



SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

BRIEFING DOCUMENT

A CURRENT PERSPECTIVE ON RESEARCH AT SIUC

John A. Koropchak

Vice Chancellor for Research and Graduate Dean

&

Prudence M. Rice

Associate Vice Chancellor for Research, and
Director, Office of Research Development and Administration

June 27, 2006

EXECUTIVE SUMMARY

In 2003, SIUC and the SIU Board of Trustees approved a long-range plan for SIUC called “*Southern at 150: Building Excellence Through Commitment*,” which targets rising into the top 75 public research institutions by 2019 while we continue to provide the foundation for academic, economic, and social progress in southern Illinois. On the third anniversary of approval of that plan, Chancellor Wendler charged the Office of Vice Chancellor for Research and Graduate Dean to assess progress toward this research goal.

This document provides an analysis of research at SIUC from historical bases and in terms of measures typically used nationwide to evaluate research universities. The University appears to have reversed a decline in research productivity and culture that occurred during the late 1980s and 1990s. Currently, SIUC already ranks among the top 75 in some measures (e.g., number of doctorates granted) and has experienced significant growth in others (e.g., total and federal R&D expenditures). In certain metrics (e.g., endowment assets), the University lags considerably but has seen significant improvement in related measures (annual giving) and has in place the proper activities (capital campaign) required to improve on this situation. In other measures (e.g., National Academies members, National Merit Scholars, faculty awards, etc.), small increases, in some cases even just of one unit, would likely be sufficient to move the campus into the *Southern at 150* target range. The *Southern at 150* plan itself and the Ten-Year Faculty Hiring Initiative plan are key elements to continued progress, while issues such as graduate student stipends and academic space require renewed attention.

We conclude that SIUC is making significant progress toward meeting the research objectives of *Southern at 150* and, with 13 years remaining in that plan, is positioned to reach the goal of being among the top 75 public research universities. However, this goal remains a significant challenge that will require continued resolve and commitment for successful achievement.

John A. Koropchak
Pru M. Rice
June 27, 2006

SPECIFIC OBSERVATIONS

- ✓ Research at universities benefits students, the institution, and the region in which the university is located.
- ✓ SIUC is rated as a “Research University (high research activity)” by the Carnegie Foundation, placing it among the top 139 public institutions in the nation.
- ✓ SIUC’s performance in research measures grew rapidly in the 1970s and early 80s, rising to 84 nationally in total research and development (R&D) expenditures.
- ✓ SIUC’s performance in research measures declined in the late 1980s and 90s owing to declines in resources and failure to grow resources, resulting in the loss of hundreds of faculty and graduate assistant positions and a loss of emphasis on and culture for research.
- ✓ Since 1999, SIUC has implemented many measures to reverse the decline in research productivity, including the creation of the position of Vice Chancellor for Research and Graduate Dean, an external study of research by the Washington Advisory Group, the initiation of a long-range plan for enhanced faculty hiring, the implementation of higher graduate student tuition rates, negotiation of higher federal indirect cost (F&A) rates, etc.
- ✓ SIUC has adopted the principles of the *Boyer Report*, putting greater emphasis on integrating research into undergraduate education, by means of REACH, an innovative Undergraduate Assistantship program, and a federally funded McNair program.
- ✓ The research done at SIUC is considered to be one of the greatest assets for economic development in southern Illinois.
- ✓ Since 1999, SIUC’s research productivity has increased in many measures, resulting in improvement in its national ranking among public institutions:
 - Total R&D expenditures rose 73% between FY99 and FY05
 - Federal R&D expenditures rose 120% between FY99 and FY05
 - SIUC was ranked between 72 and 76 nationally in doctorates awarded between 1999 and 2004
- ✓ SIUC’s ranking by *U.S. News and World Report* has oscillated between last in third tier and first in fourth tier over the last five years, not a statistically significant variation. The largest factor in this ranking is reputation score, and SIUC’s score should rise as our research ranking improves.

CONTENTS

Executive Summary	2
Specific Observations	3
Contents	4
Introduction	5
Background: The Importance of Research	5
Research and SIUC	7
Carnegie Foundation Status	7
Historical Research Performance of SIUC (pre-2001)	8
Recent (post-1999) Increases in SIUC Research Performance	10
Creation of the Office of Vice Chancellor for Research	10
Undergraduate Research and Inquiry-Based Learning	13
Research and Regional Economic Development	15
National Comparisons: SIUC and its Peers and Aspirational Peers	16
The Center at the University of Florida	16
<i>U.S. News and World Report</i>	19
The Future: Continuing Challenges	20
Continuing Cultural Change	20
Graduate Student Stipends and Benefits	21
Graduate Student (and Postdoctoral Associate) Numbers	21
Academic and Research Space	21
References Cited	23
Appendix A: Executive Summary: “The Role of Research/Scholarly/ Creative Activity at SIUC,” 2000	24
Appendix B: Organizational Chart of the OVCR/GC and ORDA	26
Appendix C: Extracts of Some Essential Concepts in the <i>Boyer Report</i>	27
Appendix D: Peer Comparison Data (tables)	28

INTRODUCTION

The purpose of this briefing document is to discuss the mission and achievements of Southern Illinois University Carbondale (SIUC) as a nationally ranked public research university. Our discussion is contextualized in three ways: (1) historically, in terms of SIUC as a research university prior to 1999; (2) recently, in terms of substantial changes and accomplishments in research productivity and visibility since 1999; and (3) nationally, in terms of SIUC's current status vis-à-vis peers and aspirational peers as indicated by third-party quantitative indices. We believe that the current status of research at SIUC cannot be understood absent a historical perspective, and we accept that a variety of arm's-length comparative criteria is the fairest way to assess any university's research successes. We conclude with comments on the future challenges SIUC faces to sustain the remarkable growth we have achieved over the past five years.

BACKGROUND: THE IMPORTANCE OF RESEARCH

Research universities are distinguished from other types of postsecondary institutions in that they offer a full range of baccalaureate programs, are committed to graduate education through the doctorate (awarding forty or more doctoral degrees each year), and give high priority to research in addition to teaching and service for faculty advancement (Davis and Diamond 1997; Koropchak, Rice, Mead, and Wilson 2003; Carnegie Foundation 2006).

Research, defined in the broadest sense to include scholarly and creative activities and research training, refers to those activities that create new knowledge (basic research) or apply new knowledge to societal problems (applied research), and range from scientific experiments to scholarship in the humanities and creation of works of art. Because of the high visibility of these accomplishments, research is a major determinant of a university's reputation, which in turn affects all aspects of the institution, including the ability to recruit and retain high-quality students and faculty and the ability to attract resources. The stature and accomplishments of a research university are highly valued by the faculty, the students, and the institution itself; once this status is achieved, most institutions fervently strive to maintain and enhance it.

Research provides intellectual stimulation and new knowledge about the world, both of which are vitally linked to the educational process. Faculty engaged in cutting-edge research can teach

their students not only what is in today's textbooks, but what will be in the textbooks of tomorrow. At both graduate and undergraduate levels, the involvement of students in the critical thinking and problem-solving aspects of basic and applied research enriches their educational experience and better prepares them for career success, as well as improves the quality of the workforce. The research process, in which faculty and students interact to solve problems together, is arguably the highest form of teaching and learning, and nowhere else is it remotely accomplished to the same extent and degree of success as at U.S. research universities.

Research performed at public universities sets a basis for the financial support the institution receives from the state, and it represents a significant fraction of that budget, for example in the form of faculty release time allocated to research. Furthermore, the external funds received as grants to support research, as a percentage of the total university budget, represent one of the few areas of budgetary growth at public institutions over the last few decades.

