

#### Criterion 4: Acquisition, Discovery, and Application of Knowledge

***The organization promotes a life of learning for its faculty, administration, staff, and students by fostering and supporting inquiry, creativity, practice, and social responsibility in ways consistent with its mission.***

IUPUI's [Principles of Undergraduate Learning](#) (PULs) articulate the faculty's shared vision of what it means to be an educated person and, specifically, a graduate of IUPUI. These broad abilities, skills, and dispositions prepare students to meet the challenges of a globalizing society; to work, create, and contribute to organizations and communities; and to continue learning throughout their lifetimes. The same values embodied by the PULs inform our approach to graduate and professional education, expressed in the Principles of Graduate and Professional Learning (PGLs), and the work of our faculty in research, scholarship, and creative activity. We place particular emphasis on collaborative and applied research and learning that span disciplinary and organizational boundaries and engage the institution in a wide range of community partnerships. Research focused on application to community needs, especially those of urban communities at IUPUI and regional communities at IUPUC, comprises a major focus. Students, both undergraduate and graduate, are central to these efforts.

***4a. The organization demonstrates, through the actions of its board, administrators, students, faculty, and staff, that it values a life of learning.***

As a vibrant urban and health sciences research university, IUPUI advances teaching and learning, research, scholarship, and creative activity, and civic engagement that address key needs and support economic development at the local, statewide, national, and global levels. Fulfilling our mission in a rapidly changing world requires students, faculty, and staff alike to cultivate abilities and attitudes that promote lifelong learning for both individuals and the organization. Accordingly, policies, practices, and resource allocation in all areas of institutional work support continuous learning.

- For students, the PULs and PGLs lay the foundation for ongoing intellectual inquiry, discovery, and application. The PULs and PGLs were addressed in Chapter Three and will be discussed in greater detail under Core Component 4b.
- For faculty and staff, the organization provides opportunities for ongoing professional development through Human Resources Administration, the Center for Teaching and Learning, the Center for Service and Learning, the Office of the Vice Chancellor for Research, the Office of Academic Affairs, and many other units.
- Research initiatives like the Signature Centers and Translating Research into Practice promote inquiry and discovery that cut across traditional disciplines and encourage faculty to apply their expertise to urgent societal problems and issues that directly affect the quality of life.
- In concert with Ivy Tech Community College and local and regional partners, IUPUC has undertaken a number of strategic initiatives to carry out its mission and strategic commitments to “university-based education of citizens,” to “meet[ing] the global work force needs of regional industry with the right programs at the right times,” and to “serv[ing] cultural, intellectual and economic development in the region through collaboration and innovation.”

## Policies and Infrastructure for Acquisition, Discovery, and Application of Knowledge

**Support for freedom of inquiry:** Creating new knowledge that can be applied to society's needs and educating our students to meet their full potential require freedom of inquiry. IUPUI and IUPUC subscribe to and honor [university-wide policies that mandate freedom of inquiry for faculty, staff, and students](#), as set forth in *The IU Academic Handbook*. The *Handbook* specifies that "the central functions of an academic community are learning, teaching, and scholarship. Academic freedom, accompanied by responsibility, attaches to all aspects of a teacher's and librarian's professional conduct. The teacher and librarian shall have full freedom of investigation." Similarly, the Preamble to [The IU Student Code of Rights, Responsibilities, and Conduct](#) assures freedom of inquiry for students: "the purposes of Indiana University include the advancement of knowledge, the pursuit of truth, the development of students, and the promotion of the general well-being of society."

**Infrastructure for Knowledge Acquisition, Discovery, and Application:** Developing an effective organizational infrastructure to support the acquisition, discovery, and application of knowledge and, specifically, IUPUI's planning theme of research, scholarship, and creative activity has been an IUPUI priority over the past decade. This period has seen substantial organizational change at both the university-wide and campus levels. Until 2007, the Office of the Vice Chancellor for Research (OVCR) was responsible for research administration, compliance, and development at the campus level. That year, IU consolidated oversight for submission of grant proposals and the execution and administration of awards, as well as regulatory compliance, in the IU Office for Research Administration (ORA), located in Bloomington and Indianapolis, and headed by the IU Associate Vice President for Research Administration, who reports to the IU Vice President for Research and operates independently of the OVCR. In addition, following an analysis of the roles of university units that deal with sponsored funds, IU adopted [an institutional oversight model](#) for Proposal Development & Project Management and for Industry-Sponsored Clinical Trial Contracts. The model establishes lines of authority for financial transactions on sponsored accounts.

At the campus level, IUPUI has sustained and broadened an already robust organizational infrastructure for inquiry and discovery. The OVCR now offers an array of services to support IUPUI faculty and student research, scholarship, and creative activity. These services include substantially expanded internal funding opportunities, extensive professional development support to assist faculty in establishing research programs and developing successful proposals for external funding, and help with submissions for limited submission and interdisciplinary proposals. The Solution Center, a unit of OVCR, serves to connect faculty researchers with community members and organizations in need of specific expertise. Another OVCR unit, the Center for Research and Learning (CRL), provides a wide range of funded opportunities for undergraduate students to engage, with faculty mentors, in innovative research, scholarship, and creative activity. Schools and departments offer numerous research opportunities to undergraduates as well. By involving students in research at the undergraduate level, these programs set the stage for lifelong active learning, scholarship, and professional development. These programs are described in greater detail under Core Component 4c.

The Center for Teaching and Learning (CTL) offers comprehensive professional development opportunities for faculty seeking to enhance their expertise in teaching and learning, to engage in evidence-based teaching and learning practices, and to carry out related scholarship and grant proposal development. These opportunities are discussed in Chapter 3.

The infrastructure for knowledge acquisition and discovery extends to individual schools, which have each appointed an Associate Dean for Research. These Associate Deans comprise the Council of Associate Deans for Research, which advises the Vice Chancellor for Research on issues that affect faculty research efforts; in turn, the Vice Chancellor keeps the Associate Deans informed about current RFPs from state, federal, and private agencies and about campus-wide issues and initiatives related to the university's vision and mission in research, scholarship, and creative activity.

IUPUI faculty also provide input to the OVCR through the Research Affairs Committee, a standing committee of the IUPUI Faculty Council. Members of the committee are drawn from a range of schools across the campus and represent faculty interests in research, scholarship, and creative activity. The committee's responsibilities include periodic review of research policies and procedures, development of proposed revisions when needed, and interpretation of policies and procedures when specific questions arise. The committee communicates with the IUPUI administration through the IUPUI Vice Chancellor for Research (Appendix 4a,d—Handbook Supplement).

### Planning for Acquisition, Discovery, and Application of Knowledge

**Doubling Task Force:** For research, scholarship, and creative activity, Chancellor Bantz's Doubling Goals set an external funding target of \$430 million by the year 2010. To achieve this goal, the Task Force for Doubling Research recommended:

- Providing internal support to both new and established investigators, including seed money for new research efforts
- Promoting research collaboration among IUPUI units and with IU-Bloomington and Purdue University-West Lafayette
- Expanding research facilities
- Enhancing the diversity of IUPUI researchers and engaging in research that supports cross-cultural understanding and solutions appropriate for diverse communities
- Increasing the numbers of undergraduate and graduate students participating in research.

The task force also identified seven key research areas that might serve as focuses for new initiatives and cross-disciplinary collaboration: 1) basic life science; 2) applied life science; 3) informatics and technology; 4) physical and environmental science; 5) public policy and applied social research; 6) community arts and humanities; and 7) the scholarship of teaching and learning.

This ambitious planning effort set in motion major improvements to IUPUI's physical and organizational research infrastructure. Several of these improvements are discussed below.

**Academic Plan:** As discussed in Chapter 2, upon joining IUPUI in 2006, Executive Vice Chancellor Sukhatme initiated a new strategic academic planning effort aligned with the campus's established goals in each of the planning theme areas. In the area of research, scholarship, and creative activity, the Academic Plan aims to sustain and expand the campus research enterprise by capitalizing on established strengths, supporting faculty efforts to pursue external funding, and enhancing undergraduate student involvement in research. It identifies multidisciplinary research collaborations as a special strength that the campus should seek to build on, especially in areas relevant to its health and life sciences mission. The Signature Centers Initiative, discussed below, comprises the plan's key strategy for expanding these collaborations.

## Support for Acquisition, Discovery, and Application of Knowledge

**Support for faculty research:** IUPUI demonstrates its commitment to the acquisition, discovery, and application of knowledge through substantial resource allocations to units that directly support faculty research, including the OVCR, the Center for Research and Learning (CRL), and the Indiana University Research and Technology Corporation (IURTC). In addition to providing ongoing financial support to each of these units, the institution has made considerable investments in recent years in expanding opportunities and incentives for faculty and students to engage in innovative research, scholarship, and creative activity. A major effort emerging from the IUPUI Academic Plan is the Signature Centers Initiative, administered by the OVCR and funded by the Office of Academic Affairs in partnership with the schools. Inaugurated in 2006-2007, the initiative provides competitive internal seed funding to distinctive, predominantly interdisciplinary, research units that demonstrate potential to make unique contributions to knowledge and to attract significant external funding. In addition to becoming self-sustaining after three years of internal support, funded centers are encouraged to take advantage of the university's Indianapolis location and to establish partnerships with local community and cultural organizations—that is, to enhance the institution's civic engagement as well as its research enterprise. Centers that fulfill these criteria may earn a permanent "Signature Center" designation.

To date, the university has invested almost \$11 million in the Signature Centers Initiative, funding 38 potential centers. In turn, proposals submitted by funded centers have been awarded more than \$136 million in external funds. Eight of the funded units earned the permanent "IUPUI Signature Center" designation in [2010](#) and [2011](#), following the initial three years of internal funding. These IUPUI Signature Centers are creating cutting-edge knowledge in such multidisciplinary fields as personalized medicine, cross-cultural health issues, automotive safety, stem cell therapy, religion and culture, mental health, water quality, and service learning. Signature Centers will be periodically reviewed to ensure that they are continuing to fulfill useful purposes.

In addition to the Signature Centers Initiative, an array of other campus-wide programs offers faculty members opportunities for internal funding to support the creation and application of new knowledge. Most of these programs are based in the OVCR, which allocates about \$1.5 million each year to internal grant funding. For example, the Research Support Funds Grant (RSFG) program provides seed funds or release time for promising new research ventures, particularly research that involves collaboration among campus units; support for new faculty just beginning to establish their research agendas; and "bridge" funding for senior faculty members between external grants. To date, 62 percent of 181 awardees have secured external funding within two years of receiving their RSFG awards, testimony to the success of the program. Particularly noteworthy are achievements in the category of "New Investigators" as shown below.

