech entities. With the establishment of the Innovation Center, improved visibility of OSC, integration of OhioLink, growth of eStudent Services in e-learning and even greater national visibility of OARnet, attention must be paid to the integration of these entities. The Office of Research will play an active role in hosting leadership meetings, leadership

training and maximizing the research potential of the OH-Tech organization in partnership with the Ohio Board of Regents.

6. Enhancing Electronic Resources for Research Support

Three national trends in university research demand ever-increasing activity in research support services. First, a growing list of regulatory imperatives require investigators to document many aspects of their research activities, such as effort certification, conflict of interest disclosures, or protection of human subjects. Second, the ubiquitous presence of auditors from both internal offices and external agencies mandates the retrieval of massive amounts of data on all aspects of the research enterprise. And finally, the torrent of requests for customized sets of research award and expenditure data from both internal and external sources continues to intensify.

All three of these trends converge to necessitate an expanded set of electronic tools for use by investigators and research support staff. Ohio State's in-house product, the PI Portal, was the envy of many other universities when it was first launched a decade ago. It has served as a model for the systems developed at universities nationwide. But after many patches and additions to the base software, it is now apparent that the PI Portal needs a complete overhaul. In trying to meet the needs of multiple constituencies, it can prove confusing and cumbersome for individual users.

In addition, other compliance tools for investigators must move to electronic submission to relieve bureaucratic burdens on researchers. Implementing a comprehensive suite of tools for protocol submissions to the Institutional Review Boards (IRBs), the Institutional Animal Care and Use Committee (IACUC), and the Institutional Biosafety Committee (IBC) is imperative. For researchers who work with animals, the ability to order and track census changes electronically saves time and effort that can be invested directly in research. Recent changes in reporting requirements for conflict of interest disclosures require investigators to provide far more information than was previously needed, and the differences in requirements across funding agencies pose confusing choices for researchers.

Further complicating the landscape is the array of other initiatives being fielded in other parts of the university. Efforts such as the Grants Data Warehouse and the proposed Business Intelligence Dashboard in the Office of Business and Finance are valuable in concept, but will realize best value only if they can articulate well with other university systems. It is imperative that we work collaboratively to link data across systems, so that they can provide maximal utility to all users.

Developing tools that can address the complexity of data requests from colleges, university offices, and external constituents will relieve the substantial burden that such requests place on our research support staff. Employing virtualized server infrastructure, web services, and cloud computing solutions will enhance the accessibility of data for all users.

The Office of Research's recently developed tool for conflict of interest disclosures, eCOI, has met with great success. This tool, developed in-house, utilizes responsive and adaptive interface design, and can be accessed from mobile devices as well as computers, and incorporates both touch and keyboard access, to accommodate the access styles of faculty and students. We plan to pattern future software developments on this model, emphasizing ease of use and straightforward presentation.

Three initiatives are planned to address Enhancing Electronic Resources for Research Support:

a. Develop and implement a comprehensive Information Portal. The Office of Research will develop a next-generation portal that will present customized views to different categories of users. A view for a principal investigator might be different from that of a research administrator or compliance officer, which in turn might differ from the view that would be optimal for a dean or vice president. This advanced portal would allow individual customization of views so that a user could tailor the application in ways that were most useful.

   Such an approach would have several benefits. First, all of the data would be unified underneath the application, but not necessarily visible to the user, such that confusing and annoying conglomerations of data would not clutter the user's view. Second, a more intuitive interface would allow administrators to generate reports themselves, rather than tasking central research support staff with requests. This immediate access to data would speed up the efforts of administrators and planners.

b. Complete the transformation of IACUC, IRB, IBC, and Animal Operations to electronic format. The rollout of our electronic e-IACUC and e-IBC modules has been praised by investigators as a time-saving (and paper-saving) effort. We are hoping for similar success with the next module, Animal Operations, which will enable online animal ordering and tracking of animal census using RFID technology. Similarly, researchers have been highly positive about the in-house application for conflict of interest disclosures, eCOI. We plan to use the approach employed in the eCOI application in developing the next phase, e-IRB. Although the intermediate solution, IRBsubmit, has been positively received, we feel that a truly electronic solution will provide considerable time and effort relief for investigators, as well as a reduction in the confusion that often accompanies submission of an IRB protocol. We have begun development of this application and will work to get it into general use as soon as possible. Pursuing an in-house solution will allow flexibility to make changes rapidly in keeping with the shifting landscape of federal regulations.

c. Integrating research award and expenditure data into other university data efforts. The Office of Research is already working with groups in the College of Medicine and in the Office of Business and Finance to determine the best path forward in integrating data in grants, contracts, and compliance with efforts such as the Grants Data Warehouse and the Business Intelligence Dashboard. We will work to create tools that allow users to access these integrated data streams seamlessly, which will permit better planning and assess activities across the university.

7. Reinforcing Compliance Oversight and Audit Responsiveness

All aspects of the university have been subject to increased reporting requirements, new regulations, and audit scrutiny. Research is no exception. Because of the federally-imposed cap on the administrative portion of indirect costs, these new federal and state mandates are largely unfunded. Further, the increasing size and complexity of our research portfolio,

with large grants featuring numerous subawards and new structures for industry grants and contracts, necessitate new levels of administrative oversight. Because our central research support staff has not increased in size even as our research expenditures have risen sharply, colleges and departments have moved to fill service gaps with their own personnel. This has resulted in some challenges in communication and service provision, but also has produced some significant benefits for investigators in obtaining knowledgeable and rapid response to their research needs. We must work even more closely with college and department grant support staff to ensure good communication and to avoid duplication and confusion. Both within the Office of Research and in the colleges and departments, research support units strive to act in a manner that is cost-conscious, facilitative of the research efforts of faculty, and efficient in the allocation of personnel resources.

This close collaboration with college and department support staff is also necessary in administering our human and animal research protection programs, in maintaining compliance with conflict of interest and export control regulations, and in ensuring the quality of the facilities and programs of University Laboratory Animal Resources. In striving to find the right balance between facilitating research and protecting human and animal subjects, and in ensuring compliance with applicable reporting and regulatory requirements, Office of Research staff work in partnership with investigators and college and department staff.

Further, the new compliance landscape is constantly changing, both externally and internally. Responding appropriately to new regulatory changes, as well as defining ways to implement new processes for facilitating large multi-institution research projects, are important for maintaining an accredited human and animal research program and for fiscal and regulatory compliance with grant and contract administration. The best way to implement thoughtful and orderly alterations to existing programs is to have as much advance notice as possible regarding regulatory changes. Research support unit leaders need to maintain an active and visible national profile to ensure that we have a seat at the table when new regulations are debated and announced. This will provide us with the ability to act in anticipation of new regulatory guidance, and make changes and transitions in a fashion least disruptive to investigators. In addition, this level of participation will allow support unit leaders to provide expertise and counsel in the formation of these regulatory changes.