University research also has substantial economic impacts, which can take several forms, starting with the direct impact of the new resources generated and spent in the local region: external grants and contracts provide funds to support graduate students, research assistants, and postdoctoral associates. Research universities are generally considered to be regional "economic engines": new ideas generated by research may be transferred to the commercial sector, leading to economic development, providing jobs, and enhancing the quality of life for the citizens of the region. Indeed, research at universities is considered an important societal investment in the future that surveys have shown to be strongly supported by the vast majority of citizens, including those in Illinois (*Survey of Illinois Residents* 1999).

At the national level, the American Competitiveness Initiative (ACI; see http://www.innovateamerica.org/index_nii.asp), a major federal effort to increase the competitiveness of the U.S. in the global economy through enhancement of innovation, has support from virtually every corner, including the Council on Competitiveness, the National Business Leaders' organizations, the National Academies of Science, bipartisan congressional efforts, the President, and so on (http://innovateamerica.org/download/resources_default.asp). Research universities are considered to be the keystone of ACI and are expected to shoulder at

least 85 percent of the activity of the initiative.

As SIUC is the only research university in the southern half of Illinois, the citizens of this region deserve the benefits that derive from the presence of such an institution.

RESEARCH AND SIUC

Teaching, research, and service are the primary missions of SIUC. The goal of the campus planning document, *Southern at 150*, to be “.... among the top 75 public research universities by the year 2019.....while we continue to provide the foundation for academic, economic, and social progress in southern Illinois,” clearly establishes enhancement of research productivity as an important institutional target.

Carnegie Foundation Status

The Carnegie Foundation for the Advancement of Teaching (Carnegie Foundation 2006) classifies SIUC as a “Research University (high research activity),” the second highest category in their most recent scheme. The criteria used to evaluate doctorate-granting universities to develop this ranking are: research and development (R&D) expenditures in science and engineering (S&E, defined by the National Science Foundation [NSF] to include social sciences); R&D expenditures in non-S&E fields; S&E research staff (postdoctoral appointees and other non-faculty research staff holding doctoral degrees); doctorate conferrals in humanities, social sciences, STEM fields (science, technology, engineering, mathematics), and other fields (business, education, public policy, social work). Of nearly 4,400 institutions of higher learning categorized by the Carnegie Foundation, 103 (or 2.3 percent) were rated in the “high research activity” category and 96 (or 2.2 percent) were rated in the highest category, “Research University (very high research activity).”

Overall, this classification places SIUC among the top 199 universities (public and private) in the U.S. Of these 199 institutions, sixty are private, placing SIUC among the top 139 public institutions in the nation based on this classification scheme. Of our *Southern at 150* peers, all are in the same Carnegie classification as SIUC except Iowa State, Kansas State, and Washington State, which place in the “very high” category. Among Illinois universities, UIUC

and UIC are in the very high category, SIUC and NIU are in the high category, and ISU is in the lower, doctoral/research category. All of our aspirational peers place in the very high category.

Historical Research Performance of SIUC (pre-2001)

As summarized in Appendix A, the research mission of SIUC grew in the 1960s, 70s, and early 80s, beginning with the administration of President Delyte Morris. In 1973 and 1976, SIUC was rated by the Carnegie Foundation as Doctoral I, roughly equivalent to today’s doctoral/research category. By 1986, SIUC had risen to Research II (akin to today’s “Research [high research activity]” category), and some on campus had visions of attaining the highest Research I category.

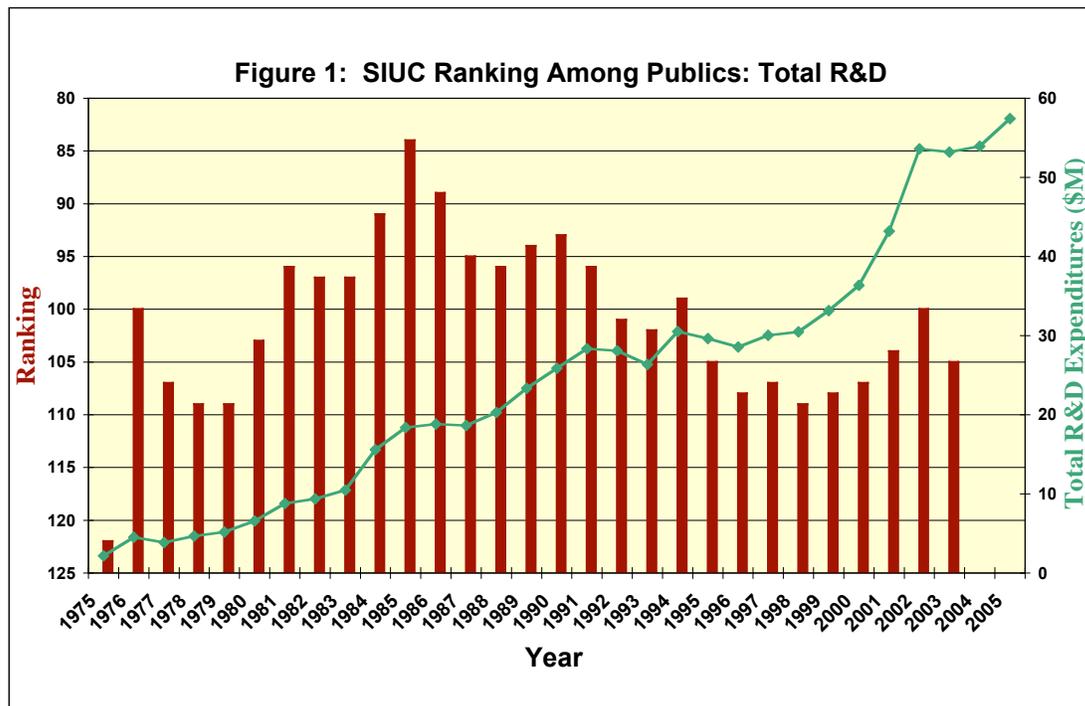
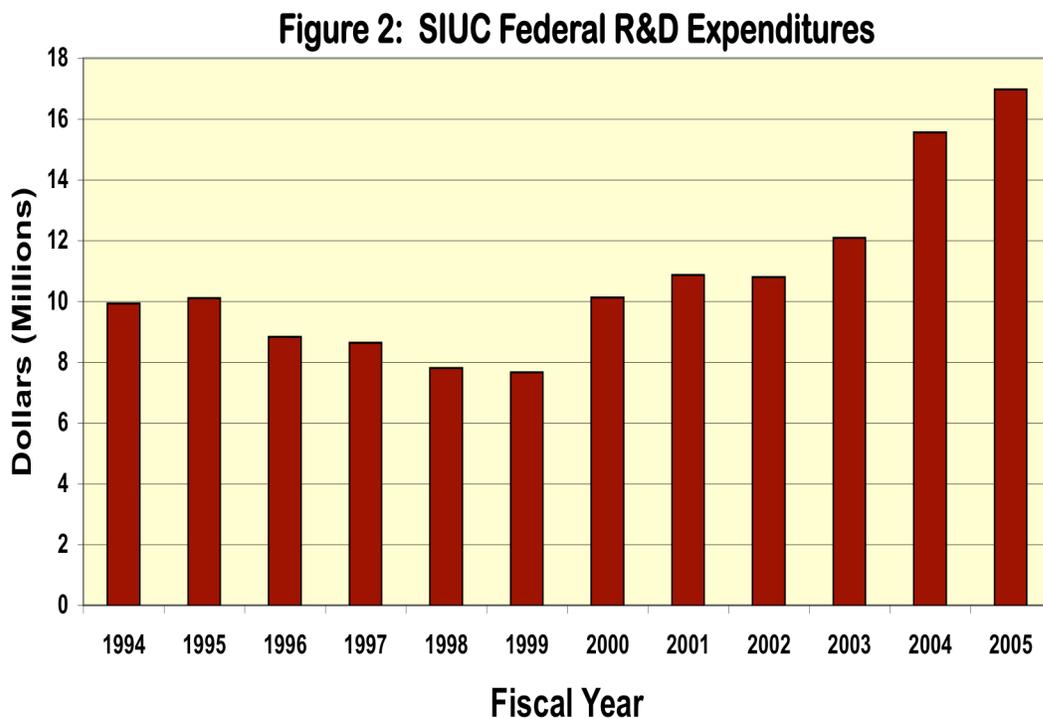