	2005	2006	2007	2008	2009	2010	2011
New Investigators	23	18	18	18	18	20	18
Ext Funding within 2 yr	16	11	14	9	8	8	NA

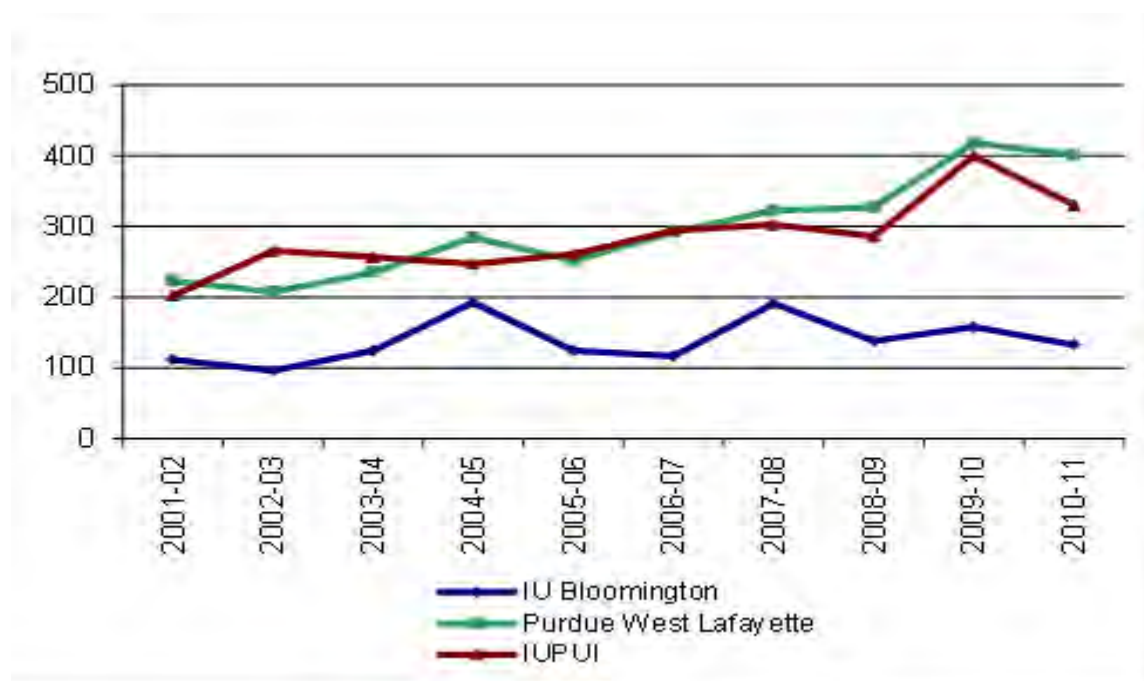
Two programs, EMPOWER (Enhanced Mentoring Program with Opportunities for Ways to Excel in Research) and DRIVE (Developing Diverse Researchers with InVestigative Expertise), aim to enhance diversity among IUPUI researchers and to support the success of underrepresented faculty members. Among other [research opportunities offered by the OVCR](#), the FORCES (Funding Opportunities for Research Commercialization and Economic Success) Program helps IUPUI researchers transform research findings into commercially viable inventions, technology, or other intellectual property. IUPUC

faculty are eligible to apply for these OVCR programs; in addition, in 2010, IUPUC established a fund to support IUPUC faculty research efforts.

**Support for student research:** IUPUI offers abundant opportunities for both undergraduate and graduate students to participate in research with faculty mentors. As part of the RISE Initiative, the current Academic Plan calls on the institution to expand opportunities for undergraduate research, a proven means of enhancing student engagement, learning and success. Undergraduate research programs are discussed in detail under Core Component 4c.

#### Achievements in Research and Creative Activity

**Growth in external funding:** In keeping with its mission as Indiana's urban health and life sciences university, IUPUI has devoted substantial effort to expanding its research enterprise over the past ten years. The dramatic increase in external funding over this period—despite consecutive years of flat funding by major federal funding agencies—is one indicator of the effectiveness of these efforts. In 2009-2010, the campus came close to reaching its goal of doubling sponsored funding by 2010, garnering \$400.3 million in external support.



Federal government agencies provided more than half of these funds:

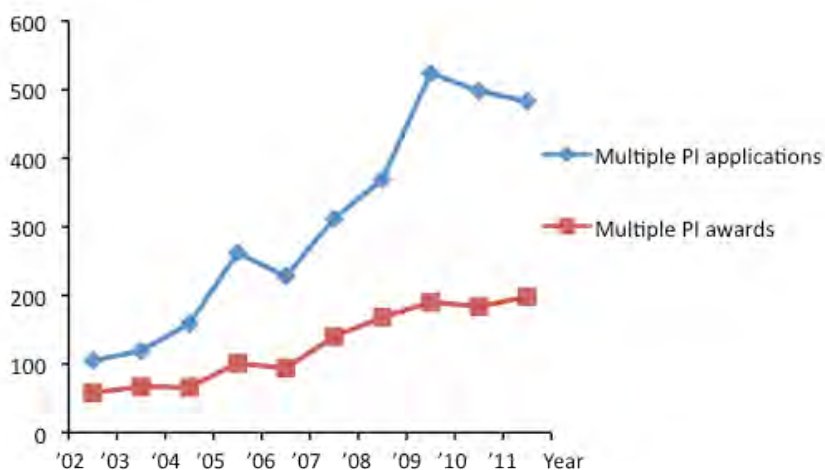
#### IUPUI and IUPUC

Fiscal Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011
Federal Government	147,679,516	136,433,144	178,316,721	158,627,246	202,920,663	189,004,081
State, Local, and Other Government	19,236,108	28,669,866	14,514,301	18,332,663	29,962,874	11,448,279
Foundations	12,513,744	50,254,523	19,625,321	18,856,241	80,874,810	39,927,947

Industrial and Commercial	38,787,869	38,883,964	49,376,115	50,531,121	42,638,412	46,620,840
Non-Profit and Higher Education	42,878,333	40,249,718	40,976,896	39,885,911	43,946,436	43,678,647
<b>Total Income</b>	<b>261,095,570</b>	<b>294,491,215</b>	<b>302,809,354</b>	<b>286,233,182</b>	<b>400,343,195</b>	<b>330,679,794</b>

The health science schools—Medicine, Dentistry, Health and Rehabilitation Sciences, and Nursing—accounted for 89 percent of external grant funding in 2010-2011, but other schools, including Business, Engineering and Technology, Informatics, Liberal Arts, and Science also won grants for health-related research. And while the School of Medicine has contributed the bulk of the increased sponsored funding, other schools have achieved notable successes in enhancing external support for research as well.

Consistent with IUPUI's emphasis on multidisciplinary collaboration, the number of applications and awards that include two or more principal investigators has also grown significantly. Targeted efforts like the Signature Centers Initiative to promote and support such collaborative research are largely responsible for this trend.



The impact of sponsored research extends beyond the discovery of new knowledge. External funds invigorate the local and

regional economies through direct spending and job creation. Funded research also enables undergraduate and graduate students to participate in the process of discovery, supporting the campus's efforts to prepare students for a lifetime of learning as researchers, innovators, or practitioners.

**Research centers and institutes:** The new Signature Centers join more than [100 established IUPUI research centers and institutes](#), many of them focused on collaborative multidisciplinary research with direct application to the needs of communities, especially urban communities. [See the sidebar for examples of several of our major centers.](#)

Sidebar: The **Indiana University Melvin and Bren Simon Cancer Center** is a patient care, research, and educational organization within the Indiana University School of Medicine that aims at advancing the understanding, prevention and treatment of cancer throughout Indiana and the world. Established in 1992 as the IU Cancer Center, it has been a National Cancer Institute (NCI)-designated Cancer Center since 1999 and is the only center with such distinction in Indiana that provides patient care. It changed its name in 2006 to reflect the philanthropic support of the Melvin and Bren Simon family, who agreed to donate \$50 millions to cancer research. More than 200 investigators, primarily faculty of the IU School of Medicine, but also representatives from the schools of nursing, dentistry and science, conduct research in the areas of experimental and development

therapeutics, breast cancer, cancer control, as well as hematopoiesis, microenvironment, and immunology. The center's work in breast cancer was recognized in 2004 by the Department of Defense with the award of a \$10 million grant establishing the IU Center of Excellence for Individualization of Therapy for Breast Cancer. The Vera Bradley Foundation for Breast Cancer has raised more than \$12 million and has pledged an additional \$10 million endowment since its inception in 1998 to support the Simon Cancer Center. The Susan G. Komen for the Cure Research Grants and Awards Program presented \$1 million in both 2008 and 2009 to the IU Simon Cancer Center to expand its tissue bank, which is the nation's first and only healthy breast tissue bank.

Sidebar: The **Urban Center for the Advancement of STEM Education (UCASE)** is a joint effort among the School of Science, School of Education, and School of Engineering and Technology at IUPUI. Through a combination of program development, science, technology, engineering, and mathematics (STEM) education research, and graduate and undergraduate scholarships, UCASE fosters the goals of increasing the numbers of highly qualified K-12 STEM teachers, and expanding knowledge of teaching and learning. UCASE was founded in 2006 through IUPUI's Commitment to Excellence (CTE) Funds. To date the center has received close to \$5 million in NSF funding. It also administrates the Woodrow Wilson Indiana Teaching Fellowship, an initiative funded by a \$10 million grant from the Lilly Endowment that is shared by IUPUI and three other universities in Indiana.

Sidebar: Founded nearly 20 years ago with an initial grant from Lilly Endowment, the **Center on Philanthropy** is part of the School of Liberal Arts at IUPUI. The center's mission is to increase the understanding of philanthropy, to improve its practice, and to enhance participation in philanthropy. Research is at the core of all three. Through basic and applied research, the Center has built an international reputation for philanthropy and not-for-profit management research. Its credibility and methodological rigor set the standard for the field. In 2007 the center received a \$40 million grant from Lilly Endowment Inc. to help fund future operating costs.

Sidebar: The **Center for Urban Policy and the Environment (CUPE)** is devoted to supporting economic success for Indiana and a high quality of life for all Hoosiers. An applied research organization, CUPE was created by the IU School of Public and Environmental Affairs in 1992 with support by the Lilly Endowment. The Center works in partnership with community leaders, business and civic organizations, nonprofits, and government. CUPE's work is focused on urban policy, intergovernmental cooperation, community and economic development, housing, environmental issues, and fiscal affairs research essential to developing strategies to strengthen Indiana's economy and quality of life.

**Impact through translational research and innovation:** IUPUI claims a distinctive history of interdisciplinary, practice-based education and research that bring direct benefits to society. Chancellor Bantz established the TRIP (Translating Research into Practice) Initiative in 2007 in order to build more intentionally on that history. The TRIP Initiative seeks to foster the transformation of knowledge generated from scientific inquiry and humanistic scholarship into practices and solutions that improve the quality of life, benefit industry, and contribute to economic growth through advances in healthcare, education, sustainability, technology, and public policy, among other areas.

The TRIP Initiative has helped to highlight translational scholarship at IUPUI and to attract external funding for translational research focused on the health and life sciences. It has added impetus to the work of the Indiana Clinical and Translational Sciences Institute (CTSI), a collaboration among Indiana University, Purdue University, the University of Notre Dame, and public and private partners begun in 2008. Headquartered on the IUPUI campus at the School of Medicine, the CTSI supports the translation of discoveries in the laboratory into clinical trials and new patient treatments to improve the health of people in Indiana and beyond. Major initiatives of the institute support innovative pilot research, accelerate children's health research, train new translational researchers versed in new technologies, build organizational and technological infrastructure for translational research, and work with community partners across the state to improve research, health, and healthcare. With initial funding of \$25 million from NIH augmented by an additional \$60 million from the state, the member universities,

and other partners, the CTSI at IUPUI also supports mentored research and professional development programs for both undergraduates and high school students interested in pursuing translational biomedical research careers.

Among other accomplishments, in Spring 2012, the CTSI launched its [M.S. program in Clinical Investigation and Translational Education](#). This new interdisciplinary program trains scientists, engineers, and clinicians in translational research methodologies and is designed for participants who already have or are in training for a terminal degree in a healthcare field (e.g., M.D., D.N.S., D.D.S., D.V.M.).

A major infusion of TRIP funding came from a 2009 Lilly Endowment grant of \$60 million to the School of Medicine to support the Indiana Physician Scientist Initiative. This initiative promotes the development of important scientific discoveries in the laboratory, determines how those discoveries could improve human health, and then helps to translate the discoveries into products and treatments that benefit patients and generate new businesses and jobs. The award is enabling the medical school to strengthen its infrastructure for translational health research by building a cadre of physician scientists—medical doctors with expertise in a scientific research field—and supporting a number of other important educational and research efforts.