Along with the changing regulatory environment has come a corresponding increase in audit scrutiny. Responding to the requests of both announced and unannounced audits and inspections by regulatory arms of agencies poses a significant challenge for Office of Research support unit staff, both because of limited resources and personnel, and because of the distributed nature of compliance operations described above. Auditors are ubiquitous in research support unit offices, and thus far the extraordinary efforts of our staff in maintaining a strong compliance operation have allowed us to avoid any significant audit findings. We must ensure that staff have the tools they need to continue their excellent work on this front. In meeting the standards for accreditation of animal care and use and human subjects protection programs, the university depends on the ethical conduct and regulatory compliance of investigators. In meeting the challenges of both announced and unannounced inspections and audits, this partnership is even more critical. Recently-launched post-approval monitoring programs for human and animal research protocols will be of tremendous benefit in avoiding adverse consequences of these investigations.

Operating a research enterprise that is compliant with necessary regulations and documenting that compliance with appropriate policies, procedures, and recordkeeping requires the efforts of a network of groups with members from across the university. The dedication and hard work of the faculty and staff who chair and serve on the Institutional Review Boards, Institutional Animal Care and Use Committee, Institutional Biosafety Committee, Scientific Misconduct Committee, and other oversight committees, are critical to maintaining a strong compliance operation. Support of these efforts by staff from the Office of Research support units is equally critical. Resources to maintain robust operation of these groups are also important in successful inspection and audit outcomes.

An additional challenge for research support units arises within the university itself. The university is restructuring its compliance programs, and Office of Research support units will be integral participants in that restructuring. We believe that Ohio State's research compliance program is firmly based and cognizant of the major issues on the national scene, and will work to integrate our activities into the new compliance structure.

Other university initiatives, such as the increased emphasis on technology commercialization and internationalization, will inevitably come with additional regulatory compliance requirements. The Office of Research will work together with the relevant university units to ensure that we are meeting the compliance demands of these new activities.

For all of these new challenges, adequate education and training for investigators and research support staff is imperative. Such education will go a long way in ensuring that our compliance activities meet all federal and state regulations. It will also permit faster response from staff when needs arise.

Finally, new initiatives to develop a comprehensive responsible conduct of research training program, as well as policies on institutional conflict of interest and handling of research data, will be needed. We will work with colleges and other support units to create robust programs to address these imperatives.

Three initiatives are planned to address Reinforcing Compliance Oversight and Audit Responsiveness:

a. Increased communication, education, and training with college and department research administrative staff. The Office of Research will use existing vehicles, such as the Administrative Research Council, and create new vehicles to meet regularly with college and department administrative staff to provide new information and training and to share best practices in research compliance.

b. Creation of a research training program for investigators. The Office of Research will create and implement a series of short training modules for investigators in various aspects of research compliance, to ensure that researchers have the necessary knowledge to run ethical and compliant research programs at the university.

c. Maintaining visibility in the national conversation. The Office of Research will ensure that leadership staff and faculty researchers remain actively engaged with national organizations and strategic planning panels at federal agencies, to allow us to have a voice in the formation of new guidance and advance

knowledge of new and altered regulations. We will actively nominate staff for positions on these working groups and panels.

Resource Stewardship—People, Facilities, Budget, IT

People, Culture, and Leadership Continuity

In all units, the Office of Research has been working to provide leadership opportunities for mid-level staff. The process of addressing leadership continuity was begun about two years ago, and we have made structural changes where necessary to create a level of middle leadership in all larger units. Mid-level staff are provided with leadership opportunities (e.g., heading a new project, overseeing a small staff) to gain experience in managing and leading. We are constantly seeking additional resources for leadership training for mid-level staff. Although some programs are available in the Glenn School and in the Fisher College of Business, these do not seem ideal for university staff at this level. Because this need is not unique to the Office of Research, but rather is ubiquitous across colleges and support units, we request that such resources be developed within the Office of Human Resources, such that staff from across the campus can gain the necessary expertise.

Creating pathways for leadership continuity has taken different forms in various units. In research centers, the formation of faculty advisory boards or elevation of faculty to executive boards has served this need. In others, new staff hires have been made with leadership continuity in mind. In still others, structural changes have created a mid-level leadership cohort. For all of these models, we stress the sharing of corporate memory with mid-level leadership and new targeted hires, to minimize the disruptive effect of departures and retirements.

For all staff, we encourage additional education and training outside the daily workload. Staff are offered opportunities to attend regional and national professional association meetings (e.g., NCURA, SRA, PRIM&R). In addition, webinars of relevance are screened for staff to provide a continuing source of skill updates. In two units (Sponsored Programs and Responsible Research Practices), staff can attain certifications within their specialty area. We strongly encourage all eligible staff to seek these certifications, provide time during the workday for mastery of necessary materials, and pay the costs of certification. These activities are not only a way to ensure that we have the best-trained professionals in the units, but also serve as a source of pride and career achievement for staff.

We constantly strive to increase diversity in new hires. All advertisements and recruiting materials strongly encourage applications from underrepresented groups and veterans. When possible, we encourage search committees to be particularly attentive to applications from individuals in these groups.

The Office of Research engaged in a series of leadership workshops on culture shaping in 2010 led by Senn Delaney. Initially, these workshops were held for leaders in the Office of Research, and were well received. Thereafter, individual workshops were held for most units in the Office of Research during 2011 to assess and work on culture in each of the units, similar to the rest of the university. Since that time, budget, audit, and compliance pressures have caused us to focus on other matters. Creating and reinforcing a positive workplace culture continues to be a challenge in some units. In some units, a very positive culture, accentuated by discussions of university values and their application in the unit, as well as

detailed feedback in performance management, have been effective. We are working to disseminate these best practices to other units, but still have a distance to go. We have found that one-size-fits-all generic activities are less useful in some units. Rather, activities that are tailored to meet the specific needs and goals of a particular unit may be more suitable.

Facilities

Office of Research staff are housed in a variety of locations around the campus. The largest concentration of employees is the Research Administration Building at 1960 Kenny Road. Approximately 125 staff from Sponsored Programs, Responsible Research Practices, Research Compliance, and Information Systems occupy the four floors of this building. Although the building is functional, its infrastructure systems are aging and in frequent need of repair. Also, the facility's location on Kenny Road in close proximity to the Martha Morehouse Medical Plaza has attracted interest from the Wexner Medical Center. The necessity of staff from these units working closely on issues related to grants, contracts, and compliance, sometimes in a time-sensitive manner, makes it optimal to house them together. If relocation is deemed a university priority, all efforts must be made to find a suitable location at which all of these offices could be housed together.