Figure 1 shows historical data for SIUC’s total R&D expenditures and ranking among public institutions. The rise in total R&D expenditures and rank among publics by 1985, with our rank reaching 84 nationally, mirrors the Carnegie ranking trends up to 1986. It is notable that in the eleven years from 1975 to 1985, SIUC rose thirty-eight positions in the NSF rankings in this measure, a significantly steeper rise than would be required to reach the *Southern at 150* goal in this measure by 2019. Note as well that this rise was not monotonically upward during this

period but included several time segments where the rank number worsened for several years.

Figure 1 also shows that from 1986 to 1999, there was a gradual reversal of this trend, with a shallower decline in both of these measures. In 1992, the campus dropped out of the top 100 in this measure for the first time since 1981 and to 109 in 1999, the lowest level since 1975.

The decline of research performance in the 1990s is evident in a tabulation of federal R&D expenditures (Figure 2), which decreased at SIUC despite nationwide trends for growth as a consequence of increased appropriations to federal research agencies. If inflation is included in this time frame, the losses in this measure are even more extreme.



In addition, throughout the 1990s the University failed to submit Facilities and Administrative (F&A; “indirect”) cost rate proposals to the Department of Health and Human Services, SIUC’s cognizant agency, as required every three years. Instead, SIUC requested extensions of its existing rate, which resulted in a penalty adjustment downward, to 41 percent. This meant, of

course, that the University was receiving an ever-smaller than deserved share of reimbursements for the costs of doing federally financed research.

It should also be noted that external reviews of the Office of Research Development and Administration (ORDA) and the Graduate School in 1992 and 1997, and the 1999 North Central Association's accreditation review of the University, all expressed deep and continuing concerns about the administration's commitment of resources to sustain the institutional research mission.

One reason for the declines and inattention to research at SIUC is that during this approximately fifteen-year period, the campus stressed affordability and did not generate the resources (from tuition, state funding, F&A cost returns, gifts, etc.) needed to sustain the institution. In effect, the campus cannibalized itself, sequentially eliminating other-than-salary dollars, college-level research administrators, several hundred graduate assistantship lines between 1993 and 1995 alone, and more than one hundred tenure/tenure track faculty lines (out of ~800) by the end of the 1990s. Particularly damaging was the decline in faculty numbers, because faculty members initiate and manage almost all of the research/scholarship conducted at universities, and SIUC is no exception. The campus "research culture" was degraded to the point that information about research productivity was no longer even requested in annual departmental and college-level achievement reports. All these factors led to reduced faculty morale—not to mention a union—and further declines in productivity and ranking.

RECENT (post-1999) INCREASES IN SIUC RESEARCH PERFORMANCE

The downward trend of research productivity at SIUC—evidence of the disappearance of a "culture of research excellence"—began to be reversed beginning in 2000 through a combination of actions and activities that brought greater attention and visibility to research, scholarly, and creative activities (see Koropchak, Rice, Mead, and Wilson 2003).

Creation of the Office of Vice Chancellor for Research

Perhaps the most important of these actions was creation of the title and office of Vice Chancellor for Research and Graduate Dean (OVCR/GD) in 2002, along with the title of Associate Vice Chancellor for Research (in 2003) (see Appendix B). This raised the

administrative level of research to the second tier on campus (from what had previously been the parenthetically titled Associate Vice Chancellor for Academic Affairs [Research] in the Provost's office), thereby strengthening the office's ability to argue effectively, alongside other administrative domains, for increased resources for research.

One of the important accomplishments of this office to date has been re-establishing compliance with federal F&A rate negotiation requirements. Working with Huron Consulting, we negotiated an increased rate with DHHS from 41 to 43 percent in 2002, and then to 44.5 percent in 2004 with an early proposal submission. These rate increases, along with the growth in grant dollars, have led to an increase of approximately \$2M in F&A returns in FY06 to date, compared to FY99.

In addition to increased F&A (indirect) cost return dollars from growth in external grants and contracts, increased support for research also has been fueled by changes in graduate tuition. Beginning in the late 1990s, the graduate tuition rate began to be increased at a higher rate than the undergraduate rate. Currently, the target is for the graduate rate to be 1.4X higher than that of the undergraduate rate, and we are approaching this level. At this point the net tuition revenue from graduate tuition is over \$3M higher than in 1999.

Another critical accomplishment was the initiation of a Faculty Hiring Initiative. In 2003, the University, through the OVCR/GD, contracted with a preeminent national consulting firm, the Washington Advisory Group (WAG), to conduct a study of the research enterprise of the SIUC campus. The WAG Report (Washington Advisory Group 2003) noted that "Undoubtedly, the single most important thing that SIUC will have to do to achieve its vision is to recruit outstanding researchers and build necessary critical mass," and that "recruiting outstanding faculty is the principal mechanism for assuring research quality, and the University must arrange its priorities so that it succeeds in this competition."

In response to this need, in FY03 the Chancellor approved \$2M for a strategic faculty hires initiative, to attract around thirty new faculty members beginning in FY04. During FY04, a long-range plan called the Faculty Hiring Initiative (FHI) intended to invest \$1M/year for ten years

was approved, with the first hires to arrive in FY05. Most of these FHI positions have been filled by junior faculty members, who generally require three to four years of experience to develop their research agendas before they begin to generate significant research productivity and grant dollars.

The new emphasis on research on campus, including the FHI, has resulted in the increase in federal R&D expenditures evident in Figure 2. Some of the highlights among these federal grants include: four NSF major equipment grants, seven prestigious NSF CAREER awards to junior faculty, three EPA STAR Fellowships, several \$1M+ NIH grants, and, through the Coal Research Center, pending federal appropriations for the Coal Fuels Alliance (\$85M with Purdue and University of Kentucky) and the Center for Energy Systems of the Future.