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Sidebar: IU-related intellectual property, trademarks, and business development are managed by the IU Research and Technology Corporation (IURTC). With a mission to support technology-based economic development state- and nationwide, create new Indiana companies, and promote entrepreneurial development, the IURTC assists IU researchers in realizing the commercial potential of their discoveries and partners with companies in technology, the life sciences, and manufacturing to bring IU research to the market. In 2003, the IURTC established the IU Emerging Technologies Center (IUETC), a business incubator located in Indianapolis close to the IUPUI campus and focused on establishing new life and health sciences companies. Both the IURTC and the IUETC have played key roles in increasing invention disclosures and patents filed by IUPUI researchers.

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IUPUI's emphasis on research that directly benefits communities means providing researchers with encouragement and assistance in commercializing discoveries. Commercialization of research findings has the potential to benefit the local community, the state, and the nation, as well as the university, through technological innovation and economic development. With help from the IU Research and Technology Corporation (IURTC) and the IU Emerging Technologies Center (IUETC), IUPUI researchers have significantly increased invention disclosures and patents filed over the past decade, as shown in the table below. (The decrease in new licenses is probably a result of the poor economy.)

School	Disclosures		New Licenses		Patents Filed (US & Foreign)		Patent Issued (US & Foreign)	
	2002	2011	2002	2011	2002	2011	2002	2011
Medicine	48	92	12	19	68	113	30	12
All other academic units	14	42	25	8	10	45	2	1
<b>IUPUI Total</b>	<b>62</b>	<b>134</b>	<b>37</b>	<b>27</b>	<b>78</b>	<b>158</b>	<b>32</b>	<b>13</b>



Since 2002, technologies developed at IUPUI have generated 29 start-up companies.

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Sidebar: ANGEL Learning and the ANGEL LMS evolved from research at IUPUI. Ali Jafari, Professor of Computer and Information Technology, and former student David Mills both from the School of Engineering and Technology thought the course management system they had developed together had commercial potential. In 2000, Professor Jafari began working with IURTC to create a for-profit start-up to market the educational and course management software. In May 2009, the company was bought for \$100 million by Blackboard Inc., headquartered in Washington, D.C. The sale of the company represents the largest commercial transaction linked to the sale of a university start-up company that IU has experienced. As a result, the university realized \$24 million for the sale, which will support more teaching and research activity.

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Sidebar: Founded in 2005, EndGenitor Technologies, Inc (EGT) combined the pioneering science of Dr. Mervin Yoder, MD and Dr. David Ingram, MD with the respective corporate and drug development experience of two pharma/biotechnology veterans. EGT is one of Indiana's first adult stem cell companies licensing the core intellectual property for ECFCs® from IURTC.

Sidebar: ImmuneWorks, a biotechnology firm founded in 2006 by Indiana University School of Medicine scientists, is developing a treatment for idiopathic pulmonary fibrosis (IPF), which kills more than 40,000 people each year and for primary graft dysfunction (PGD), which is a leading cause of morbidity and mortality following lung transplantation. ImmuneWorks first product, IW-001, was granted orphan drug status by the US Food and Drug Administration in 2009, and is now being tested in clinical trials.

Sidebar: CS-Keys, a company started by School of Medicine Professors Linda Malkas and Bob Hickey, was named Innovation of the Year at the 2008 Techpoint Mira Awards celebration. The company has translated the discovery of a new biomarker into a patented antibody that may help pathologists detect early cancers through a simple blood test.

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### Recognition and Dissemination of Discovery and Application of Knowledge

**Internal awards and recognition:** To demonstrate that the campus places a high value on the discovery and application of knowledge, IUPUI and IU have created a range of [appointments and annual awards](#) to recognize faculty and student achievements in research, scholarship, and creative activity, including the Chancellor's Professor and Distinguished Professor designations, and a variety of one-time awards and recognitions. The Center for Research and Learning annually honors outstanding undergraduate research and mentoring with several awards. IUPUC faculty members and students are included in and eligible for all IU-wide and IUPUI recognitions; IUPUC also confers its own faculty awards for research, scholarship, and creative activity. In addition, many IUPUI schools have created school-based recognitions for accomplishments in research, scholarship, and creative activity by students, staff and faculty.

**Celebrating and showcasing the discovery and application of knowledge:** In addition to conferring the individual awards discussed above, IUPUI and IU offer faculty, staff, and students a wide variety of venues for publicly showcasing their accomplishments, including an annual Research Day, undergraduate research symposia, public lectures, and feature articles in both print and digital publications. The university also holds an annual Prestigious External Award Recognition that celebrates these accomplishments, many of them honoring cutting-edge research discoveries and lifetime research achievements. All of these programs are open to IUPUC faculty and students; in addition, IUPUC faculty participate in monthly colloquia that highlight work in research, scholarship, and creative activity.

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Sidebar: During his recent mission to develop trade with China and Japan, Indiana Governor Mitch Daniels presented artwork from faculty and students of the Herron School of Art and Design to company executives and government officials. The pieces included a *Blue Skies and Crossroads* pottery vase, boxes made from reclaimed Indiana maple and cherry wood, and silk scarves.

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### Professional Development Opportunities

**Workshops and training opportunities:** IUPUI recognizes that carrying out our mission effectively requires meeting the needs of students, faculty, administrators, and staff alike for lifelong learning and ongoing personal and professional growth. Many IUPUI units thus offer professional development opportunities in various formats, including workshops, seminars, and individual consultations. These range from Center for Teaching and Learning programs that assist faculty in applying new knowledge about teaching and learning to their own classes and programs, to OVCR seminars on grantsmanship, to the Office of International Affairs' seminars and workshops on international research, service and teaching opportunities, to leadership development opportunities for current and future administrators offered by the Office of Faculty Appointments and Advancement. Human Resources Administration also provides [online and face-to-face workshops on management skills and other topics](#). Most of these programs are tailored to the needs of staff, especially managers, professional staff, and staff in administrative support roles.

Faculty and staff surveys show fairly high levels of satisfaction with the availability and quality of professional development opportunities, although there is room for improvement. Among faculty respondents, 58 percent say that they are satisfied or very satisfied with faculty development opportunities available from their school, while 66 percent are satisfied or very satisfied with opportunities available at the campus level. The latest staff survey, conducted in 2009, indicates that more than 60 percent of staff members are satisfied with the availability and quality of professional development opportunities, with professional staff members indicating significantly higher levels of satisfaction than clerical and custodial staff.

**Other development opportunities:** Tenured faculty members and senior lecturers at IUPUI and IUPUC are eligible to take paid leaves of absence to pursue research and creative activity. The number of faculty taking advantage of these opportunities has remained fairly constant over the past decade despite budget constraints, although at least four schools have not granted sabbatical leaves for the past eight years. Detailed statistics on sabbatical leaves are available in [Appendix X](#). In addition, all full-time IUPUI and IUPUC employees are entitled to fee remission for courses offered by IU; almost 10,000 faculty and staff (86 percent staff and 14 percent faculty) have taken advantage of this benefit since Fall 2005. The dollar value of this university subsidy between Fall 2005 and Spring 2011 was more than \$8.6 million. IUPUI and IUPUC's Staff Council also support professional development for non-academic staff through scholarships and other awards.

Finally, faculty and staff members in many of IUPUI's professional schools, including Dentistry, Law, Medicine, and Nursing take advantage of seminars, conferences, and online courses offered by their respective schools to earn required continuing education credits. Continuing education ensures that these professionals maintain up-to-date expertise on new knowledge, technologies, and issues in their fields.

***4b. The organization demonstrates that acquisition of a breadth of knowledge and skills and the exercise of intellectual inquiry are integral to its educational programs.***

Among higher education institutions and especially among research universities, IUPUI was an innovator and early adopter of an outcomes-focused approach to undergraduate general education like that advocated by the Association of American Colleges and Universities in its LEAP initiative. Our Principles of Undergraduate Learning define an understanding of all undergraduate education that values the abilities to acquire and apply knowledge that is both broad and deep, to synthesize and create knowledge, and to use knowledge responsibly to contribute to the well-being of local and global communities. Opportunities to cultivate these abilities are woven into the First-Year Seminar and all undergraduate courses and degree programs, culminating in the capstone experience required by most majors at IUPUI. As discussed in more detail below, co-curricular experiences provide additional opportunities for students to engage with the PULs. IUPUI's "principled" approach to general education was expanded in 2011 to our graduate programs, which have adopted a set of "Principles of Graduate and Professional Learning." Currently, a task force is developing recommendations for a 30-credit Common Core for all undergraduate degree programs; while discussion of a Common Core began in 2011, a new statewide transfer initiative has accelerated the pace of this work.

At both the undergraduate and graduate levels, IUPUI, including IUPUC, has a tradition of practice-based inquiry and learning, stemming from our early beginnings as a training center for teachers, and health and social work professionals. In keeping with this tradition, the RISE (research, international experience, service learning, and experiential learning) Initiative aims, among other goals, to support student mastery of the PULs by promoting the development of undergraduate scholarship and learning grounded in experience as well as theory and challenging students to re-think and re-examine ideas and assumptions. As Chapter 3 notes, active, collaborative, and experiential pedagogies have long been hallmarks of IUPUI's efforts to promote student engagement and success; RISE incorporates these learning experiences, which are recorded on students' transcripts, into the formal undergraduate curriculum. Similarly, graduate professional students are required to engage with their fields by "think[ing] critically and creatively to improve practice," as stated in the PGLs.

Development of the Principles of Undergraduate Learning

**Adoption of the PULs:** The IUPUI Faculty Council adopted the PULs in 1998, following seven years of extensive campus-wide discussion and a series of iterations. The PULs provide a statement of shared expectations for all undergraduate students, whatever their majors, and are intended to be taught and learned throughout the undergraduate experience at IUPUI. They include a set of core skills in communication, quantitative reasoning, and information literacy, as well as breadth and depth of knowledge, and higher order abilities in critical thinking, integration and application of knowledge, ethical reasoning, and understanding of the diversity of human cultures, societies, and perspectives. Emphasizing liberal learning, inquiry, and civic engagement across the curriculum, the PULs equip graduates with the skills and dispositions that characterize effective citizens, professionals, and leaders.

The PULs were revisited and updated versions were adopted by Faculty Council in 2005 and 2007.

**Early work on implementing the PULs:** When IUPUI's HLC accreditation was last reaffirmed in 2002, we reported that undergraduate academic programs were at various stages of implementing the PULs. An introduction to the PULs was included in IUPUI's First-Year Seminar, taken at the time by about 65 percent of incoming new freshmen. Most departments had begun intentionally incorporating the PULs

into their curricula, particularly into the capstone courses that serve as culminating experiences for the great majority of undergraduate degree programs at IUPUI. Assessment of the PULs was at an early stage. Some degree programs had begun assessing student achievement of the PULs and many more had plans for implementing such assessment. At the campus-wide level, PULs assessment was accomplished primarily through surveys of current students, recent graduates, and employers, and through various special studies and initiatives.

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Sidebar: The Center for Teaching and Learning (CTL) has created tip sheets on how to teach and assess each of the PULs and made them available as [downloadable resources](#) online (search “PUL” and “tip sheet”).