Employees of University Laboratory Animal Resources (ULAR) are housed in Wiseman Hall (administrative leadership), as well as in multiple animal housing facilities across campus. A large concentration of employees in the OH-Tech units are located on West Campus on Kinnear Road. Some of the Industry Liaison Office staff are also housed on Kinnear Road. Satellite locations of the Office of Sponsored Programs are found in Graves Hall, the Agricultural Administration Building, and Derby Hall. Staff in research centers and facilities are housed in a number of different locations around central and West Campus (and beyond, in the case of Stone Laboratory). Finally, Office of Research leadership staff are housed in Bricker Hall. All of these facilities are in varying states of disrepair, and require constant attention from our office to ensure that they are functional.

Top priorities for the Office of Research in the area of facility renovation/replacement are: 1) a replacement building for Wiseman Hall for large animal housing and surgical suites; 2) expansion of freezer space for the ice cores at the Byrd Polar Research Center; and 3) expanding the power needed for an upgrade of the Ohio Supercomputer Center. A feasibility study for a Wiseman Hall replacement is currently nearing completion. Because this facility is of importance to the Medical Center expansion as well as the One Ohio State Framework Plan, we are working closely with other stakeholders in the design and funding of the Wiseman replacement. The building will likely also include research floors, as well as incorporating vivarium space to replace the Graves and Postle Hall small animal vivaria.

We continue to seek opportunities to fund an expansion of freezer space for the Byrd Polar Research Center ice core collection. This collection is irreplaceable, and will provide a source of research data to polar investigators for many years to come. Thus, a fiscal solution for this need, estimated to be approximately $3M, is urgently needed.

Vigorous plans have been put forth for expansion of the Ohio Supercomputer Center capability to meet increasing needs of academic and industry clients. However, any expansion will require new power and storage capacity. We will work with the Board of Regents to assess what those needs may be.

Budgetary Resources for Planned Initiatives

Although some of the initiatives outlined in the previous sections are rather modest in cost, a number of them will require substantial financial investment. Estimates for some of the larger cost items are outlined below.

1. Facilitating Interdisciplinarity and Multidisciplinarity

    a. National conferences: Although much of the cost of national conferences can be recouped with registration fees, some level of university investment will be needed to support each conference. Estimated internal investment cost for each conference is $100K. For three conferences, the total investment will be $300K. These funds will be obtained from the Office of Research and partner colleges.
    b. Creation of new centers and institutes: Support costs for new centers and institutes can be quite modest, or might be more substantial, depending on the size and scope of the effort. Estimated internal investment for each new center is $200K/year for an initial 3-year period. Assuming a total of three new centers over the 5-year period, total internal investment is $600K in PBA. These funds will be obtained from the Office of Research and partner colleges.

2. Growing the Portfolio of Federally-Funded Research

    a. Writing and editing assistance for individual researchers: Cost for the pilot effort to provide writing and editing assistance to researchers is estimated to be approximately $150K over one year. These funds will be obtained from the Office of Research and the selected partner college/department. Future expansion of this effort will be dependent on the success of the pilot effort.
    b. Establishment of a Proposal Development Center: Personnel will be needed to staff the Proposal Development Center. It is estimated that a total of eight new staff hires will be necessary: three senior-level project managers, four intermediate-level editors and graphic designers, and one director. Estimated total cost: $1M/year in PBA when the office is fully staffed. Funds will be obtained from Office of Research, OAA, and partner colleges.

3. Expanding Partnerships with Industry

    a. Grow the role of the Industry Liaison Office to serve the campus community: Two to three additional hires in the Industry Liaison Office will offer better service to researchers, especially those in the health sciences colleges. Estimated total cost: $500K in PBA.

4. Creating and Maintaining Outstanding Core Facilities and Physical Infrastructure

    a. Construction of a replacement facility to house large animals from Wiseman Hall and the vivaria from Graves and Postle Halls: Estimated total cost of a replacement facility for Wiseman Hall will depend on the total number of floors in the replacement building, as well as on options selected and the site requirements of different possible sites. We will work with the University Architect and staff at Facilities Operations and Development to determine the total estimated cost and to determine possible funding sources for this building.

5. Realizing the potential of the assets within OH-Tech

    a. Ramping up the Supercomputer Center: Additional staff will be added to engage in business cultivation as engagement with industry becomes a greater priority. In addition, recurring resources will be needed for upgrade of the supercomputer hardware and software as well as storage, estimated to be approximately $4M every other year. Funds will be obtained from external grants as well as the State of Ohio.

6. Enhancing Electronic Resources for Research Support

    a. Develop and implement a comprehensive information portal: One FTE developer position will be needed to complete this project. Estimated total cost: $100K in PBA.
    b. Integrating research award and expenditure data into other university data efforts: One FTE web services administrator will be needed to allow these various databases to be mutually accessible and to allow the generation of needed reports by users. Estimated total cost: $85K in PBA.

7. Reinforcing Compliance Oversight and Audit Responsiveness

    a. Creation of a research training program for investigators: One FTE staff position will be needed to create, coordinate, and implement the modules for a comprehensive research training program for investigators. Estimated total cost: $90K in PBA.

Tracking Our Performance

To determine progress on the Office of Research strategic initiatives, both university-level and unit-level metrics are proposed. Ultimately, our strategic initiatives should have a positive impact on university-level metrics, particularly U8, Total Research Expenditures. Indirectly, our initiatives may help with U6, National Academy Members; U7, Faculty Scholarly Productivity Index Rating; U9, Commercialization Success Index; U10, Industry Research Expenditures: Market Share; and U11, Return on Industry Research Expenditures.

Office of Research-specific metrics are listed below:

1. Facilitating Interdisciplinarity and Multidisciplinarity in Ohio State's Research Enterprise

Initiative	Metric
National conferences on Discovery Themes	Three conferences in five years
Workshops and networking follow-up	Three follow-up activities in five years
New ways to leverage databases	# of workshops for faculty
Creation of new centers	Three centers in five years

2. Growing the Portfolio of Federally-Funded Research

Initiative	Metric
Writing and editing assistance	Completion of pilot effort with partner college (Years 1-2)
Establishment of Proposal Center (Year 1)	Hire director and staff and embed in Battelle
	Complete center at Ohio State (2 Years)
	Evaluate effectiveness (% funded) (Years 3-5)
Federal agency specialists	Hire two staff (Year 1)
	Evaluate effectiveness (# of new opportunities, % funded) (Years 3-5)
External proposal services	Establish pilot program (Year 1)
	Evaluate effectiveness (% funded) (Years 3-5)

3. Expanding Partnerships with Industry

Initiative	Metric
Grow role of ILO	Two additional hires (Year 2 and Year 3)
Rosters of core facilities and capabilities	Complete (Year 2)
Comprehensive strategic partnerships	Four new partnerships (Years 1-5)
Innovation forums	12 forums, 3/year (Years 2-5)
Invigorate SciTech	# of new companies/laboratories (Years 2-5)