Other achievements of the OVCR/GD over the past five years include:

- Creating an SIUC Research Advisory Group
- Holding campus Research Town Meetings (began 2004)
- Starting a Matching Funds Program for grants (2000)
- Securing start-up funds for new faculty hires through RAMP process
- Initiating an Interdisciplinary Seed Grant Program (2006)
- Creating a Travel Fund Program for faculty and students; \$120K for faculty in FY06
- Developing new centers: Neuroscience, Ecology, Middle Mississippi Wetland Field Station, Mass Spectrometry Facility
- Working with the Chancellor's Delta Region Initiative
- Creating new research awards
 - Advocating creation of a faculty Outstanding Research/Scholar Award in each college
 - Creating (with the Chancellor) the Excellence Through Commitment Awards, including an Outstanding Graduate Student Researcher award
- Increasing collaboration between Carbondale and Springfield campuses:
 - Biomedical Engineering initiative
 - Monthly visits by OVCR to Springfield begun in 2004
 - Research Town Meeting duplicated in Springfield

- Travel support for speaker exchange
- Interdisciplinary Research Seed grant funded for a collaborative grant to the College of Engineering and School of Medicine- Springfield
- Encouraged collaboration between SimmonsCooper Cancer Center and Carbondale faculty and staff, to include smoking cessation programs
- Publicizing research to internal and external audiences
 - Added color to *Perspectives* research magazine in 2000
 - Began publishing annual *Research Profile* in 2001
 - Began publishing annual *Graduate Highlights* newsletter in 2002
 - Worked with radio station WJPF to create and broadcast the award-winning “Research Minutes”

Undergraduate Research and Inquiry-Based Learning

SIUC, like research universities nationwide, has embarked on integrating research into the undergraduate educational experience following recommendations of the *Boyer Report* (Kenny 1999) (also see Appendix C). This highly influential report on “reinventing undergraduate education,” compiled by members of the Nation Academies, begins by asking the question, Why should baccalaureate students give their loyalty and their money to research universities? Their answer: Because of the potential “for acquiring a virtually matchless education. The research universities possess unparalleled wealth in intellectual power and resources.” The challenge for research universities, then, “is to make their baccalaureate students sharers of the wealth.”

Nationwide, many models have been developed to meet this challenge, and the Council on Undergraduate Research (CUR) and the National Conference on Undergraduate Research (NCUR) meet and publish newsletters to present such models to a wide audience. As the *Boyer Report* notes, “Undergraduate education in research universities requires renewed emphasis on a point strongly made by John Dewey almost a century ago: learning is based on discovery guided by mentoring rather than on the transmission of information. Inherent in inquiry-based learning is an element of reciprocity: faculty can learn from students as students are learning from faculty.”

At SIUC, undergraduate students have been increasingly engaged in research with faculty members through the inception of a formal undergraduate research program in 1999. This program, **Research-Enriched Academic Challenge** or REACH, has been administered by ORDA (a staff member serves half-time as Director) since 2000 and is funded by the Office of the Provost and Vice Chancellor. Up to twenty students are accepted into the program each year, receiving awards of \$1500 to cover research expenses. REACH is showcased on campus in April of every year on Research Day, which features poster displays and monetary prizes for best posters. Visit <http://www.siu.edu/%7Ereach/> .

The undergraduate research mission has been expanded in several ways since its inception. One is through the Ronald E. McNair Postbaccalaureate Fellowship Program, initiated at SIUC in 2003. This is a federal program through the Department of Education to prepare students from underrepresented groups for graduate school, with the expectation that they will earn doctorates and join the professoriate, thereby serving as role models.

Another enhancement to undergraduate research has come through the Chancellor's Undergraduate Assistantship Program. This innovative program, initiated in 2003, provides undergraduate students with opportunities to work with faculty and staff in their fields of academic interest, while at the same time earning an hourly wage for their efforts. Although undergraduate assistantships support activities other than research, the overwhelming proportion of them (from 80 to 86 percent of the ~170 awards per year between FY03 and FY06) funded research and scholarly positions with faculty in the colleges. Since 2004, undergraduate assistantships have been formally linked to REACH in that the twenty winners of the REACH awards also receive assistantships, allowing the students to earn money while they participate in inquiry-based learning.

Recently, the Department of Chemistry received a highly competitive and multi-year NSF "Research Experiences for Undergraduates" grant, establishing a summer training center for undergraduate students from SIUC and other universities.

Two recent examples provide evidence of the impact of these undergraduate research

opportunities. Students in these programs won three of ten prizes awarded in the April 2006 St. Louis Area Undergraduate Research Symposium, the only students from a public institution to win awards. And in December 2005, a design team of eight undergraduate and graduate students won first place in an International Creativity Competition in Taiwan, besting U.S. teams from MIT and the University of Washington.

To publicize these and other successes of SIUC research-active undergraduate students, we are initiating an annual *Undergraduate Research Highlights* newsletter, the first issue to appear in Fall of 2006. We expect this newsletter will also be a powerful tool for recruiting excellent students who are seeking a challenging academic experience in college.

To support undergraduate research efforts via the family phase of the SIUC Comprehensive Campaign, we have established a Foundation account for undergraduate research (no. 11-06299).

Research and Regional Economic Development

In 2002, the then Illinois Department of Commerce and Community Affairs (DCCA) awarded SIUC a grant to establish SouthernTECH, a technology development center at the Office of Economic and Regional Development (OERD), now reporting to the OVCR/GD. Then, in 2003, the renamed Department of Commerce and Economic Opportunity (DCEO) established an Enterprise Center at OERD. Both entities are charged with moving University and other innovations from basic research into small businesses, creating new jobs in the region. Since their creation, these units have provided financing and business plan-development assistance to scores of small-business developers in the southern Illinois region.

Most recently, the 2006 economic development plan of the Jackson County Business Development Corporation (JBDC) (TIP Strategies 2006) asserted that “Jackson County’s greatest strength is SIUC” and “the presence of a major research university should be treated as a unique and primary asset for fostering a culture of entrepreneurship in the area.” The report goes on to say that in the area of technology transfer/commercialization, “SIUC is the largest contributor to the economic vitality of Jackson County”; that “University research and its transfer to the private sector (technology transfer/commercialization) has long been one of the

stalwarts of the American economy”; and that “the nation’s greatest competitive advantage in the global marketplace is now the intellectual capital generated by America’s university system.” Although the JBDC plan focuses on Jackson County, SIUC strives to have similar impact throughout the southern Illinois region.

Technology transfer activities at SIUC are handled through the Office of Research Development and Administration, and these activities have surged over the past five years. In FY05 alone, there were nineteen invention disclosures, nine patents filed, and four patents issued, and we have approximately forty patents pending. An important component of tech transfer is the ownership of intellectual property between the inventor and the University, and a new Intellectual Property Policy was successfully negotiated with the Faculty Association and accepted by the Board of Trustees in 2004. Somewhat related to this, a new policy on Conflict of Interest/Conflict of Commitment has also been developed, its provisions endorsed by resolutions of the Faculty Senate and the Graduate Council.

NATIONAL COMPARISONS: SIUC AND ITS PEERS AND ASPIRATIONAL PEERS

A variety of measures and indices have been developed by which universities’ stature and productivity are evaluated and ranked. One of these is the Carnegie Foundation classification and another is the National Science Foundation rankings, both discussed above. Two others are discussed here: *The Top American Research Universities* by The Center at the University of Florida (Lombardi et al. 2001, 2002, 2003) and the annual rankings of *U.S. News & World Report*.

The Center at the University of Florida

For The Center’s comparative purposes (Lombardi et al. 2001), research universities are defined as those universities that (1) compete successfully for federal research funds and (2) are regionally accredited institutions whose academic programs award accredited academic degrees. The Center’s rationale and criteria for research productivity of research universities include nine measures: total R&D expenditures, federal R&D expenditures, endowment assets, annual giving, National Academies memberships, faculty awards, doctorates awarded, postdoctoral appointees, and national merit and achievement scholars.

The Center includes comparative data for the top 200 research universities, including SIUC and our peers and aspirational peers (see Appendix D). Note that The Center data for rank differ from NSF data because “The Center makes adjustments, when necessary, to ensure that the data reflect the activity at a single campus rather than that of a multiple campus institution or state university system.” This distinction is exemplified in Tables A-1 and A-2, which present the NSF ranking and The Center ranking, respectively; invariably, the SIUC ranking is a larger number (i.e., lower) in The Center system than in the NSF system, indicating that we are ranked lower because of factors other than strictly research expenditures. NSF data are available for a longer time period, allowing analysis of long-term historical trends, such as those depicted in Figure 1. However, The Center provides a convenient compilation of data for a wide range of measures and rankings that are not otherwise available from a single source. An analysis of the relative performance of SIUC and comparable institutions for these measures in recent years follows. For simplicity, this analysis is based on The Center data.