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**Current strategies for supporting student learning of the PULs:** Today’s IUPUI students encounter a substantially enriched array of opportunities both within and outside the formal curriculum for achieving the skills and developing the capacities defined by the PULs. The First-Year Seminar (FYS), now taken by more than 90 percent of entering new students, and the FYS Personal Development Plan (PDP) set the stage by introducing students to the PULs and asking them to incorporate into their plans opportunities, including RISE experiences, for learning to master each of these skills and abilities. Students are encouraged to consider the sequencing of and connections among their learning experiences—with the PULs as an overarching framework—so that from the outset they view their undergraduate education as an integrated whole, rather than as a series of discrete activities. The electronic version of the PDP, which enables students to construct the PDP as a unified web site within the IU ePortfolio environment, reinforces the concept of integrated planning and learning in undergraduate education. In addition, as Chapter 3 explains, First-Year Seminar sections are frequently taught as part of Themed Learning Communities or are linked to the introductory writing course, so that students can begin early to reflect on connections among courses and disciplines and between in- and out-of-class experiences and to advance their skills in analysis and synthesis.

Schools and departments have made substantial progress in more intentionally incorporating the PULs into courses and degree programs, as evidenced in the annual assessment reports that each school assembles and the annual campus-wide [IUPUI Assessment Report](#). Most undergraduate major programs have explicitly articulated the relationship between the PULs and discipline-specific outcomes in the form of curriculum maps or crosswalks. In several cases, program outcomes are stated as discipline-specific versions of the PULs. The School of Education’s six [Principles of Teacher Education](#) (PTEs), for example, parallel the six PULs and set forth, in the context of the discipline, the specific professional skills associated with each PTE. Thus, PTE 1, “Conceptual Understanding of Core Knowledge,” associated with PUL 1, “Core Communication Skills,” is defined as “the ability of teachers to communicate and solve problems while working with the central concepts, tools of inquiry, and structures of different principles. For secondary [education] students, this means developing rich expertise within their chosen discipline.” PTE 1 includes abilities to “improve learners’ communication and quantitative skills through meaningful learning engagements,” to “model effective communication and problem solving,” and to “use a variety of media and technology.” Student achievement of the PTEs and PULs is systematically assessed at each stage of the curriculum as students move through the Education program to ensure that each student is achieving the necessary skills. Students whose achievement repeatedly falls short may be advised to consider switching majors. At the same time, faculty can address any weaknesses in curriculum and pedagogy revealed by considering aggregated assessment outcomes.

Strategies to enable faculty to assess both disciplinary outcomes and PULs have been adopted by a number of other schools at IUPUI. In 2004, for example, the Kelley School of Business at IUPUI adopted four Principles of Undergraduate Business Learning (PBLs), based on the PULs and on input from Indiana employers and has mapped these outcomes to the PULs. Instructors in all undergraduate courses distribute both sets of outcomes to students, along with information about how they are addressed by the course. In a comprehensive evaluation of the school's assessment processes in 2010-2011, the Kelley faculty chose not to make changes to the PBLs. Similarly, the School of Engineering and Technology has mapped the ABET outcomes to the PULs and specified the relevant outcomes and assessment strategies for each individual course.

Most undergraduate major programs culminate in a capstone experience designed as an opportunity for students to integrate or apply their learning of the PULs and the key outcomes of the discipline. Capstone experiences frequently incorporate research, service learning, internships or other field experiences, and/or a project that calls on students to integrate and apply their learning of the PULs and the outcomes of the specific major. In the Department of Anthropology, for example, students begin the capstone experience during the fall semester of the senior year with a one-credit Senior Seminar. In this course, they develop and defend a proposal for a Senior Project, with guidance from the course instructor. For the project itself, conducted during the spring of the senior year, students choose an intensive research paper that uses an anthropological perspective to explore a central question, a senior thesis based on original anthropological data, or an applied/service learning project in which they carry out research for a community-based organization or agency. The last option, which involves an external mentor, as well as a faculty advisor, offers students an opportunity to learn about the role of applied anthropology undertaken collaboratively with a community organization or agency outside the university setting. The project requires proficiency in almost all of the PULs and is assessed specifically for PUL 3, Integration and Application of Knowledge.

In 2009, all IUPUI and IUPUC schools and departments that teach undergraduates identified one to three specific PULs most emphasized in each of the courses they offered. Students can thus work with their advisors to ensure multiple experiences with each PUL across an undergraduate career. In addition, these outcomes are assessed at the course level, using a variety of methods, in a five-year cycle. (These assessments may supplement other assessments of PULs and disciplinary outcomes conducted by programs, departments, and schools.) Outcomes for courses that primarily enroll seniors are aggregated across each school and campus-wide, so that relevant faculty and administrators are aware of the extent to which graduating students are gaining proficiency in each of the PULs and can plan warranted improvements in curricula and instruction. As is discussed in greater detail in Chapter 3, these assessments, in addition to others that the schools and departments conduct, indicate that most graduates are achieving expected levels of PUL proficiency; that is, that they can communicate, think critically and analytically, solve problems by synthesizing and applying knowledge, make informed and principled ethical choices, have the tools they need to continue learning over their lifetimes, and understand that society is made up of individuals from diverse cultures and backgrounds who bring varying perspectives to issues and events.

**IUPUC's general education initiative:** As noted above, IUPUC students are expected to demonstrate competence in the six PULs, which comprise a principal framework for assessing undergraduate learning in IUPUC programs. In addition to working with the PULs, IUPUC began a campus-level general education initiative, guided by the Association of American Colleges' 1994 "principles for effective general education programs," in 2010. The initiative aims to promote "questioning and complex problem-solving," and to ensure that all IUPUC graduates "demonstrate active cross-cultural inquiry,

research and advanced writing competencies, and an understanding of global and ethical issues they will face as members of contemporary society” (General Education at IUPUC: Conceptual Framework). To date, after extensive study and discussion, the IUPUC faculty has adopted 15 competencies, and associated assessment rubrics, that fall into three main categories: “Foundational Skills,” “Areas of Knowledge,” and “Modes of Inquiry,” with implementation of the initiative scheduled to begin in Fall 2012. (See Appendix X for detailed information on the conceptual framework, vision for general education, and list of competencies.)

**The RISE Initiative:** The RISE to the Challenge Initiative provides additional opportunities for students to strengthen their learning of the PULs and to hone skills in inquiry, discovery, and application of knowledge. A key component of the 2006-2007 Academic Plan, the RISE initiative challenges all IUPUI undergraduates to participate in at least two powerful experiential learning opportunities intended to enhance their preparation for employment, graduate or professional school, and active, enlightened citizenship. It builds on the campus’s established strengths in service learning, mentored research, internships, and field experiences, on already-existing efforts to expand undergraduate research and international opportunities, and on a longstanding IUPUI tradition of involving students in authentic learning environments that require them to engage with real issues in the discipline and to apply their knowledge in research, workplace, or community settings. As noted in Chapter 3, more than 19,000 students have taken a RISE course since the initiative was launched two years ago; those numbers are expected to increase.

**Discovery-based pedagogies:** In addition to incorporating the PULs and opportunities for inquiry- and practice-based learning into the formal curriculum through RISE and other experiences, many programs and individual faculty members at IUPUI use pedagogical practices that promote learning through individual or group inquiry and discovery, at both the undergraduate and graduate/professional levels. Opportunities for such learning begin in the First-Year Seminar (FYS). The [“Template for First-Year Seminars”](#) at IUPUI specifies that instructional teams will “foster an environment of active learning” and “introduce students to multiple facets of critical thinking,” including “finding solutions to challenging problems; analyzing complex issues and making informed decisions; synthesizing information; evaluating the logic, relevance, and validity of data; and using knowledge and understanding to raise new questions.” Instructional teams take a variety of approaches to implementing the template, depending on the focus of individual seminar sections and the interests of the students; FYS sections in Themed Learning Communities, for example, frequently incorporate service learning experiences or other opportunities for civic engagement that enable students to apply classroom learning to practice. Similarly, FYS sections in professional schools often include job shadowing or other components that help students understand the day-to-day experiences and demands they are likely to encounter.

Several programs, including curricula in the Schools of Dentistry and Medicine, and undergraduate and graduate programs at the Kelley School of Business, make extensive use of problem- and case-based learning approaches. These strategies aim to support students’ development as independent thinkers and learners adept at asking the right questions, identifying and locating the resources needed to find answers, and discovering solutions to unstructured, real-world problems. At IUPUC, the [Division of Business](#) has intentionally designed an integrated undergraduate curriculum that engages students in learning “how real business is conducted.” IUPUC student teams from the Division of Business have won Global Business Simulation competitions annually since 2005.

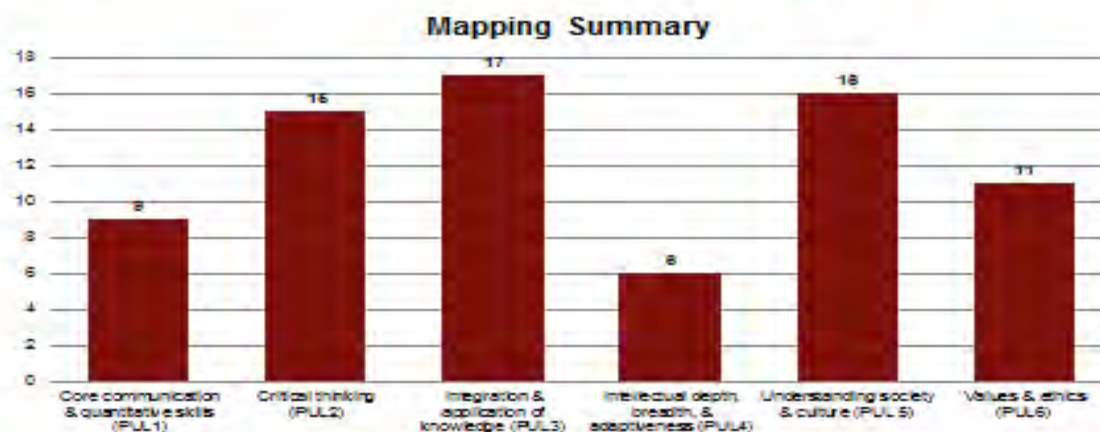
Peer instruction and various forms of collaborative learning are other common strategies for promoting students’ capacities to learn independently. As noted in Chapter 3, for example, the Schools of Science

and of Engineering and Technology have been national pioneers of Peer-Led Team Learning (PLTL) and [cyber-PLTL](#). Both PLTL and cPLTL engage students as active participants in “activities that involve complex problem-solving, working collaboratively...and fostering self-directed learning,” as well as in “relat[ing] abstract concepts to real-world examples.”

**Acquisition and application of knowledge outside the classroom:** Involvement in campus life beyond the classroom can play a crucial role in supporting student retention, learning, and success. But engaging IUPUI’s urban, commuter students in co-curricular learning activities has always been challenging. To meet this challenge, in 1999, the campus created the Division of Student Life. In the years since its inception, the division has developed and sponsored a wide range of co-curricular learning opportunities, including volunteer activities, cultural and diversity programming, a social justice advocacy program, recreational sports, service-focused travel experiences, and leadership development, among others. Under the aegis of the Division of Student Life, the number of student organizations has grown exponentially, from 85 in 1999-2000 (when formal tracking of student organizations began) to 355 [check number] at the end of the 2010-2011 academic year. IUPUC, which faces similar challenges in involving commuter students in the campus, created an Office of Student Services in 2010. That office currently sponsors 17 student organizations, and has launched an Excellence in Leadership Initiative, a one-year student leadership development and certification program.

**Assessment of co-curricular learning:** In 2009-2010, Student Life formally adopted the PULs as the framework for assessing the educational impact of its co-curricular programs and communicating the value of these programs to IUPUI students, faculty, and staff. Because graduate students are included in these efforts, the division elected to use the term “Student Life Learning Outcomes” (SLLOs), rather than “Principles of Undergraduate Learning.” Each of the division’s 86 programs, services, and activities has been mapped to the SLLOs. (See [Appendix X](#) for the comprehensive map.) The graph below shows the number of SLLOs represented in the Division’s work.