4. Creating and Maintaining Outstanding Core Facilities and Physical Infrastructure

Initiative	Metric
Comprehensive list of core facilities	Complete (Year 2)
Regular meetings of core directors	Establish (Year 1)
Shared facility discussions	Begin in Year 1 (Years 1-5)
Replacement of Wiseman Hall	Begin construction by Year 5

5. Realizing the Potential of Assets within OH-Tech

Initiative	Metric
Establishment of Innovation Center	Complete (Year 1)
Ramping up the Supercomputer Center engaged	# of projects using OSC # of industries

6. Enhancing Electronic Resources for Research Support

Initiative	Metric
Develop comprehensive Information Portal	Complete (Year 4)
Complete transformation of e-Protocol	Complete (Year 2)
Integrate research data into other efforts	Years 1-5

7. Reinforcing Compliance Oversight and Audit Responsiveness

Initiative	Metric
Increased communication with colleges	# of meetings, trainings
Research training program for PIs	Complete (Year 3)
Maintaining visibility in national efforts	# of committee memberships, groups

The Ohio State University Strategic Plan Scorecard

Research & Innovation Scorecard

Create distinctive and internationally recognized contributions to the advancement of fundamental knowledge and scholarship and to the solutions of the world's most pressing problems

	Focus Area	Metric	2011 Baseline	2012	2013 Est.	2014 Est	2015 Est	2016 Target	Progress
U8	Productivity	Total Research Expenditures	$832M	$938M	$938M	$880M	$780M	$800M	

Outreach and Engagement Scorecard

Establish mutually beneficial partnerships with the citizens and institutions of Ohio, the nation, and the world so that our communities are actively engaged in the exciting work of The Ohio State University

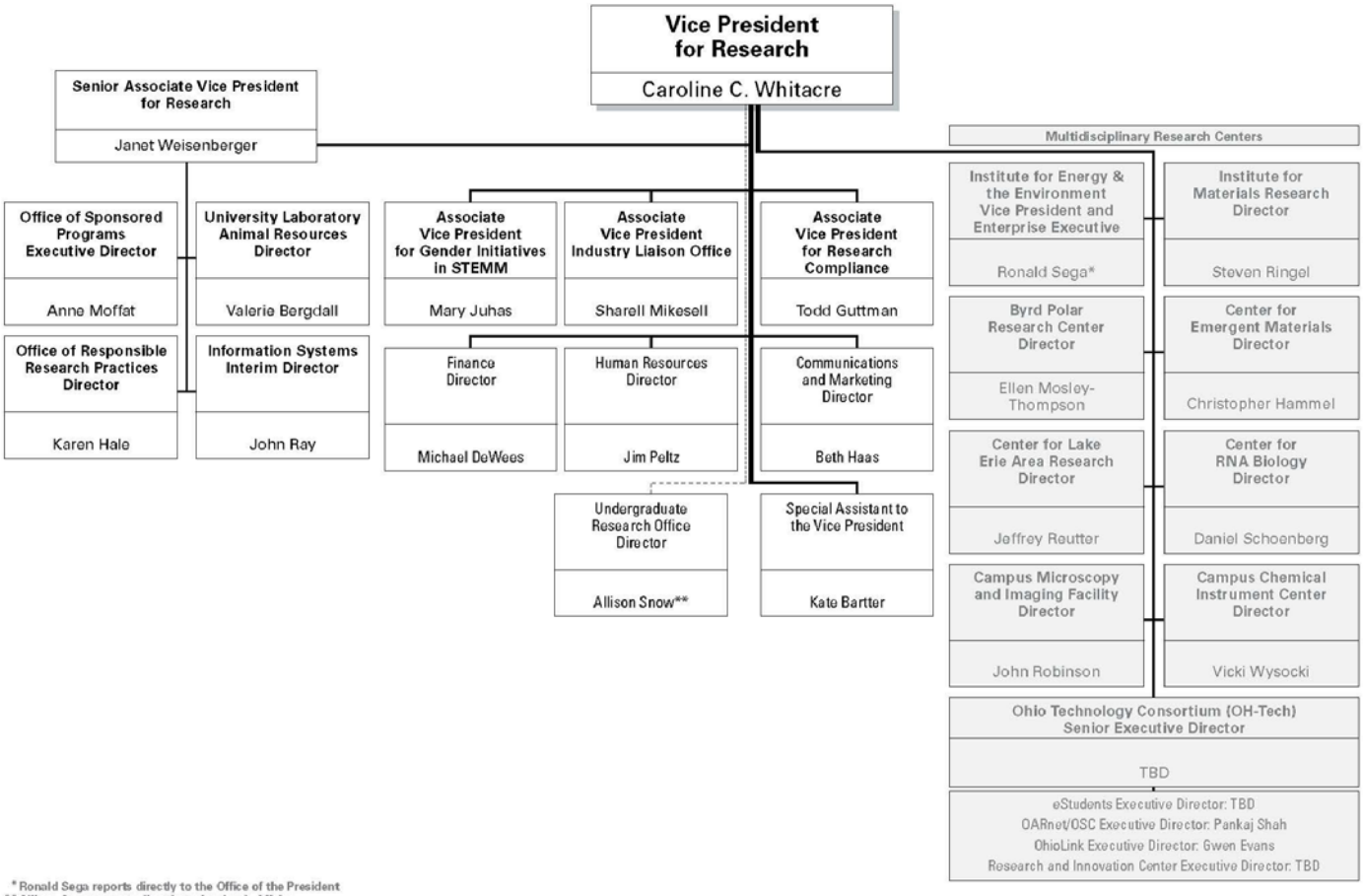
	Focus Area	Metric	2011 Baseline	2012	2013 Est	2014 Est	2015 Est	2016 Target	Progress
U10	Strategic Partnerships	Industry Research Expenditures	$106M	$100M	$92M	$87M	$96M	$106M	
U11	Strategic Partnerships	Return on Industry Research Expenditures	Metric under development						

APPENDIX A

Organizational Chart

THE OHIO STATE UNIVERSITY **OFFICE OF RESEARCH**

research.osu.edu
Revised November 2012



* Ronald Sega reports directly to the Office of the President
** Allison Snow reports directly to Academic Affairs

APPENDIX B

Research Support Strategic Plans

OFFICE OF RESEARCH
Office of Sponsored Programs

Strategic Plan

Office of Sponsored Programs
The Ohio State University
2012-2017

Office of Sponsored Programs (OSP)

Mission

The Office of Sponsored Programs (OSP) partners with OSU faculty and staff to provide professional, customer-focused administrative support for all aspects of sponsored projects. Our well-qualified staff and easy-to-use electronic tools and resources facilitate compliance with sponsor and institutional requirements, and promote responsible stewardship of funds, while minimizing administrative burden.