Total R&D Expenditures

As shown in Figure 1, SIUC’s R&D expenditures and rank improved significantly in the 2000s, with the level in FY05 being 73 percent higher than that for FY99. From FY99 to FY03 (i.e., July 1, 2002 - June 30, 2003; the latest FY for NSF compilations), SIUC was one of only four of the group of thirteen peers and aspirational peers to rise in rank. Of the others, seven went down in rank and two remained unchanged. From 01-03, six peers declined in rank, four rose, and two (including SIUC) remained unchanged. Since FY03, total R&D expenditures at SIUC have begun to rise again, up 7 percent in FY05 from FY04, and projected for a much larger increase for FY06.

It should be noted that following 9/11/01, serious budget problems affected most states, including Illinois, which saw state revenues decline for two consecutive years. Consequently, state institutions were particularly affected during this unique period. This impact was particularly severe for SIUC as we traditionally derive a larger percentage of total R&D expenditures from state sources (>75 percent), than do most other state institutions (~50 percent). As one example, the College of Agricultural Sciences has been particularly reliant on the state’s

C-FAR program for research support, and was one of the leading colleges for external support in the 1990s. However, the C-FAR program budget was reduced ~80 percent (or >\$10M) from 2001 to 2003. As a result, the ag college's state award dollars declined 62 percent between FY00 and FY05 and total external awards for FY05 were 68 percent of the FY00 level.

Federal R&D Expenditures

As indicated in Figure 2, SIUC's level in this metric, considered by The Center to be the most reliable indicator of research performance by universities, has grown significantly since 1999. The \$17M total for FY05 is 9 percent higher than in FY04, 40 percent higher than for FY03, and 120 percent higher than for FY99. The largest growth in this measure has occurred after the most recent NSF compilation. Up to FY03 for the NSF data that provide rankings, eight of the peer group (including SIUC) are down and five are up in rank from FY01. From FY99 to FY03, nine of the peer group, including SIUC, declined in rank, and four rose. Up to FY03, SIUC remains distant from the *Southern at 150* goal for rank, but the more recent FY data show SIUC fast approaching The Center's \$20M threshold for top research universities.

It should be noted that SIUC federal awards are likely to get significant boosting from at least two sources: the \$85M pending appropriation for the Coal Fuels Alliance (shared with Purdue and University of Kentucky), and enhanced success with federal grants that is anticipated as a result of the creation and endowment of the Simmons-Cooper Cancer Center at the School of Medicine in Springfield.

Doctorates Awarded

From FY01 to FY04, nine among the peer group, including SIUC, saw growth in the number of doctorates awarded, and SIUC was ranked between 72 and 76 nationally in this measure during this time frame, on target for *Southern at 150* goals. The addition of new Ph.D. programs in Applied Physics, Agriculture (pending), and Computer Science (pending), along with targets to grow graduate enrollment from the current level of 4000 to ~5300 by 2010, promise to keep SIUC within sight of this goal.

Endowment Assets

During FY00-04, six peers were up and six peers down in rank; SIUC was unchanged. But the SIUC rank of 148 is distant from the next lowest (Oklahoma St) among the group at number 82. Failure in the 1990s or earlier to conduct a capital or comprehensive campaign can explain this result, and of course this area is not the responsibility center of the OVCR/GD. Initiation of the SIUC *Opportunity Through Excellence* campaign holds promise to correct this problem.

Annual Giving

During FY00-04, seven peers increased in rank, and SIUC rose forty places, from 160 to 120.

Faculty Awards

During FY00-04, SIUC's rank ranged from 74 to 175. With a few senior hires to stabilize the level at the higher level (five awards), SIUC could maintain this rank in line with *Southern at 150* goals.

Postdoctoral Appointees

For FY00-04, the data reflect effective SIUC competition in this measure. However, the veracity of the data is questionable: Note that between 2000 and 2001, UC-Boulder increased postdocs from 274 positions to 744, an increase of nearly 500. We have recently determined that SIUC appears to be vastly underreporting this measure due to definitional issues. In addition, postdoctoral positions are generally paid with funds from external grants; continued growth in grants should lead to an increase in postdoctoral positions.

National Merit Scholars

Between FY00 and FY04, SIUC did not compete well with peers in this category, only being ranked in two of these years. However, even a small number of these positions (four or five) would place SIUC in the *Southern at 150* target range. Enhanced research reputation and research opportunities for undergraduates should enhance our competitiveness in this category.

National Academies Memberships

In 2004, five institutions in the peer group, including SIUC, had no National Academies members, and two only had one. Adding only one or two National Academy members to the SIUC campus would put us into the *Southern at 150* target range. Devoting some part of the

Faculty Hiring Initiative (FHI) to attract faculty of this caliber could quickly elevate SIUC to this level.

U.S. News & World Report

U.S. News & World Report publishes an annual report ranking “America’s Best Colleges” that includes seven measures: peer assessment, retention, faculty resources, student selectivity, financial resources, graduation rate performance, and alumni giving rate. SIUC’s ranking by *U.S. News & World Report* has oscillated between last in third tier and first in fourth tier over the last five years, which is not a statistically significant variation over this time period.

Although this ranking is not a direct evaluation of research at universities, some measures may in part be related to research productivity. Because the largest factor in this ranking is a *reputation score*, improvement in our research ranking, which has a major impact on reputation, should enhance this measure in the long term. In addition, the Faculty Hiring Initiative (FHI) is a significant part of our strategy, but it must be noted that because of cost, the FHI is devoted primarily to hiring junior faculty, who will take several years to impact the overall research reputation of the University. An alternative strategy of hiring more costly senior faculty with high stature and visibility would have more immediate impact on our overall reputation. The FHI, which is intended to grow our tenure/tenure-track numbers, will also positively impact the faculty resources measure, which includes sub-measures of class size, student-to-faculty ratio, and the proportion of students who are full-time. Greater engagement of undergraduates in research activity may improve retention of some high-achieving students who are eager for more challenging academic activities.

THE FUTURE: CONTINUING CHALLENGES

Continuing Cultural Change

The declines in research productivity in the 1980s and 90s coincided with the disappearance of a “culture of research” for campus excellence in scholarship and creativity. Once entrenched, these cultures (or lack thereof) take long periods to change, and continued nurturing is required in this area. Arguably, nothing has had greater significance for reversal of the decline than the creation

of *Southern at 150*, a long-range vision for the campus of the sort that was sorely lacking in the 1990s.

Despite significant progress in reinvigorating the campus culture of research and excellence, the momentum must continue until it is completely embraced. One idea that could accelerate this momentum would be to commit the FHI for some year(s) to highly productive senior hires from well-established research universities. This approach could also have the added benefits of rapidly adding to the reputation of doctoral programs in advance of the upcoming National Research Council ranking of such programs. In addition, such an effort could be widely publicized to those who provide the subjective rankings for *U.S. News & World Report* in a manner that might positively influence the reputation of the University in those rankings.