## Division Programs/Services by PULs



**IUPUI** INDIANA UNIVERSITY—PURDUE UNIVERSITY INDIANAPOLIS

Following its adoption of the SLLOs, Student Life developed a division-wide communication plan to help students and others make connections between their classroom learning and their co-curricular experiences, with the PULs/SLLOs as framework. The plan includes:

- Explicit learning objective statements for each event, service, or activity. These are announced at the beginning of the activity or service and may be distributed in written form.
- Ongoing opportunities for formal or informal reflection on/discussion of relevant SLLOs in all programs.
- Education of student leaders on connections between formal and informal learning and encouragement of leaders to share information with peers.
- Inclusion of SLLOs in marketing materials for programs, services, and activities.

To assess student learning of the SLLOs in co-curricular experiences, Student Life staff created learning outcome statements incorporating the PULs and relevant standards from student affairs professional associations for each of its programs, services and activities. In 2010-2011, ten division units began collecting assessment data on student learning from student employees and program participants, based on these statements. Data collection methods include pre- and post-tests, debriefing discussions, written reflections, and evaluations that draw on an item bank of questions about learning outcomes developed by the division's Assessment Group.

For example, Lead IUPUI, a five-year-old co-curricular leadership development program sponsored by Student Life, was one of the first in the division to map its activities to the SLLOs and to begin collecting systematic data on student learning. The program aims to “[support] the diverse needs of campus life”



and to “empower students to be engaged and inclusive leaders in their communities.” It includes an Emerging and Advanced Leaders Seminar series, an overnight Student Organization Leadership Retreat, Student Organization Leadership Development workshops, and Catalyst, a one-day program developed by LeaderShape. While the program is open to all students, most participants in Lead IUPUI are student organization leaders. The program has identified five key learning outcomes, focused on enhancing personal strengths, developing a leadership identity, and improving abilities to work collaboratively with others. Each outcome is mapped to two PULs, including Core Communication Skills, Critical Thinking, and Understanding Society and Culture. (For a list of the outcomes and relevant PULs, see [Appendix X](#).)

The 2010-2011 assessment report for Lead IUPUI provides detailed information on student learning of the SLOs, including survey/evaluation responses and comments taken from reflections, evaluation forms, and a student focus group. The report summary notes that these self-reported data suggest that students find the program valuable and believe that they are improving their proficiency in most of the relevant SLOs. The results are very similar to those of assessments conducted in 2009-2010, indicating some degree of reliability. Some SLOs received consistently lower scores than others; activities related to those SLOs may need to be revamped. Student feedback on longer programs and experiential programs implies that these programs had greater impact on learning than others; the division is thus exploring the possibility of including additional extended learning experiences in the future. The report also identifies a need to include some direct assessment measures to complement the use of indirect measures, and to adjust some of its indirect assessment methods so that they yield more information. (See [Appendix X](#) for the full assessment report.)

**Learning outcomes for graduate programs.** The Principles of Graduate and Professional Learning, adopted by the IUPUI Faculty Council in 2011, describe general expectations for learning outcomes of post-baccalaureate programs, differentiating between master’s and doctoral programs and between research-focused and professional degrees. In all cases, students are expected to acquire a knowledge base that will prepare them for additional study or for advanced practice in their fields. Assessment at the graduate program level is discussed in detail in Chapter 3.

***4c. The organization assesses the usefulness of its curricula to students who will live and work in a global, diverse, and technological society.***

IUPUI’s mission documents emphasize IUPUI’s responsibility to help supply our region and state with the work force they need to thrive in the new century. The same is true of IUPUC in its service region of South Central Indiana. Since so many of our graduates remain in Indiana, we are in a position to make a meaningful contribution to the economic competitiveness and quality of life in our city, region, and state: the 2011 Undergraduate Alumni Survey, which surveyed both IUPUI and IUPUC students who graduated with associate or bachelor’s degrees between 2007 and 2010, indicates that approximately 86 percent of IUPUI undergraduates are employed in Indiana after they complete their degrees. In addition, IUPUI provides the state with a substantial proportion of its healthcare professionals, including 80 percent of its dentists and more than half of its physicians, as well as with significant percentages of the work force in other key professions, including engineering and technology, law, and education. Preparing students to meet the demands of a global, diverse, and technological society is thus a priority not just for IUPUI, but for Indiana.

For undergraduates, the PULs encapsulate the broad skills and dispositions graduates will need in order to adapt and excel in the society and work place of today and tomorrow, explicitly emphasizing information literacy, a commitment to the well-being of local and global communities, and

understanding of our globalizing society. IUPUC's general education Initiative similarly requires undergraduates to "demonstrate both a) an understanding and appreciation of the complexity of world cultures and b) the ability to think transnationally or transculturally about social, political, economic, aesthetic, or technological issues." As Chapter 3 notes, degree program outcomes incorporate these capacities, tailoring them to the needs of the discipline or professional field. The RISE Initiative seeks to strengthen these abilities by ensuring that undergraduate students participate in experiences that challenge them to expose themselves to the unfamiliar, to work and learn with others, and to apply knowledge to solving real problems. Similarly, at the graduate/professional level, assessment of discipline-specific outcomes, clinical experiences, field placements, and service learning experiences, among others, provide IUPUI programs with continuous feedback about the currency and effectiveness of student skills.

Assessment of the usefulness of curricula "to students who will live and work in a global, diverse, and technological society" thus takes place in a number of ways, including:

- Ongoing assessment of the PULs (discussed in Chapter 3 and in Core Component 4b above)
- Assessment of program-specific learning outcomes (discussed in Chapter 3)
- Program review (discussed in Chapter 2 and below)
- Ongoing feedback from community members and area employers about the skills they need and expect from graduates (discussed below)
- A variety of ongoing efforts and special initiatives aimed at assessing outcomes related to globalization, diversity, and information literacy (discussed below)
- A campus-wide initiative led by the Center for Service and Learning to define a "civic learning pathway" and to identify the attributes of a "civic-minded graduate" (discussed in Chapter 3 and below).
- Support for and assessment of student engagement in research, scholarship, and creative activity (discussed below)
- Campus-wide and school-specific surveys of current students and recent graduates (discussed in Chapter 3 and below)

#### Ensuring Currency and Relevance of Courses and Programs

**Academic program review:** As Chapter 2 explains, program review at IUPUI and IUPUC involves a range of internal and external stakeholders and is designed to promote ongoing improvement, meet community and employer needs, and support all aspects of the university's mission, including civic engagement. Linkages between programs under review and the communities they serve comprise a strong emphasis of the process, both to ensure that programs remain responsive to current work force and community needs and to strengthen community understanding of the program and of IUPUI. Review teams thus include local employers or other community stakeholders, where relevant, and self-study guidelines ask programs to document external demand for the program, attention to new directions in the discipline and the community, and graduate placements and performance in related employment or further education.

Program reviews frequently result in program modifications to ensure currency and relevance. For example, a 2006 review of the Department of Physics in the School of Science led to development of a new program that enables students to graduate with a dual degree in Physics and Electrical and Computer Engineering. The dual degree offers students exceptional preparation for jobs in engineering,

particularly research and development jobs, and greater career flexibility than a traditional engineering degree. The Religious Studies review described in Chapter 2 led to a new faculty position that has strengthened course offerings in non-Christian religious traditions and to an increased focus on preparing both majors and non-majors to navigate diversity and complexity.

**Experiential learning:** Relationships with organizations that hire interns or offer field experience opportunities provide additional information and feedback on the effectiveness of curricula and on needed updates, in addition to offering students enhanced opportunities to develop key skills. At IUPUI, many of these experiences are coordinated by the IUPUI Solution Center, established in 2004. Among other activities aimed at creating linkages between the university and the community, the Solution Center facilitates partnerships between IUPUI and nonprofits, businesses, and government agencies in Central Indiana to create credit and non-credit opportunities for students to engage in “real world” projects through internships, community-based research, class projects, and business assistance initiatives. Based on a recent campus-wide study of paid and unpaid internships, the Solution Center estimated that 8,559 IUPUI students participated in over 1.4 million hours of community-based projects and internships in 2010-2011.

Solution Center projects and internships are evaluated by both community partners and students. The most recent survey of 44 employers, conducted during the first six months of 2011, showed high rates of satisfaction with IUPUI students’ workplace skills. Eighty-three percent of employers were satisfied or very satisfied with their IUPUI interns, with 93 percent rating interns’ critical thinking skills and leadership skills as good or excellent and 80 percent rating students’ communication skills as good or excellent. These outcomes are consistent with findings from student and alumni surveys on preparation for the work force, discussed in detail below.

Professional programs that sponsor their own internships, field experiences, and practica also routinely seek feedback from students’ supervisors. For example, the Health Informatics Administration Program requires seniors to complete two semesters of Professional Practice Experience under the direction of a faculty member and an on-site professional practice instructor. Students’ ability to “communicate clearly and effectively with diverse populations” is assessed through performance at the practice site and evaluation of a series of narrative summaries that students complete during the course of their experiences. Like many other professional programs at IUPUI, Health Informatics also conducts regular surveys of employers of its graduates to ensure that students are well prepared for the workplace and, in response to employer feedback in 2010-2011, is adjusting curricula to incorporate more problem-solving and time management skills.

**Other efforts to ensure currency and relevance of curricula:** Chapter Three, along with the annual IUPUI Assessment Report and annual school assessment reports, documents many instances in which programs have improved and updated curricula and pedagogical approaches in response to assessment findings. To maintain current and relevant curricula and assure that graduates attain the skills they need to succeed, IUPUI academic units also seek ongoing feedback from a variety of other information sources. Almost all IUPUI schools and IUPUC divisions, as well as individual departments in the School of Engineering and Technology, for example, have established community advisory boards whose membership includes major employers in the Indianapolis and Central Indiana communities. For some schools, alumni boards made up of local IUPUI graduates working in the relevant fields serve this purpose. In several disciplines, Public Scholars—faculty members whose academic appointments are explicitly linked to community institutions—provide an additional source of information on evolving work force needs in their fields. In the Museum Studies Program, the five faculty members who hold a

Public Scholar appointment divide their time between IUPUI and a local museum or museum-related organization. As researchers and instructors who are also involved in the practice of their disciplines, they bring a unique perspective that informs both their own teaching and curriculum planning and design at the program level.

#### Initiatives to Enhance Learning for a Global, Diverse, and Technological Society

**Globalization initiatives:** As Chapter 3 notes, IUPUI'S Office of International Affairs (OIA) has invested considerable effort in expanding international learning opportunities for our students, using approaches that include bringing more international students to campus, increasing study abroad opportunities, and internationalizing the curriculum for all students, including development of a state-of-the-art international videoconferencing facility for interactive teaching with faculty and students overseas. These efforts have borne fruit: since 1999-2000, the number of international students studying at IUPUI has more than doubled, from 606 to 1,364 in 2010-2011, while study abroad numbers have grown from 151 in 1999-2000 to 410 in 2009-2010. We continue to work toward additional growth in these areas through enhanced recruiting, improved support for international students, and ongoing development of study abroad opportunities that fit the needs of our students, who tend to be constrained by jobs, family obligations, and professional school curricula. Addressing these constraints has frequently meant creating meaningful short-term study abroad programs that include service learning, internships, and other forms of reflective experiential learning keyed to specific curricula. International service learning, in particular, constitutes two thirds of our study abroad offerings and about 90 percent of all international service learning in Indiana University.