Current state

The Office of Sponsored Programs supports OSU researchers throughout the life cycle of their sponsored programs. Pre-award activities include identifying sources of funding, proposal submission, and award negotiation and acceptance. Post-award activities include purchasing necessary equipment, supplies and services, including sub-contracting with other entities, paying bills, collecting funds from sponsors and ensuring orderly project closeout reporting. In tandem with supporting research activities, OSP has an increasingly important compliance responsibility, ensuring proposals and project activities comply with both university and sponsor requirements.

In addition to project specific activities, OSP plays a pivotal role in the research component of the University's annual A-133 audit, in a variety of other audits, and in institutional research reporting (e.g., NSF's annual expenditure survey, STAR Metrics, US News and World Reports etc.).

Over the last few years a number of factors, both beneficial and challenging, have resulted in a change in OSP's focus. The beneficial impacts include:

1. Increasing number of on-line proposal submissions

2. Increased access to funding information from external vendors, professional societies, internet, etc.

3. Increase in college- and department-supported staff who facilitate primarily pre-award processes (e.g., budget preparation and proposal submission)

The challenges include:

1. Increase in the number and complexity of awards

2. Increasingly burdensome, non-negotiable, compliance requirements (e.g., FFATA, ARRA reporting, RCR, subrecipient monitoring, changing NIH salary cap)

3. Increasing audit scrutiny – NIH, NSF, State, Annual A-133, ARRA

4. Ever increasing appetite for research expenditure data in myriad formats. Responding to these requests is time-consuming and challenging, and delivery is possible only because of the dedication and resourcefulness of the staff involved

5. Loss of some key OSP staff to retirement buy out with no replacements; recruitment of staff by campus departments

6. Departure of institutional knowledge/memory in central university administration

7. Differences among service centers across campus

Because of the increased availability of college- and department-funded staff, supporting primarily pre-award activities, OSP has been able to redirect some resources to providing value-added support for the increasingly demanding post-award compliance and reporting activities. The change, however, has been accompanied by some loss of clarity about roles within the research administration community, resulting in some inconsistencies and redundant processes.

Moving Forward

Ohio State's future will be defined and driven by the university's move from excellence to eminence. Making that move requires a strategic vision and a clear path for achieving it.

The vision is focused around three Discovery Themes:

1. Health and Wellness
2. Food Production and Security
3. Energy and Environment

Four core goals pave the path to eminence, two of which are particularly relevant to OSP responsibilities:

1. Research and Innovation: To create distinctive and internationally recognized contributions to the advancement of fundamental knowledge and scholarship and to solutions of the world's most pressing problems.

2. Resource Stewardship: To become the model for an affordable public university recognized for financial sustainability, unsurpassed management of human and physical resources, and operational efficiency and effectiveness.

In an environment of diminishing resources and external funding challenges, the university must optimize the benefit of available internal resources and exercise creativity in acquiring external resources. OSP will help pave the path to eminence by continuing its history of creative responses to challenging situations.

Strategic goals

1. Partner with college and department research administration staff to maximize the support available to investigators

   There are a number of research support offices around campus (Comprehensive Cancer Center, Education and Human Ecology, Davis Heart and Lung Research Institute), as well as many full or part time department administrators who provide research administration support. Services provided by these groups vary, as do the skills of the incumbents. By working collaboratively, we will develop a shared body of knowledge, clarity on roles and responsibilities, and well defined communication channels. In addition we will develop easy to use, easy to maintain sources of up-to-date information. This activity will compliment ARC programs by providing more focused, hands-on training and information.

2. Continue developing electronic tools and information systems that support research productivity

   The PI Portal has become a victim of its own success and now includes so much information that it can be difficult for PIs to use. We will develop the next generation PI Portal in several versions, customized for different audiences. PI's will have a simple tool that provides quick answers to relatively straightforward questions; department and college staff will have a view that easily and efficiently alerts them to potential problems, perhaps some kind of dashboard. Finally, central research administration staff will have a comprehensive view of all project and award data, but with built-in intelligence that alerts users to areas of concern without their having to scroll through reams of data. A new portal platform will also allow the Office of Research Information Systems (ORIS) to acquire data more efficiently and consistently from the various feeder systems.

3. Optimize OSP staff effectiveness by creating project management teams when appropriate

   Sponsored Program officers tend to be autonomous – each does everything for their specific constituency. Financial Services and Procurement staff on the other hand do a specific task for a number of sponsors. As projects become more complex, they run more smoothly if there is an integrated, comprehensive management plan put in place at award initiation. We will develop project management teams where members bring their specific expertise to the project from the beginning. Not only will complex projects be managed more effectively, staff involved will have the opportunity to increase their skills by developing a better understanding of all of the parameters of project management.

4. Support the university's technology commercialization initiative by enhancing interactions among TCO, ILO and OSP

   We will work with the Office of Research to develop a common understanding of each group's roles and responsibilities, and establish effective, professional communication channels. We will advocate for support teams for research/commercialization intensive

faculty so that their sponsored programs and commercialization activities are managed as an integrated portfolio. Short term goals will be streamlining procedures for working with UTCCs and developing a tracking procedure to monitor contract negotiation progress.

5. Implement a Grants Data Warehouse with reporting capabilities that provide data necessary to support institutional and college decision making

   We will work with OCIO, Business and Finance, and colleges as appropriate to develop and populate a grants data warehouse from which colleges can extract metrics information. Related to this will be an effort in collaboration with the appropriate campus community representatives – colleges, Institutional Research and Planning, OCIO, Business and Finance – to develop agreed upon data definitions (e.g. Investigator, Department, Interdisciplinary). If the outcome of that exercise is that we have to begin accumulating data in different ways (e.g. by investigator rather than by department) we will develop procedures to implement the revised requirements.

6. Develop a procedure for tracking sponsored programs activities by Discovery Themes

   There is currently no robust way to identify activity by Discovery Theme. If appropriate, we will modify the ePA-005 form so PIs can provide the information prospectively, and we will work with Institutional Research and Planning to identify a process whereby we can allocate current activity with a reasonable degree of confidence.

7. Ensure research has a seat at the table in the financial system upgrade decision/implementation process

   Research funding is a major component of many college balance sheets, and there is a demand to manage and report on research funding in combination with other sources of support. However, because of the significant personnel changes in OCIO and Business and Finance, there is not much appreciation of the nuances of managing very restricted funds. Having research administration participate in the design/implementation of a new system will facilitate development of consistent processes, logical data entry and intelligent workflow, while also accommodating sponsor specific requirements.

8. Build on OSP's status as a Green Buckeye organization by working with campus to minimize paper-based processes

   We will continue to advocate for electronic flow as much as possible. In cases where a transaction starts on paper, we will advocate for scanning into a centralized and controlled system, so that the paper never has to be shipped anywhere.