Graduate Student Stipends and Benefits

Although the faculty is the primary driving force for research activities, graduate students (and postdoctoral associates) actually conduct the bulk of the work associated with those activities. The best graduate students will do the best research and will typically also be the best teaching assistants who provide support to undergraduate teaching. We recently completed a study showing that graduate student stipend levels on campus are almost invariably below national median levels for the various disciplines. In order to compete for the best graduate students, we need to attract them with the best environment for learning, including well-known faculty and more competitive stipends.

Graduate Student (and Postdoctoral Associate) Numbers

As graduate students conduct most of the research at universities, increasing the enrollment of these students will have a positive impact on the overall productivity of the campus. Part of the means to generate funds to support these students will be through continued growth in external grants and contracts. In addition, investment of state dollars into additional teaching assistant lines could also provide an increase of this support sufficient to enhance various aspects of the educational experience of our undergraduates, perhaps in an organized student mentoring program. The development of such a program could also improve retention of undergraduates.

Academic and Research Space

A key observation of the Washington Advisory Group was that “in some areas, availability of quality research space and necessary research infrastructure is a serious problem. This situation detracts from the research productivity of existing faculty, and will make recruiting outstanding faculty more difficult.” We recently conducted a preliminary assessment of academic space on campus and, through comparison to national data sets, we concluded that: (1) SIUC has a significantly smaller level of net assignable square footage (NASF) than do comparable institutions, and (2) SIUC has less research space than do comparable institutions.

As a result of these inadequacies, many strong departments are unable to compete for Faculty Hiring Initiative positions because of lack of space to house additional faculty, particularly those needing labs. In addition, poor quality of space in terms of basic necessities (e.g., adequate temperature control, non-leaking roofs, etc.) has led to problems such as deaths of expensive laboratory animals. It is our hope that through initiatives like Saluki Way, with the construction of academic and research buildings, this problem can be alleviated.

References Cited

Carnegie Foundation. 2006. The Carnegie Foundation for the Advancement of Teaching, <http://www.carnegiefoundation.org/classifications/index.asp>

Charlton Research Company. 1999. *Survey of Illinois Residents*.

Davis, H. D., and N. Diamond. 1997. *The Rise of American Research Universities*. Johns Hopkins University Press.

Kenny, R. W. 1999. *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. The Boyer Commission on Educating Undergraduates. [http://naples.cc.sunysb.edu/Pres/boyer.nsf/webform/images/\\$File/boyer.txt](http://naples.cc.sunysb.edu/Pres/boyer.nsf/webform/images/$File/boyer.txt)

Koropchak, J. A., P. M. Rice, J. Mead and D. Wilson. 2003. "Reinventing the Mid-level Research University," *J. Higher Education Strategists* 1(1): 11-31.

Lombardi, J. V., D. D. Craig, E. D. Capaldi, D. S. Gater, and S. L. Mendonca. 2001. "The Top American Research Universities," The Center of the University of Florida, 2001. (also subsequent annual reports, <http://thecenter.ufl.edu/research.html>)

TIP Strategies. 2006. "An Opportunity Analysis for Jackson Co., Illinois."

Washington Advisory Group. 2003. "A Review of the Research Enterprise at Southern Illinois University Carbondale, including the School of Medicine in Springfield."

APPENDIX A EXECUTIVE SUMMARY

“The Role of Research/Scholarly/Creative Activity at SIUC”