On-campus internationalization has also gained momentum. An International Studies major inaugurated in 2005 has seen steady growth. The Global Crossroads videoconferencing facility is fully booked and has been used by several First-Year Seminars, for a Global Dialogues science/liberal arts Integrator course, for the Introduction to International Studies course, and for other international courses. A faculty Community of Practice for PUL 5, "Society and Culture," has merged with a Multicultural Teaching Community of Practice and developed a new teaching award that highlights multicultural teaching and includes international perspectives. Goals for the next five years include increasing the use of international interactive videoconferencing and broadening the range of participating courses, further increasing international student enrollments, continuing to expand study abroad, and integrating international learning into more degree requirements.

IUPUI has also made progress in assessing global learning. The campus was an early member of the American Council on Education's Internationalization Collaborative, an initiative that brought together a campus-wide faculty committee to develop twelve international learning outcomes that span the liberal arts and the professions. [\[Need sidebar here.\]](#) These outcomes guide faculty and departments in assessing PUL 5, which calls for developing an understanding of the diversity of human cultures and societies. Learning in study abroad experiences is assessed primarily at the course level, with a focus on intercultural learning. Participating students also evaluate their experiences, considering both the program itself and their own intercultural learning, including knowledge of the host country, understanding of the roles of the U.S. and the host country in the world, and improvement in the host country language.

**Diversity initiatives:** As discussed in Chapter 1, IUPUI's mission documents affirm that a commitment to diversity infuses every aspect of the institution's mission. This commitment includes preparing students for life in a diverse society and workplace. Chapters 1, 3, and 5 outline a broad range of programs and

initiatives undertaken, in part, to contribute to students' ability to participate effectively in diverse environments by assuring that the composition of our student body and faculty reflects the diversity of our society; by incorporating diverse perspectives into academic programs and curricula; and by assisting faculty in developing pedagogical approaches that support learning and success for all students.

Results of these initiatives, to date, include both successes and disappointments, as is noted in the annual IUPUI [Diversity Report](#) for 2011 and in our [diversity indicators](#). Survey findings, in particular, tell us that the campus climate for diversity needs improvement: in a new survey of the climate for diversity, minority and LGBT students reported a significant number of negative experiences. Responses to diversity items on the National Survey of Student Engagement (NSSE) and IUPUI's Continuing Student Satisfaction and Priorities Survey (CSSPS) further indicate that IUPUI lags behind its urban peers in the frequency of diversity experiences that students encounter in the curriculum and co-curriculum, although the percentage of students reporting these experiences has increased. (NSSE and CSSPS outcomes are discussed in greater detail below, in the section on Survey Research on Learning for a Global, Diverse, and Technological Society.)

Efforts to recruit and retain underrepresented students, on the other hand, have resulted in steady gains, although we have not yet fully achieved our goals. Faculty diversity has also increased: between 2006 and 2009, the Support for Recruiting Underrepresented Faculty Program, an initiative begun with the Academic Plan, brought 47 faculty hires to the campus. Following a temporary suspension between 2009 and 2011, due to budget constraints, the program resumed in Fall 2011. The CTL, the Office of Diversity, Equity, and Inclusion (DEI), and other campus units offer faculty members a variety of ongoing opportunities to learn about inclusive pedagogies. The university's substantial investment in DEI, established in 2008, the work of the Chancellor's Diversity Council, new STEM initiatives, and new efforts in individual schools, including appointment of school-level diversity officers in the Schools of Business, Dentistry, Medicine, and Nursing, attest to our ongoing commitment not only to preparing students to thrive in diverse environments, but also to maintaining a diverse campus environment, and to supporting the success of *all* students and faculty.

Academic programs now include majors Women's Studies and Africana Studies and minors in Islamic and Arabic Studies, with a minor in Latino Studies making its way through the approval process. As noted above, all IUPUI programs assess PUL 5, Understanding Society and Culture, which encompasses abilities to "compare and contrast the range of diversity and universality in human history, societies, and ways of life" and "operate with civility in a complex world." Program-specific outcomes and assessment efforts also incorporate diversity, as appropriate to the discipline and professional field. In addition, all IUPUI schools have developed comprehensive diversity plans that include diversifying curricula and increasing the use of inclusive pedagogies. As noted above, co-curricular diversity experiences and programs have increased as well, with more student organizations partnering with the Office of Student Life as co-sponsors each year. RISE experiences provide other opportunities for students to learn about diversity in various settings.

**IUPUI's Intergroup Dialogue Initiative:** A promising new effort to improve the campus climate for diversity and prepare students to participate in a diverse society is the IUPUI Intergroup Dialogue (IGD) Initiative, which aims to enhance participants' skills in creating and sustaining constructive communication between and among members of various social identity groups. Modeled on a University of Michigan program, the IGD Initiative convenes sets of facilitated, face-to-face meetings including 14-16 people representing two or more social identity groups with a history of conflict or

potential conflict (e.g., women and men, people of color and white people, LGBT people and heterosexuals, or people of different socioeconomic classes). IGD emphasizes sustained communication on issues of social justice, social group membership, identity, and positionality (privilege and oppression) of groups. It aims to put into practice the campus commitment to diversity, as articulated in our mission documents, and to deepen the campus's diversity efforts by engaging the community in meaningful, sometimes difficult, conversations on race, gender, sexual orientation, and other issues.

IUPUI work on IGD began in 2009, when a campus team attended the [National Intergroup Dialogue Institute](#) at the University of Michigan. Since then, numerous IUPUI schools, departments, and groups have collaborated on planning efforts to develop a campus-wide IGD program. In August 2011, Human Resources Administration and the School of Liberal Arts organized a two-day IGD workshop, facilitated by representatives of the [University of Michigan Program on Intergroup Relations](#), that drew about 55 participants from across the campus. Plans for 2012 include: developing curricular, co-curricular, and experiential learning pilots, providing faculty and staff professional development, identifying student, faculty, and staff peer facilitators, and establishing an academic base for ongoing development and support of a sustainable IUPUI IGD program.

**Information and Technology Literacy Initiatives:** The ability to “use information technology for academic, personal, and professional needs,” part of PUL 1, is addressed in the First-Year Seminar, and subsequently cultivated and assessed across the curriculum. University Library is extensively involved in these efforts, beginning with the First-Year Seminar: librarians partner with faculty members teaching the First-Year Seminar, as well as the Summer Bridge Program, and subject liaison librarians work with students throughout their academic careers, offering course-related instruction and individualized research consultations to both undergraduate and graduate students. A longstanding partnership between the library and the Center for Teaching and Learning provides professional development opportunities for faculty members and librarians interested in learning more about teaching and assessing information literacy skills. The library also supplies information resources through Oncourse, subject research for specific disciplines, and online tutorials on information literacy concepts, including evaluating web sites, selecting topics, and developing effective techniques for searching specific databases.

Currently, University Library is leading a campus-wide effort to assess information literacy outcomes as part of its participation in the national [TRAILS](#) (Tools for Real-Time Assessment of Information Literacy Skills) Initiative. To date, the library has articulated a set of [scaffolded information literacy learning outcomes](#) and mapped them to the PULs, as well as to the [Information Literacy Competency Standards for Higher Education](#) developed by the Association of College & Research Libraries. The TRAILS instrument, an online multiple-choice assessment, is being piloted with undergraduate and graduate students during the 2011-2012 academic year. Ultimately, the assessment will be given to first-year students in Themed Learning Communities, the Summer Bridge Program, and Gateway courses. The library has also begun an evaluation of its instructional settings, with the goal of improving instructional facilities and services that support the development of information literacy across the curriculum; evaluation teams will include faculty members and students from a range of disciplines.

#### Learning for Social Responsibility

Service to the local community and to the broader needs of society is integral to IUPUI's institutional mission and identity; civic engagement is, for this reason, one of IUPUI's major planning themes, and is the focus of Chapter 5. Civic learning is explicitly addressed by PUL 5, “Society and Culture,” and PUL 6,

“Values and Ethics,” and implicitly by all of the other PULs and the PGLs, since effective citizenship and service to society require students to communicate effectively, think critically, and acquire, apply, and integrate knowledge. Social responsibility is also included in discipline-specific outcomes for undergraduate degree programs, and for graduate-level programs, as appropriate to the discipline and profession. At IUPUC, in addition to assessing PULs 5 and 6, the new general education Initiative requires all students, regardless of program of study, to “demonstrate personal and social responsibility by using knowledge in the service of society” as a general education learning outcome.

IUPUI undergraduate and graduate students alike encounter a wealth of opportunities to engage in service learning, co-curricular service, and community-based research. Several schools, including Dentistry, Medicine, and the Herron School of Art and Design, have developed administrative units specifically dedicated to service learning, collaborative research with community organizations, and other forms of community service. Through the RISE Initiative, service is a strong focus of IUPUI’s current Academic Plan; in addition to “S”(service)-designated courses, two thirds of our “I”(international)-designated programs incorporate service projects, as noted above, while “R”-designated experiences are frequently undertaken in concert with community members and organizations.

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Sidebar: In 2000-01, the Center for Service and Learning hosted five campus-wide service events (such as the United Way Day of Caring) attended by 347 students, faculty, and staff members. The number and variety of campus-wide service events have been expanded each year, so that in 2009-10, CSL organized 43 events involving 2,614 students, faculty, and staff.

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A relatively new initiative focused on service and engagement is the IUPUI Common Theme. The Common Theme began in 2008 with a “common reader” project aimed at promoting campus unity, discussion, and collaboration on timely issues that connect IUPUI to Central Indiana and the world. Initially designed to engage incoming freshmen in first-year courses, the effort soon expanded to include events and projects more broadly applicable across disciplines and upper-level and graduate courses. The first Common Theme in 2009-2011, “Consuming Well for the Wealth of Communities: From IUPUI to the World,” focused on issues of sustainability, the green economy, and healthy communities, resulting in the founding of the IUPUI Student Sustainability Council and the new IUPUI Office of Sustainability. The 2011-2013 Common Theme, “Change Your World: The Power of New Ideas,” examines social entrepreneurship, wherein citizens collaborate to develop innovative solutions to social problems locally and globally. Building on IUPUI’s tradition of civic engagement, work on the theme has led to new community partnerships, including a collaboration between graduate psychiatric nursing students and Red Oak Industries, a commercial cleaning service that creates long-term employment opportunities for people with disabilities. Along with these efforts, a new program in the Center for Research and Learning, Multidisciplinary Undergraduate Social Entrepreneurship (MUSE) will offer undergraduates support for applied community-based research on specific social issues.

To support the growth of opportunities for civic learning, as well as assessment of this learning, IUPUI’s Center for Service and Learning (CSL) offers faculty development programs, internal grant opportunities, and individual consultation to faculty members seeking to incorporate service learning into courses and academic programs. The CSL also offers nine service-based scholarships, supporting 229 undergraduates, who provided the Indianapolis and IUPUI communities with 39,738 hours of service, during the 2010-2011 academic year. Other opportunities for students to engage with the community as undergraduates include the Sam Masarachia Scholars Program, which provides full-tuition

scholarships for up to four years to students with a demonstrated interest in social change and community advocacy. Students perform community service as part of the program, which is funded from the School of Liberal Arts, but open to students in all programs.

**The civic-minded graduate:** Over the past decade, the CSL has played a national and international leadership role in research on effective service learning, efforts that earned it an IUPUI Signature Center designation in 2010. The CSL has also been a pioneer in the assessment of civic learning and developed “the civic-minded graduate” model, discussed in Chapter 3, to define “a person who has completed a course of study...and has the capacity and desire to work with others to achieve the common good” (Bringle and Steinberg, 2010, 429). “Civic-minded” refers to “a person’s inclination to or disposition to be knowledgeable of and involved in the community, and to have a commitment to act upon a sense of responsibility as a member of that community.”