Summary

Opportunities abound to make an impact and a difference – OSP has the talent and creativity to recognize and develop such opportunities.

OFFICE OF RESEARCH
Office of Responsible Research Practices

Strategic Plan

Office of Responsible Research Practices
The Ohio State University
2012-2017

Office of Responsible Research Practices (ORRP) Overview

The Office of Responsible Research Practices (ORRP) provides administrative support to the university research community and the review boards responsible for research oversight. The ORRP staff help Ohio State faculty, staff, and student researchers navigate regulations governing research in a way that fosters ethical conduct, ensures compliance, and minimizes administrative burden. Research activities overseen by the following committees are included:

- The Institutional Animal Care and Use Committee (IACUC), which oversees the responsible use of animals in university research and instructional activities and monitors university animal facilities to ensure compliance with standards and regulatory requirements. The Ohio State University Animal Care and Use Program complies with the statutes of the Animal Welfare Act and guidelines of the Public Health Service and is accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC).

- The Institutional Biosafety Committee (IBC) oversees research involving recombinant DNA molecules, in accordance with the *NIH Guidelines for Research Involving Recombinant DNA Molecules*, and reviews and approves research conducted with microorganisms pathogenic to humans, plants, or animals.

- The primary responsibility of the Institutional Review Boards (IRBs) is to protect the rights and welfare of human research subjects in accordance with Department of Health and Human Services and Food and Drug Administration regulations. All university research activities involving human subjects must be reviewed and approved by an IRB unless ORRP staff determine that the research falls into a federally exempt category. The Ohio State University Human Research Protection Program (HRPP) is accredited by the Association for the Accreditation of Human Research Protection Programs, Inc. (AAHRPP).

ORRP Mission

The ORRP staff are committed to:

- Assist Ohio State faculty, staff, and students requiring research reviews and provide collaborative consultation on flexibility within the regulations

- Support the Institutional Review Boards in applying consistent and transparent processes

- Ensure compliance with regulatory and sponsor requirements while minimizing administrative burdens

- Foster and provide education on the responsible conduct of research

- Lead university efforts in securing and maintaining accreditation for the human subject and animal research programs

Strategic Scan

Current and future effects of the internal and external environments on the success of the Office of Responsible Research Practices are summarized below.

Internal and External Environments

As in past periods, there are numerous factors affecting delivery of ORRP services to the research community. Many of these issues are the result of, or proposed as a partial solution for, increased competition for research funding. Other influences are a reflection of changes in the regulatory environment. Growth and shifts in research emphasis (perhaps also as a result of funding opportunities) also have effects on the efficiency with which support services can be provided to university researchers.

The following internal and external factors will continue to significantly influence the demand for research review and its support services in the next several years:

1. Increased competition for research funding, which is exerting even greater pressure on the Office of Research and Office of Responsible Research Practices to ensure the efficiency and reduce the burden of IRB, IACUC, and IBC review. At this time, only the IACUC and IBC submission processes are fully electronic.

2. The explosion of requests for cooperative review and other arrangements (e.g., MOUs) necessary to promote research collaborations between academic institutions and industry partners also stress the current system for supporting research review. Global partnerships are particularly challenging and labor-intensive to develop and support. Continued faculty interest in collaborating in human subjects research with the Columbus VA also presents additional operational challenges and new requirements to comply with VA regulations.

3. Changes in research priorities, including new biotechnologies, community engaged projects, and stem cell research, which will require additional educational, review, and oversight resources.

4. Increased emphasis on commercialization of Ohio State technologies, data, and specimens, requiring careful attention to regulations and state laws, as well as the ethical circumstances under which these materials were originally developed and obtained

5. Unknown regulatory changes that may result from the Department of Health and Human Services 2011 *Advance Notice of Proposed Rulemaking*, thus inhibiting significant changes in HRPP policies and processes, including consideration of possible innovative service delivery models.

6. Potential philosophical and/or operational changes in university and research compliance that may be introduced by the new Office of University Compliance and Integrity and the Chief Compliance Officer.

7. Increasing frequency of external audits (e.g., FDA, USDA) and new conflict of interest and training requirements for federally funded research, making it is difficult to balance resources between ensuring compliance and providing service.

8. Difficulties in retaining qualified members for review committees (both IACUC and IRB), particularly non-affiliates and expedited IRB reviewers, which have resulted in regulatory citations and delays in initiating research.

9. Maintaining AAALAC and AAHRPP accreditation of the university animal and human research programs and ensuring compliance, which is challenging in such an environment. Both accrediting groups have requirements for quality improvement programs and post-approval monitoring that require sophisticated resources that are difficult to maintain under current workloads.

Strategic Focus Areas

Efficient delivery of services and development and implementation of electronic tools for the entire research community remain the top priorities. Support of research collaborations through streamlined review processes is another of the unit's primary goals. AAALAC and AAHRPP accreditation of the animal and human research programs are also significant university distinctions that must be maintained.

The following strategies for succeeding in the primary focus areas identified above address the major demands for research review and its support services in the next several years:

1. Complete the development, implementation, and full utilization of e-Protocol systems for IRB, IACUC, and IBC protocols. Information technology resources are needed for development of the electronic IRB submission system (e-IRB) and maintenance of the e-IRB, e-IACUC, and e-IBC modules.

    a. Develop smart-form online application(s) and workflow for IRB protocols
    b. Phase out current IRB document upload submission process
    c. Convert IRB paper review process to electronic review
    d. Operationalize remaining functional requirements for e-IACUC and e-IBC systems (e.g., meeting minutes, agendas, view differences)

2. Increase the quality, efficiency, and capacity of the research review committees. Additional ORRP staff resources are needed to perform and/or support the expedited IRB review process.

    a. Re-evaluate the IRBs' convened review workload/capacity
        i. Evaluate board composition
        ii. Redistribute workload and/or subdivide existing boards
    b. Develop new mechanisms for expedited IRB review
        i. Expand ORRP staff role as expedited reviewers
        ii. Recruit and train additional expedited IRB reviewers and/or subdivide existing boards
    c. Recruit and train additional IACUC and IRB non-affiliated members
    d. Develop internships and consider appointment of student board members

3. Develop tools to facilitate initiation and tracking of cooperative review agreements (e.g., MOUs, individual investigator agreements, and reciprocity and/or reliance agreements). Information technology resources are needed for tool/system development and ORRP staff resources are needed for consultation, initiation, and maintenance of the agreements.

    a. Operationalize Ohio CTSA Agreement
        i. Consider addenda for non-CTSA Ohio institutional partnerships
        ii. Phase out existing agreements between Ohio State and Ohio CTSA institutions
    b. Perform a comprehensive review of existing agreements; migrate to new system
    c. Evaluate existing partnerships to develop standing reciprocity and/or reliance agreements (e.g., Honda, Wright State)
    d. Pursue central IRB review for NCI-sponsored research
    e. Collaborate with the Office of Sponsored Programs to develop a process to verify committee approvals