http://www.siu.edu/orda/reports/siuc_research.pdf

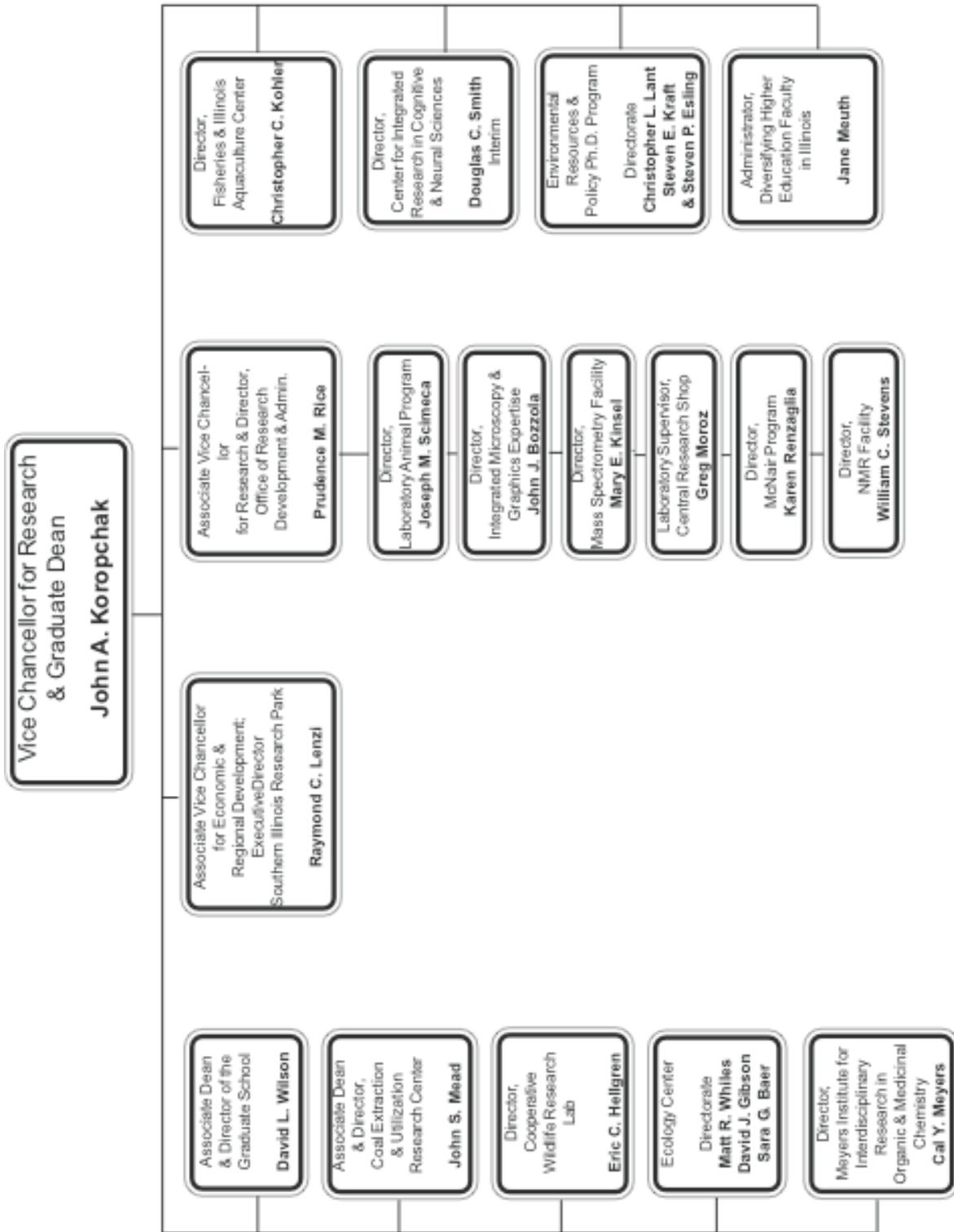
Prudence M. Rice

April, 2000

- Research flowered at SIUC during the Delyte Morris era, beginning in the 1950s. Morris emphasized “research in the directions best adapted to the special assets and the special needs of the area.”
- The Graduate School was created in 1951, and continues to operate under a mission statement approved in 1988.
- In the 1970s, research thrived at SIUC, largely under the direction of then-Provost Frank Horton, whose goal was to turn the campus’s lingering “teacher’s college mentality” into that of a major research institution.
- In 1973 and 1975, SIUC was classified as a Doctoral I institution in the initial classifications by the Carnegie Institution.
- Up to 1983, the SIU Foundation made available \$50,000 per year to ORDA to subsidize faculty travel; this amount was withdrawn in 1988, but contributions of \$20,000 were made in FY01 and FY02.
- In 1985, SIUC was ranked number 85 among U.S. public research institutions by the National Science Foundation, based on annual research expenditures.
- In 1986, SIUC moved into the Carnegie Research II category.
- Sometime during the 1980s, the lines in the colleges for Associate Deans for Research were terminated (except in the College of Agricultural Sciences) because of cost-cutting.
- In 1989, then-Chancellor Lawrence Pettit’s Strategic Plan recommended that SIUC shift its enrollment mix such that graduate students increased to 20-25% of the total, that Morris Library was among the top 60 research libraries in the U.S., that a new library, physical plant, and engineering and life sciences buildings were “absolutely essential,” and that SIUC should attain Carnegie Research I status in 5-10 years.
- Through 2002, research was administered at a third-tier administrative level: Associate Vice Chancellor for Academic Affairs and Research (AVCAAR) and Dean of the Graduate School, who reported to the Provost and Vice Chancellor for Academic Affairs. Three associate deans and one assistant dean reported to the AVCAAR.

- During the 1990s, research funding and activity grew slowly or not at all, despite the burgeoning federal R&D budget:
 - In 1992 and again in 1996, various administrative titles were changed and “research” was reduced into a parenthetical functional title: AVCAA(R).
 - The University failed to submit federal F&A (indirect cost) rate proposals after FY90, which are required every three years, and instead requested extensions, resulting in a penalty rate adjustment downward (to 41%).
 - In 1992, the then-Dean of the Graduate School removed \$161,104 from ORDA’s budget for internal faculty research grants.
 - In 1993, nearly all remaining travel money in ORDA was returned to individual colleges as OTS. Those funds were cannibalized during succeeding state budget recissions.
 - External reviews of the Graduate School and ORDA in 1992 noted that “a more concerted focus on the research mission would be beneficial to the university.” These recommendations were not addressed or implemented, and were reiterated in the next review in 1997.
 - In 1999, the North Central Association accreditation review repeatedly expressed deep concerns about SIUC’s inadequate technology to support the teaching and research mission. They also noted the basically flat external funding support received in the Colleges of Engineering and Science, and the School of Medicine.
 - In 1999, SIUC/ORDA participated in the first national Benchmarking Study conducted by KPMG and the Society of Research Administrators: SIUC fell near or below the median on 10 of 17 metrics, and in the bottom quartile on seven. In none of the measures did SIUC rank in the first quartile.
 - In FY99, SIUC received a total of \$36.8M in federal awards and \$26.5M in research awards; of these totals, federal research awards were only \$11.3M.
- By 1999, contrary to the hopes expressed by former Chancellor Pettit, and also contrary to the awareness of the faculty, SIUC was barely clinging to its Research II status, sustained only by Ph.D. production. Our federal R&D expenditures and F&A rate were among the lowest of the category.

APPENDIX B



APPENDIX C

Extracts of Some Essential Concepts in the *Boyer Report*

“Every research university can point with pride to the able teachers within its ranks, but it is in research grants, books, articles, papers, and citations that every university defines its true worth.”

“The undergraduate who flourishes at a research university is the individual who enjoys diverse experiences, is not dismayed by complexity or size, has a degree of independence and self-reliance, and seeks stimulation more than security.”

“Undergraduates need to become an active part of the audience for research. In a setting in which inquiry is prized, every course in an undergraduate curriculum should provide an opportunity for a student to succeed through discovery-based methods.”

“The basic idea of learning as inquiry is the same as the idea of research; even though advanced research occurs at advanced levels, undergraduates beginning in the freshman year can learn through research. In the sciences and social sciences, undergraduates can become junior members of the research teams that now engage professors and graduate students. In the humanities, undergraduates should have the opportunity to work in primary materials, perhaps linked to their professors’ research projects. As undergraduates advance through a program, their learning experiences should become closer and closer to the activity of the graduate student. By the senior year, the able undergraduate should be ready for research of the same character and approximately the same complexity as the first-year graduate student; the research university needs to make that zone of transition from senior to graduate student easy to enter and easy to cross. For those who do not enter graduate school, the abilities to identify, analyze, and resolve problems will prove invaluable in professional life and in citizenship.”

Ten Ways to Change Undergraduate Education

- Make Research-Based Learning the Standard
- Construct an Inquiry-based Freshman Year
- Build on the Freshman Foundation
- Remove Barriers to Interdisciplinary Education
- Link Communication Skills and Course Work
- Use Information Technology Creatively
- Culminate with a Capstone Experience
- Educate Graduate Students as Apprentice Teachers
- Change Faculty Reward Systems
- Cultivate a Sense of Community

APPENDIX D: PEER COMPARISON DATA

TABLE A-1

Total R&D Expenditures (\$M) and (Rank among Public Research Universities by NSF)

	1999	2000	2001	2002	2003
Auburn	\$80.5 (74)	\$92.6 (72)	\$106.3 (71)	\$108.8 (75)	\$124.1 (72)
Iowa St.	\$162.3 (36)	\$175.6 (39)	\$179.2 (41)	\$188.6 (43)	\$199.5 (48)
Kansas St.	\$85.6 (71)	\$91.8 (73)	\$94.0 (76)	\$106.8 (76)	\$112.7 (76)
Ohio U.	\$21.4 (134)	\$23.8 (131)	\$27.1 (127)	\$36.6 (117)	\$37.5 (121)
Okla St.	\$83.1 (72)	\$88.3 (74)	\$90.3 (77)	\$95.0 (78)	\$103.1 (81)
Texas Tech	\$46.2 (85)	\$53.9 (82)	\$55.0 (87)	\$63.2 (84)	\$69.7 (84)
Wash. St.	\$96.9 (65)	\$104.8 (64)	\$99.3 (70)	\$138.7 (71)	\$165.2 (54)
West Va. U.	\$63.4 (82)	\$66.1 (83)	\$71.3 (85)	\$85.0 (82)	\$104.7 (80)
SIUC	\$33.2 (108)	\$36.3 (107)	\$43.2 (104)	\$53.6 (100)	\$53.0 (105)
LSU	\$158.7 (26)	\$173.3 (24)	\$185.5 (23)	\$198.0 (26)	\$206.7 (25)
UC-Boulder	\$184.2 (14)	\$207.9 (14)	\$201.0 (15)	\$219.9 (15)	\$214.0 (15)
U. Ky.	\$174.0 (32)	\$202.4 (32)	\$211.8 (36)	\$236.3 (36)	\$272.0 (36)
UM-Columbia	\$149.0 (44)	\$158.9 (46)	\$174.8 (43)	\$177.0 (49)	\$205.2 (46)

Based on National Science Foundation (NSF) listing.