The civic-minded graduate framework includes ten learning outcomes that can be fostered through curricular and co-curricular learning and that include understanding of complex current social issues, communication skills, a nuanced understanding of and respect for diversity, self-efficacy, and consensus-building skills. Assessment of these outcomes uses two instruments: a 30-item survey and a narrative reflection in which students respond to the following prompt (the “Civic-Minded Graduate Narrative Prompt”):

I have a responsibility and a commitment to use the knowledge and skills I have gained as a college student to collaborate with others, who may be different from me, to help address issues in society.

The reflection is assessed using a CSL-developed rubric. To date, the survey and reflection have been piloted in FYS sections in which students create an ePDP and with service-learning scholarship students, who also develop ePortfolios. Outcomes of the pilots, as reported in Chapter 3, show that students involved in service learning are more academically engaged, have a clearer sense of their future career path, and are more likely to expect to graduate. Ultimately, the CSL hopes to use the civic-minded graduate tools with all IUPUI students; immediate plans are to expand use to students involved in service learning courses and in some co-curricular service activities.

### Student Research and Independent Learning

**The Center for Research and Learning:** IUPUI faculty have long recognized the potential of undergraduate research to engage students in learning and to support academic achievement. The Undergraduate Research Opportunities Program (UROP) was initiated in 1999 to encourage more students and faculty to participate in this demonstrably powerful means of enhancing student learning and success. Originally sponsored by the School of Science, UROP soon expanded to support an annual average of 140 student research, scholarly, and creative projects across IUPUI undergraduate schools. But students tended to conduct these projects in isolation from one another and without any formal programming to support their efforts. To meet the needs of these students, the CRL was established in 2004 with a mission to develop, expand, and promote learning through mentored research, scholarship, and creative activities for undergraduates in all disciplines across the campus. As was the case with UROP, all students in CRL-sponsored programs receive funding support for their research.

The CRL grew quickly, increasing its base funding from \$200,000 to \$490,000 in 2005. During its first year, the Center hosted the National Conference on Undergraduate Research, bringing 2,500 students



from across the country to the IUPUI campus and immediately raising the profile of undergraduate research campus-wide. In 2005, the CRL was awarded a highly competitive federally funded Ronald McNair Grant Program, now completing its second renewal. This intensive “high contact” program targets juniors and seniors from low income, first generation, and underrepresented groups, encouraging them to pursue advanced degrees by engaging them in research and professional development activities. IUPUI’s McNair Scholars Program currently serves a restricted cohort of 26 students each year, including six students attending Historically Black Colleges and Universities. Other externally funded programs in the CRL include the Louis Stokes Alliance for Minority Participation (LSAMP), funded by the National Science Foundation, the Clinical and Translational Sciences Institute Undergraduate Research Program, and the IUPUI-Ivy Tech Community College Bridges to the Baccalaureate Program, funded by NIH.

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Natalia Meijome, senior, physics major: "This is my fifth and final year at IUPUI. I plan on continuing my studies in graduate school in the area of biophysics. I have been and continue to be involved in the Ronald E. McNair Postbaccalaureate Achievement Program in research. I heard about the CRL through the summer research program I was involved in. My research was on the frequency response of a memristor under an applied voltage. I think undergraduate research is important because it has helped greatly in developing my analytical skills. Research challenges you to think about problems which have no solutions yet.

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Today, the CRL sponsors [thirteen internally and externally funded undergraduate research programs](#), many of them focused on students from underrepresented groups, and all intended to provide students with academic direction and financial support for hands-on, inquiry-based learning. In addition to McNair, LSAMP, and Bridges to the Baccalaureate, CRL programs now include the Diversity Scholars Research Program, which involves 26 students yearly in intensively mentored undergraduate research; the Multidisciplinary Undergraduate Research Institute (MURI) Program, which serves over 80 students and 50 faculty members annually; and the new Innovation-to-Enterprise Central (ITEC) Program, a collaboration with the IUPUI Solution Center that offers teams of undergraduate researcher/entrepreneurs the opportunity to work with faculty researchers and innovators on product development and research commercialization. Altogether, the Center provided financial support for research and related programming to 234 students during 2010.

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Sidebar: The Center for Research and Learning annually honors outstanding undergraduate research and mentoring with three awards:

- IUPUI Chancellor’s Award for Outstanding Undergraduate Research,
- Bowling-Jones-Russo Memorial Undergraduate Research Award,
- CRL Director’s Award for Outstanding Leadership and Mentoring of Undergraduates.

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In addition to its direct sponsorship of undergraduate research experiences, the CRL works to increase understanding of the value of undergraduate research across the IUPUI campus and is developing partnerships with several IUPUI schools. The goal of these collaborations is to foster the development of additional school-based opportunities for students to participate in mentored research, scholarship, and creative activities. For example, the CRL maintains an ongoing relationship with the School of Engineering and Technology to support MURI projects that include interdisciplinary teams of faculty mentors and student researchers/innovators. The CRL administers the program and screens the student applicants. Faculty who receive these grants are expected to apply for federal funds to continue supporting student research—for example, through the National Science Foundation’s Research

Experiences for Undergraduates program. The Center also collaborates with IUPUI programs like Project Seed and the Nanotechnology Summer Discovery Camp, which offer summer research experiences to high school students, and with the IUPUI Graduate School's Preparing Future Faculty Program. Currently under a new director, the CRL is seeking additional external funding to support student learning through undergraduate research experiences and to expand the number of funded student projects, and is developing approaches, including one based on the ePortfolio, to assess the impact of its programs on student outcomes.

**Additional undergraduate research opportunities:** Individual schools at IUPUI offer many additional opportunities for undergraduates to learn from engaging in research, scholarship, and creative activity. These include, among others:

- The Life-Health Sciences Internship Program in the School of Medicine, which enables 50 IUPUI sophomores and juniors annually to pursue paid research and professional internship opportunities on or near the IUPUI campus.
- Projects sponsored by the Frank and Katrina Basile Center for Art, Design, and Public Life in the Herron School of Art and Design, which works with local businesses, nonprofits, and government agencies to provide students with real-world opportunities to use their creative skills.
- The NSF-funded Undergraduate Research Mentoring (URM) in the Biological Sciences Program in the School of Science. URM provides annual stipends and intensive mentoring to promising undergraduates from underrepresented groups to undertake ongoing research in the interdisciplinary field of biological signaling. Research usually begins the summer after the sophomore year and continues until graduation.
- The Olaniyan Scholars Program, which is university-wide, but housed in the School of Liberal Arts. Scholars engage in research and community projects focused on the experiences of African-Americans and other descendants of Africans around the world, and receive full-tuition scholarships and annual stipends.
- Programs sponsored by IUPUC's Office of Student Research (OSR), which supports undergraduate research projects that involve students in scholarship that makes meaningful contributions to communities in South Central Indiana. OSR was created in 2010 with annual funding of \$10,000.

All CRL programs are also open to IUPUC students.

#### Survey Research on Learning for a Global, Diverse, and Technological Society

**Survey programs:** To supplement direct assessment of student learning outcomes, IUPUI's Office of Information Management and Institutional Research (IMIR) maintains an extensive program of regular surveys that provides the institution with rich information on students' and graduates' educational priorities and experiences, and their perceptions of what they have learned, as well as with insight into relevant faculty practices. Most surveys are developed in-house, but in alternate years, NSSE is administered in lieu of the IUPUI CSSPS. The annual Recent Alumni Survey, sent to students graduating in the past four years, offers additional useful insight into graduates' assessment of the value of their education for their post-college personal and professional lives. In 2011, a new Graduate Alumni Survey

was also developed and administered. IMIR analyzes and reports on findings from in-house instruments at both the school and campus-wide levels; similarly, NSSE produces reports at campus and unit levels, with comparisons to peer urban research institutions, all research universities, and all institutions participating in NSSE in a given year.

**In-house student survey findings:** Both the CSSPS and Recent Alumni Surveys suggest that respondents believe that they are well prepared to function effectively in an increasingly global and technological world. More than 94 percent of current students responding to the 2011 CSSPS reported that they are very effective or effective in respecting the views of people who see the world differently than they do and in working with people of different races, ethnicities, and religions. Eighty-five percent rated themselves as very effective or effective at understanding relationships among local, national, and global issues. Students give themselves similarly high marks for information literacy, with close to 90 percent reporting that they are very effective or effective at identifying appropriate sources of information for a project, evaluating the quality and accuracy of information found on the web, and using computer software.

Responses of new graduates to the 2011 Recent Alumni Survey paint a similar picture. Fully 95 percent of respondents rated themselves as very effective or effective at working with people of different races, ethnicities, and religions, and 85 percent reported that they were very effective or effective at seeing the relationships among local, national, and global issues. Seventy-nine percent of respondents told us they could very effectively or effectively use knowledge they gained in college to address social issues or problems. Over 96 percent perceived themselves as effective or very effective at identifying appropriate sources of information for a project.

Questions included in the 2011 Graduate Alumni Survey are more focused on research and technical skills than those in the Undergraduate Alumni Survey, but recent graduate alumni gave high ratings to the job preparation they received at IUPUI, with 99 percent of working doctoral graduates and 89 percent of working master's degree respondents reporting that their IUPUI education prepared them very well for their current positions. More than 80 percent of responding recent graduate alumni rated themselves very effective or effective at using knowledge gained in school to address social issues and problems.

**Other findings:** On the other hand, recent NSSE and Faculty Satisfaction Survey findings indicate that IUPUI may need to improve its approaches to preparing students to navigate a diverse and globalizing world. In the most recent administration of the NSSE, first-year students' reports of the extent to which diversity topics are included in their courses slightly lagged behind such reports at urban peer institutions. And, while all academic units at IUPUI have developed comprehensive diversity plans, the two most recent faculty surveys in 2006 and 2009 noted a declining percentage of faculty respondents reporting that they include diversity topics in courses. IUPUI students are also less likely to study a foreign language and are slightly less likely to study abroad than are students at peer institutions.

Findings on diversity in the co-curriculum and use of technology are more encouraging: NSSE responses indicate steady increases in co-curricular diversity experiences, although responding IUPUI students continued to report these experiences less frequently than did respondents at urban peer institutions. And IUPUI students reported more frequent use of information technology in 2009 and previous years than did students at peer campuses.

**4d. The organization provides support to ensure that faculty, students, and staff acquire, discover, and apply knowledge responsibly.**

The responsible use of knowledge is implicit in IUPUI's commitment to excellence in teaching and learning, research, scholarship, and creative activity, and, particularly, civic engagement. Effectively serving our community and the larger society requires responsible approaches to the discovery and application of knowledge. "Values and Ethics" is thus one of the Principles of Undergraduate Learning and "behaving in an ethical way both professionally and personally" is a Principle of Graduate and Professional Learning. These principles are woven into all undergraduate and post-graduate programs, respectively, and define our expectations of our students and graduates. Similarly, IUPUC's General Education Initiative will require that students "demonstrate ethical reasoning; convey understanding of how ethical issues and values frame and shape human conduct and ways of life." In addition, as a research institution, IUPUI, in concert with IU, has developed an organizational infrastructure, a set of policies, and appropriate training programs for students, faculty, and staff, including those at IUPUC, to ensure responsible research conduct by all members of the IUPUI community.

Policies on Academic Ethics

All students are required to adhere to the [Indiana University Code of Student Rights, Responsibilities, and Conduct](#) and to IUPUI's procedures for implementing the code. The code addresses academic responsibilities and misconduct as well as personal misconduct. Questions about the code can be directed to the Dean of Students.