4. Maintain AAALAC and AAHRPP accreditation, including satisfying new requirements and providing support for ongoing quality improvement programs. No additional resources are needed.

    a. Expand IACUC post-approval monitoring program
    b. Expand IRB internal auditing program
    c. Further develop and publish IACUC and IRB review metrics
    d. Extend outreach and transparency efforts to faculty, particularly in the social and behavioral sciences

Tracking Our Performance

Metrics to track performance of the above include the following:

1. Development and implementation of e-IRB module; conversion to electronic IRB review; implementation of remaining functional requirements for e-IACUC and e-IBC modules

2. Reduction in IRB review timelines for convened and expedited review; increased non-affiliate membership and attendance at IRB and IACUC meetings

3. Reduction in timelines for processing cooperative review agreements; development of standing reciprocity and/or reliance agreements

4. Number of IACUC post-approval monitoring visits and internal IRB audits performed; number of educational sessions conducted

OFFICE OF RESEARCH
University Laboratory
Animal Resources

Strategic Plan

University Laboratory Animal Resources
The Ohio State University
2012-2017

University Laboratory Animal Resources (ULAR)

Strategic Vision

University Laboratory Animal Resources strives to become one of the top five American College of Laboratory Medicine (ACLAM) training programs in the country, reflecting a state of the art centralized animal care program.

Strategic Mission

Our primary mission is to provide a high-quality, cost-effective service to the animal researchers at OSU, and facilitate biomedical animal care and welfare. Strategic planning for ULAR is atypical of a department strategic plan since we are predominantly an earnings account.

Shared Values

ULAR accomplishes its mission by providing an efficient service to the research community in a cost-conscious environment. We look for ways to enhance animal care and welfare, and facilitate compliance with regulatory requirements as part of an overall team effort.

Strategic Scan

The External Environment

The current "Age of Enforcement" by the United States Department of Agriculture (USDA) as well as new guidelines from the National Institutes of Health (NIH) has placed an additional burden on the ULAR. Funding cuts looming to the NIH create a large unknown in the future needs of the per diem earnings account.

The Internal Environment

Internally, the ULAR earnings account has continued to provide a balanced budget in spite of minimal per diem increases over the last five years. This has been accomplished via critical analysis of our processes and identification of cost savings measures. In addition, external revenues sources via grants and service lease agreements have helped to supplement the revenue stream.

The component of ULAR which supports the overall animal care and use program has received a 25% budget cut over the last five years in spite of overall growth of about 30% during the same period. As a result, we have critically examined what areas we needed to focus efforts on and determine what items we could not continue to do. Based on this analysis, our priorities are to:

- Provide veterinary care and consultation to the biomedical research community
- Support the fiscal and human resources component of the ULAR
- Train the research community in animal care and use

Items which are still important but lesser priority include oversight of non-ULAR animal care locations, interactions with research personnel on a more informal basis to help ensure appropriate animal care and use, facility access review, and detailed review of processes and expenditures.

By focusing on our core mission, we are able to work towards our vision. Clearly, with the increased number of animals being cared for and the budget cuts over the last five years, we cannot continue to keep doing the same things and move forward.

1. Teaching and Learning: Provide an unsurpassed, learning experience led by engaged, world-class faculty and enhanced by a top quality student base.
2. Research and Innovation: Create quality animal facilities which will help to recruit and retain research faculty, thereby contributing to the advancement of fundamental knowledge and scholarship and to the solutions of the world's most pressing problems.
3. Outreach and Engagement: Participate in the national organizations related to animal care and use programs to enhance the reputation of Ohio State University and help set standards for the future.
4. Resources Stewardship: Continue to look for ways to cut costs while sustaining a high quality centralized animal care program via operational efficiency and effectiveness. We must remain flexible to accommodate the fluctuating needs of our user base especially since about 50% of the *per diem* revenue is generated by about 10 investigators. Loss of any of these faculty would have a significant impact on the ULAR operations/revenue base.

Succeeding in Our Strategic Focus Areas

1. Teaching and Learning
    a. Recruit top residency candidates to our ACLAM training program
    b. Provide didactic opportunities to the OSU professional veterinary and graduate students in the field of comparative medicine

2. Research and Innovation
    a. Design and promote development of a modern large animal facility with growth capacity for small animals to support the needs of the biomedical research community for the next 15 years

3. Outreach and Engagement
    a. Present research findings to the national community via peer reviewed journals and presentations at national meetings (e.g., AALAS and ACLAM Forum)

4. Resource Stewardship
    a. Decommission inefficient (old, small) animal facilities as needs allow
    b. Apply for NIH funds to support animal facility construction and renovation (C06 and G20 mechanisms)
    c. Focus on core mission rather than trying to do it all

d. Support personnel development through education and mentoring opportunities
e. Reward teamwork and positive interpersonal attitudes

Tracking Our Performance

Metrics

1. Balanced budget?
2. Number and quality of applicants to the ACLAM training program
3. Number of presentations/publications
4. Number of grant applications submitted and funded

OFFICE OF RESEARCH
Office of Research
Compliance

Strategic Plan

Office of Research Compliance
The Ohio State University
2012-2017

Office of Research Compliance (ORC)

Mission

The Office of Research compliance program serves The Ohio State University by coordinating institution-wide research compliance policy and procedure development, and by partnering with researchers to ensure that the university is compliant with the myriad of applicable federal and state research regulations. The Office of Research and its units, the Office of Research Compliance, the Office of Responsible Research Practices, University Laboratory Animal Resources, and the Office of Sponsored Programs, is responsible for managing and/or coordinating the following research compliance areas:

- Care and Use of Research Animals
- Export Controls
- Financial Conflicts of Interest
- Financial Management of Research Funding
- Institutional Biosafety
- Research Misconduct
- Use of Human Subjects in Research

In addition to managing the above programmatic compliance areas, the Office of Research partners with compliance and risk management units across campus for cross-cutting compliance concerns, including the College of Medicine and the Wexner Medical Center (HIPAA privacy, research billing, and FDA and DEA compliance); Environmental Health and Safety (institutional biosafety, biosecurity, chemical security, research diving safety, and use of radioactive materials); the Office of the CIO (research data and IT security); International Affairs (export control and international research); Human Resources (research immigration/employee documentation issues); Student Life (student research issues); and the Office of Technology Commercialization and Knowledge Transfer (research commercialization).