IUPUI and IUPUC employees are subject to IU regulations, including the [Code of Academic Ethics](#) in the Academic Handbook. The code contains two major sections. The first, "Rights and Responsibilities," includes a general statement about the rights and responsibilities of academic personnel adapted from the "Statement of Professional Ethics" that the American Association of University Professors adopted as policy in April 1966; a list of the specific responsibilities of academic employees at Indiana University; and rules pertaining to personal misconduct on university property drawn from the [Indiana University Code of Student Rights, Responsibilities, and Conduct](#). It is assumed that academic personnel will accept without reservation those rules of conduct that are generally applicable within the university community as they are defined in the code. The second major section outlines enforcement procedures, ranging from initiation of complaints to appropriate administrative actions and reviews of such actions.

In 20XX IUPUC revised its campus student and faculty handbooks to include specific guidelines and procedures related to plagiarism.

**Ethics education and training for students:** PUL 6, "Values and Ethics," is defined as "the ability of students to make sound decisions with respect to individual conduct, citizenship, and aesthetics." The fourth PGL, "behaving in an ethical way both professionally and personally," requires students to "conduct research in an ethical and responsible manner." Undergraduate and graduate/professional courses address these outcomes through a variety of approaches, including case studies, problem-based-learning, experiential learning, role-playing, and reflection. Some programs include courses with a specific focus on ethics. For example, the Department of Organizational Leadership and Supervision in the School of Engineering and Technology offers a three-credit undergraduate course on "Ethical Decisions in Leadership," available in both face-to-face and distance formats. Students are drawn from engineering, technology, business, and other majors. Introductory writing courses in the Department of English in the School of Liberal Arts introduce students to strategies and expectations for identifying,

evaluating, and integrating source material into written work. Textbooks for all core writing courses include sections on using sources appropriately, avoiding plagiarism, taking notes, and following conventions for citation of sources. In addition, the IUPUI University Library has developed tutorials for both students and faculty members on proper citation of sources and plagiarism.

The Schools of Dentistry, Medicine, and Nursing teach students professional ethics for patient care. Ph.D. programs in the School of Medicine, for example, require courses in research ethics, and “Moral Reasoning and Moral Judgment” is one of the [nine competencies](#) that the School of Medicine has adopted for its graduates. Specifically, a “competent graduate” of the school:

recognizes the ethical issues of medical practice and health policy; identifies alternatives in difficult ethical choices; analyzes systematically the conflicting considerations supporting different alternatives; and formulates, defends, and effectively carries out a course of action that takes account of this ethical complexity. The graduate combines a willingness to recognize the nature of the value systems of patients and others with commitment to his/her own system and the ethical choices necessary to maintain his/her own ethical integrity.

The IU School of Nursing is one of only a few nursing schools nationally to require a three-credit course in Applied Ethics for all undergraduate students. One section of the course is taught by a [nurse ethicist](#), a unique position created by the School of Nursing in collaboration with the Charles Warren Fairbanks Center for Medical Ethics (FCME), part of IU Health. The nurse ethicist also serves as a faculty mentor for graduate students in the Clinical Ethics Practicum and for electives offered by the FCME, in which philosophy, law, nursing, and social work students over the course of a semester and medical residents over a one-month elective gain practical ethics experience.

The School of Dentistry has integrated ethics and professionalism into the entire dental curriculum, using case study and problem-based learning methods. Symbolic events, such as a White Coat Ceremony, and case discussions with Fellows of the American College of Dentists reinforce this learning. Students’ [understanding and application of ethical knowledge is assessed](#) via simulations and clinical ratings. In Fall 2010, School of Dentistry students founded a chapter of the Student Professionalism and Ethics Club. The group regularly invites speakers to the school to discuss topics related to ethical issues in dentistry. Recently, dental students helped lay the groundwork for the new National Student Ethics and Professionalism Association, an organization with dental school chapters that will focus on ethics and professional development.

In addition to department- and school-based ethics training and education, IUPUI offers several ethics programs campus-wide. All students engaged in undergraduate research projects through the CRL are required to pass an online module on research ethics. For graduate/professional students, the IUPUI Graduate Office offers a seminar series on Responsible Conduct of Research, in partnership with the IU Office of Research Ethics. Recent surveys indicate that an increasing number of first-year IUPUI students acknowledge the institutional contribution to the development of a personal code of conduct.

[\(Appendix 4a,d-survey data\).](#)[Need to clarify this.]

IUPUI’s ethics education initiatives extend beyond the boundaries of the campus. A four-year grant from the Fogarty International Center at the National Institutes of Health to the [IU Center for Bioethics](#) in the School of Medicine is supporting the development of a new research ethics training partnership with Moi University in Eldoret, Kenya. (IUPUI has a longstanding and extensive relationship with Moi, discussed in detail in Chapter Five.) The IU-Moi University Academic Research Ethics Partnership (IU-

Moi AREP), a curriculum development and training initiative, has created two Master's degree programs in International Research Ethics: one at IUPUI and one at Moi University. These graduate programs have common and overlapping components, joint advisory committees, shared dissemination plans, and coordinated evaluation strategies. Both programs offer a curriculum that includes required core courses, electives, and a practicum experience; IUPUI students take part of the practicum at Moi, while Moi students come to IUPUI for part of their practicum. IUPUI and Moi faculties each convene a yearly Teaching Skills in International Research Ethics (TaSkR) workshop that provides training in research ethics to approximately 50 faculty and students annually.

**Ethics education and training for faculty members:** [Research Ethics, Education & Policy](#) (REEP) leads, partners in, and provides resources that support the responsible conduct and administration of research across the campuses of Indiana University. In addition to collecting and reviewing research policies, REEP offers a variety of educational programs, including online programs through the [Collaborative Institutional Training Initiative](#) (CITI) in the areas of Research with Human Subjects, Responsible Conduct of Research, Research with Animals, and Good Clinical Practice. All IUPUI faculty, staff, and CRL-funded students involved in research are required to complete the relevant CITI programs satisfactorily. On the IUPUI campus, REEP regularly conducts [face-to-face training](#) on Ethics, Education and Policy, and Animal Care, among other topics. The REEP staff also tailors [workshops on all aspects of the responsible conduct and administration of research](#) to the needs of particular classes, faculty members, departments, and research teams.

The IU Center for Bioethics, which celebrated its tenth anniversary in 2011, serves as a local, state, and national resource in bioethics research, education, and policy. [Current research programs](#), conducted in collaboration with other university units and initiatives, include the Bioethics and Subject Advocacy Program, Predicted Health Ethics Research, and participation in CLEAR, the Center for Law, Ethics, and Applied Research in Health Information. Working with its partners across the campus, the center provides student and faculty researchers with opportunities to gain practical and theoretical knowledge of bioethics. Through graduate degree programs, training, fellowship programs, lectures, and other activities, the center helps students, faculty, and other researchers deepen their understanding of ethical issues in medicine, health law, medical research, and the medical humanities.

The Center for Teaching and Learning offers workshops related to copyright issues.

**Research compliance:** Research at IU is conducted with strict attention to ethical and regulatory practices without consideration of the source, if any, of funding or sponsorship. The IU Office of Research Administration ensures that all research activity complies with local, state, and federal regulations. [IU research policies](#) include, among others, Conflict of Commitment, Financial Conflict of Interest, Misconduct/Research Integrity, Research with Human Subjects, Animal Care & Use, Biological and Chemical Safety, Export Controls, Radiation Safety, and Whistleblower Policy. Relevant regulations, policies, procedures, and important notices can be found on the Office of Research Administration web site and in the *IUPUI Supplement to the Academic Handbook* ([Appendix 4a,d-Handbook supplement](#)) [\[Should this be a Resource Room item, rather than an appendix?\]](#). All policies are in agreement with the Code of Federal Regulations (CFR). The Office of Research Administration, while not the institutional owner of all of these documents, has primary responsibility for their application to the conduct and administration of research and other sponsored programs.

Compliance Services serves as a central resource to ensure that IU conducts its educational, research, and clinical activities in a manner consistent with regulatory, statutory, and organizational requirements, but also to establish the highest ethical standards for these activities. All research carried out at IUPUI

and IUPUC must be reviewed and approved by the appropriate campus research risk review boards. The major responsibility for maintaining standards of integrity, however, rests with individual scholars and their departments. Accordingly, faculty members must exercise active leadership in mentoring, collaborating with, or directing junior colleagues, staff, or students.

Many committees are involved in shaping and directing IUPUI's research activities. Brief descriptions of IUPUI committees involved in developing compliance policies, approving research protocols, and monitoring research compliance can be found in the *IUPUI Supplement to the Academic Handbook* ([Appendix 4a,d-Handbook supplement](#)).

**Intellectual property policy:** The [IU Intellectual Property Policy](#) addresses types of intellectual property, the distribution of revenues from and equity interests in intellectual property, dispute resolution within the university, and implementation. Under this policy, the primary categories of intellectual property are patentable intellectual property and copyrighted works. Generally, ownership of patentable work is vested in the university. Copyrighted works are subdivided into Traditional Works of Scholarship, which are owned by the creator of the work, and University Works, in which IU retains ownership. The revenues from intellectual property owned by the university are distributed according to the formula set forth in this policy. The policy document was last revised in 2008.

IU faculty members, including faculty from the IUPUI campus, were involved in drafting this policy through the Research Affairs Committee of the Indianapolis Faculty Council (IFC) and the Council of Research Deans. The policy was approved by the voting members of the IFC and is included in the *IUPUI Supplement to the Academic Handbook* ([Appendix 4a,d-Handbook supplement](#)). The *Supplement* also addresses the distribution of the portion of intellectual property revenue that is returned to creators' campuses, as specified in section 3.A.i.c of the IU Intellectual Property Policy.

### **Summary: Strengths and Challenges**

#### Strengths

- Efforts to enhance productivity in the area of research, scholarship, and creative activity have met with considerable success. Initiatives to encourage the growth of translational research and to increase research collaborations have contributed substantially to these outcomes.
- IUPUI offers faculty and staff a broad range of professional development opportunities and many faculty and staff take advantage of these, especially the fee remission benefit that enables employees to take courses tuition-free.
- Fourteen years after their adoption, the Principles of Undergraduate Learning are increasingly embedded in undergraduate curricula, and systematic PUL assessment is increasingly common. Assessment findings for students in the senior year indicate that most students are proficient in the six PULs.
- The RISE Initiative has been embraced by faculty and students, and RISE experiences are increasing [we need solid numbers on this.]
- The campus has earned national recognition and a range of awards for the PULs, service learning, undergraduate research, and the first-year experience.

- Strengthening the infrastructure for student life has resulted in increased participation in co-curricular learning experiences. The campus has begun to implement an assessment framework to gauge the effectiveness of these experiences.

### Challenges

- Staying abreast of evolving federal regulations for research and ensuring that faculty and students are informed and in compliance is an ongoing challenge.
- While the campus has increased support for faculty research, more support, including internal funding and research development staff, would enhance our ability to compete for federal and private research funds. In addition, we need to utilize research space more efficiently to support ongoing growth in our research enterprise, create more common research lab spaces, and add new research space.
- Continuing growth of RISE experiences will also demand scarce internal resources.
- While systematic assessment of the Principles of Undergraduate Learning has increased, we need to continue seeking innovative ways to apply assessment constructively and educating faculty about assessment to ensure that we are fully supporting undergraduate students in mastering these key capacities and skills by graduation.
- We need to continue and strengthen efforts to improve the campus climate for diversity, to incorporate diversity outcomes into curricula and assessment, and to maintain our institutional commitment to diversity, equity, and inclusion.