Strategic Scan

External Environment

1. Unknown impact of the Department of Health and Human Services 2011 Advanced Notice of Proposed Rulemaking for new human research protection program rules

2. New Public Health Service (PHS) financial conflict of interest (FCOI) regulations

3. Proposed changes, as part of the federal export control reform initiative, to the various categories of the U.S. Munitions List along with other Department of Commerce export rules

4. Growing federal sponsor agency expectations concerning the monitoring of Ohio State University sponsored project subrecipients;

5. New focus by the National Institutes for Health (NIH) Office of Inspector General (OIG) on the regulation and management of potential institutional conflicts of interest (ICOI)

6. Unknown impact of the October Senate Finance Committee investigation report detailing industry role in "drafting, editing and shaping" medical journal articles on the PHS FCOI rules and the new Centers for Medicare and Medicaid Services (CMS) Physician Payment Sunshine Act

Internal Environment

1. Increased emphasis on commercializing Ohio State University technology, data and biospecimens as a university revenue source, as well as creating faculty and staff owned start-up companies to commercialize university technologies

2. Increasing international academic affiliations and faculty research activities resulting from the University's globalization efforts, including academic and research activities resulting from the expansion of the OSU International Gateways

3. New priority on device and drug development by the Health Science colleges and the Comprehensive Cancer Center, including drug development activities focused at International Gateways in China and India

4. Expansion of personal healthcare efforts by the College of Medicine and the Comprehensive Cancer Center

5. Creation of a new, University-wide Compliance Office and a new reporting line from the Office of Research Compliance to the Vice President for Compliance

Strategic Focus Areas

In response to the internal and external environments described above, the Office of Research Compliance is focusing on the following strategic goals.

1. Working closely with the faculty Conflict of Interest Advisory Committee, the Offices of Sponsored Programs and Responsible Research Practices, the Colleges of Medicine, Veterinary Medicine, Nursing, Pharmacy, Dentistry and Optometry and the Office of Technology Commercialization to better identify and manage potential personal FCOIs and ICOIs, including those associated with the university's commercialization activities, as well as create a new Health Science conflict of interest in clinical care policy

2. Partnering with the university's new Office of Compliance to develop a new institution-wide conflict FCOI reporting and management process, which will help centralize and streamline the multiple current COI reporting and management processes

3. Developing additional regulatory expertise in drug and device development, including the regulatory requirements of the current OSU gateways, China and India, with the Office of Responsible Research Practices

4. Expanding the export control compliance program in response to the institution's exponentially expanding international academic and research programs, including a proposal to hire embedded export control officers in the Colleges of Engineering and Arts and Sciences to create and manage technology control plans

5. Working with the Offices of Academic Affairs, Compliance, and Sponsored Programs to develop an improved, more timely effort certification process

6. Developing an expanded subrecipient monitoring program with the Office of Sponsored Programs

OFFICE OF RESEARCH
Information Systems

Strategic Plan

Information Systems
The Ohio State University
2012-2017

Office of Research Information Systems (ORIS)

Goal: Provide Timely and Flexible Application and Systems Solutions

ORIS will work to efficiently provide flexible application and systems solutions that support the research administration process at OSU. To do this, we will focus on improvements in three areas:

- Advancing our adoption of modern tools and technologies
- Developing new customer-facing services to meet changing needs
- Better managing our own internal business processes

Technology and Tools

1. Responsive/Adaptive Interface Design
    a. Proactively design application and reporting interfaces that can serve mobile, desktop, and touch devices

2. Web Service Integration
    a. Eliminate data redundancy while providing real-time or near real-time access to data
    b. Minimize complexity of existing OR systems to streamline data dependencies
    c. Enable open standards-based data sharing with other campus services

3. Virtualized Server Infrastructure
    a. Pilot/test new software/systems quickly and without significant risk/investment
    b. Create true-failover capability for critical enterprise systems
    c. Ease management of server infrastructure

4. Standards-based and Sustainable Technologies
    a. Adopt Open Source and commercially-proven systems and technology
    b. Reduce reliance on proprietary closed-source vendor solutions

Customer Services

1. Self-Serve Reporting
    a. Develop 24/7 self-serve reporting engine for research data
    b. Reduce time delay and dependence on IT staff for canned/one-off reports

2. Information Portal
    a. Create portal to serve as a single-entry point to all OR systems and services
    b. Enable users (PI, admin, staff, etc.) to define content relevant to them

3. Online Helpdesk
    a. Enable online submission of help-desk requests
    b. Publish self-help information
    c. Display real-time system status and outage notices

4. Web Content Management
    a. Provide direct customer management of web content without direct IT involvement
    b. Adapt to evolving web and OSU design standards through the use of the template-driven sites

Managed Processes

1. System and Application Deployment and Maintenance
    a. Adopt change management and version control practices for systems and software
    b. Formalize system and application documentation standards
    c. Improve cross-training on critical systems

2. Service Desk Intake and Follow-through
    a. Establish a single request intake and routing process
    b. Automate ticket tracking to eliminate lost/stale requests
    c. Develop tools to support the help desk staff to Improve service request turnaround

Goal: Create Efficiencies by Partnering with University (Enterprise) Level Resources

ORIS will continue to seek partnerships with OCIO and other enterprise-level entities to deliver services that are beyond our traditional scope or resources. We will also participate in enterprise offerings that can improve our own operations, such as security management, colocation, and hosted services.

Service Benefits

1. Document Management
    a. Reduce physical storage requirements
    b. Improve document routing and information discovery
    c. Provide real-time access to relevant documents within user applications (protocols, invoices, and other relevant records)

2. Unified Communications
    a. Increase reliability of email and scheduling systems
    b. Provide campus-wide resource and event scheduling
    c. Lessen dependency on OR systems resources

3. Cloud Storage
    a. Improve on and off-campus collaboration
    b. Increase productivity with mobile and tablet devices
    c. Reduce insecure data sharing practices

4. Data Warehouse (see Web Service Integration above)

    a. Eliminate data redundancy while providing real-time or near real-time access to data
    b. Reduce complexity of existing data-dependent OR systems

Operational Benefits

1. Risk/Security Management
    a. Improve security through enterprise-level security scans
    b. Identify problems through centralized log monitoring and auditing

2. Co-location/Hosted services
    a. Take advantage of existing enterprise-level system management expertise
    b. Improve disaster recovery and business continuity
    c. Leverage resources as One University

GOAL: Develop an Engaged, Forward-thinking, Professional Staff

ORIS will continue to improve internal communications and collaboration. To be successful in our goals, we must embrace change and constantly work to identify "what comes next." We will build this culture into our projects and our evaluation process, rewarding those who push beyond simply maintaining the status quo.

1. Professional Development
    a. Increase participation in university-wide initiatives
    b. Identify development opportunities relevant to the ORIS goals
    c. Establish team-based performance goals

2. Performance Evaluation
    a. Shift evaluation focus to be goal-based
    b. Recognize and reward new ideas and approaches