TABLE A-2

Total R&D Expenditures in \$M (and Rank among Public Research Universities)

	1999	2000	2001	2002	2003
Auburn	\$80.5 (72)	\$92.6 (71)	\$106.3 (68)	\$108.8 (76)	\$124.1 (72)
Iowa St.	\$162.3 (34)	\$175.6 (37)	\$179.2 (40)	\$188.6 (45)	\$199.5 (49)
Kansas St.	\$85.6 (69)	\$91.8 (72)	\$94.0 (75)	\$106.8 (77)	\$112.7 (76)
Ohio U.	\$21.4 (142)	\$23.8 (139)	\$27.1 (135)	\$36.6 (126)	\$37.5 (130)
Okla St.	\$83.1 (70)	\$88.3 (75)	\$90.3 (79)	\$95.0 (82)	\$103.1 (83)
Texas Tech	\$46.2 (100)	\$53.9 (99)	\$55.0 (103)	\$63.2 (103)	\$69.7 (100)
Wash. St.	\$96.9 (63)	\$104.8 (62)	\$99.3 (71)	\$138.7 (59)	\$165.2 (57)
West Va. U.	\$63.4 (83)	\$66.1 (85)	\$71.3 (88)	\$85.0 (86)	\$104.7 (82)
SIUC	\$33.2 (116)	\$36.3 (114)	\$43.2 (113)	\$53.6 (108)	\$53.0 (113)
LSU	\$158.7 (35)	\$173.3 (38)	\$185.5 (38)	\$198.0 (43)	\$206.7 (44)
UC-Boulder	\$184.2 (28)	\$207.9 (28)	\$201.0 (34)	\$219.9 (37)	\$214.0 (41)
U. Ky.	\$174.0 (30)	\$202.4 (29)	\$211.8 (32)	\$236.3 (33)	\$272.0 (32)
UM-Columbia	\$149.0 (41)	\$158.9 (42)	\$174.8 (42)	\$177.0 (52)	\$205.2 (46)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE B**Federal R&D Expenditures in \$M (and Rank among Public Research Universities)**

	1999	2000	2001	2002	2003
Auburn	\$27.1 (88)	\$31.5 (83)	\$40.1 (83)	\$42.4 (85)	\$45.4 (90)
Iowa St.	\$54.2 (58)	\$60.0 (57)	\$62.0 (59)	\$71.4 (62)	\$82.3 (62)
Kansas St.	\$28.1 (84)	\$31.2 (85)	\$34.0 (88)	\$44.0 (84)	\$53.3 (82)
Ohio U.	\$10.5 (142)	\$11.7 (143)	\$12.9 (140)	\$17.7 (133)	\$20.4 (132)
Okla St.	\$23.2 (101)	\$24.8 (98)	\$25.6 (101)	\$31.1 (103)	\$37.7 (102)
Texas Tech	\$15.2 (122)	\$16.1 (122)	\$17.2 (126)	\$20.4 (127)	\$23.2 (128)
Wash. St.	\$44.6 (65)	\$48.4 (66)	\$44.0 (75)	\$55.6 (69)	\$63.8 (71)
West Va. U.	\$26.3 (90)	\$28.0 (93)	\$29.4 (95)	\$49.4 (78)	\$60.6 (76)
SIUC	\$7.7 (161)	\$10.1 (151)	\$10.9 (153)	\$10.8 (158)	\$12.1 (163)
LSU	\$37.3 (70)	\$44.5 (69)	\$65.3 (57)	\$52.8 (73)	\$48.7 (87)
UC-Boulder	\$141.0 (18)	\$178.8 (15)	\$172.8 (16)	\$190.7 (17)	\$192.8 (22)
U. Ky.	\$66.2 (47)	\$73.9 (46)	\$86.2 (43)	\$100.4 (42)	\$120.0 (39)
UM-Columbia	\$53.9 (60)	\$65.4 (49)	\$68.4 (54)	\$77.7 (59)	\$84.2 (61)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE C**Doctorates Awarded (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	186 (53)	153 (64)	143 (65)	159 (60)	161 (63)
Iowa St.	238 (44)	232 (45)	239 (38)	238 (38)	239 (43)
Kansas St.	132 (67)	145 (67)	152 (62)	145 (66)	146 (70)
Ohio U.	120 (73)	106 (78)	112 (79)	111 (81)	111 (80)
Okla St.	185 (54)	236 (41)	188 (51)	182 (52)	204 (50)
Texas Tech	141 (65)	139 (68)	140 (67)	163 (57)	174 (58)
Wash. St.	118 (75)	149 (65)	161 (56)	126 (72)	167 (61)
West Va. U.	132 (67)	130 (71)	142 (66)	150 (65)	160 (64)
SIUC	119 (74)	120 (75)	126 (73)	126 (72)	124 (76)
LSU	275 (33)	264 (32)	222 (41)	211 (47)	240 (42)
UC-Boulder	266 (35)	292 (27)	258 (33)	303 (25)	286 (33)
U. Ky.	249 (40)	219 (49)	216 (44)	208 (48)	233 (46)
UM-Columbia	256 (38)	278 (43)	252 (36)	274 (30)	251 (40)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE D**Endowment Assets (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	\$238M (62)	\$260M (54)	\$232M (61)	\$224M (60)	\$269M (59)
Iowa St.	\$411M (30)	\$339M (41)	\$336M (41)	\$339M (38)	\$401M (39)
Kansas St.	\$188M (76)	\$185M (72)	\$173M (73)	\$168M (74)	\$206M (71)
Ohio U.	\$221M (69)	\$196M (69)	\$162M (77)	\$159M (77)	\$176M (79)
Okla St.	\$167M (81)	\$168M (74)	\$153M (79)	\$149M (82)	\$169M (82)
Texas Tech	\$293M (49)	\$316M (4)	\$332M (42)	\$199M (67)	\$247M (67)
Wash. St.	\$437M (28)	\$469M (26)	\$473M (29)	\$495M (26)	\$515M (29)
West Va. U.	\$283M (54)	\$274M (51)	\$271M (53)	\$275M (48)	\$303M (51)
SIUC	\$47M (148)	\$46M (146)	\$43M (150)	\$45M (150)	\$58M (148)
LSU	\$190M (75)	\$184M (73)	\$202M (68)	\$227M (59)	\$257M (63)
UC-Boulder	\$239M (61)	\$205M (67)	\$197M (70)	\$193M (68)	\$250M (65)
U. Ky.	\$369M (40)	\$419M (29)	\$397M (34)	\$412M (32)	\$489M (31)
UM-Columbia	\$369M (38)	\$354M (37)	\$381M (37)	\$433M (30)	\$571M (25)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE E**Annual Giving (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	\$37M (67)	\$61M (42)	\$38M (67)	\$44M (56)	\$51M (52)
Iowa St.	?? (14)	\$52M (47)	\$61M (47)	\$47M (50)	\$54M (48)
Kansas St.	\$40M (59)	\$45M (63)	\$37M (69)	\$45M (55)	\$54M (47)
Ohio U.	\$17M (109)	\$16M (125)	\$12M (135)	\$16M (124)	\$18M (110)
Okla St.	\$38M (65)	\$41M (66)	\$31M (79)	\$40M (68)	\$41M (66)
Texas Tech	\$59M (41)	\$115M (19)	\$43M (58)	\$27M (92)	\$42M (63)
Wash. St.	\$46M (54)	\$40M (71)	\$40M (65)	\$45M (54)	\$41M (67)
West Va. U.	\$53M (47)	\$39M (72)	\$57M (51)	\$42M (64)	\$49M (55)
SIUC		\$10M (160)	\$8M (162)	\$13M (143)	\$15M (120)
LSU	\$33M (72)	\$51M (49)	\$61M (44)	\$39M (71)	
UC-Boulder	\$57M (42)	\$49M (54)	\$61M (45)	\$40M (70)	\$35M (78)
U. Ky.	\$48M (52)	\$55M (45)	\$61M (46)	\$55M (43)	\$59M (43)
UM-Columbia	\$39M (63)	\$44M (62)	\$90M (26)	\$65M (34)	\$71M (36)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE F**Faculty Awards (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	3 (104)	3 (107)	1 (175)		3 (107)
Iowa St.	6 (60)	11 (40)	13 (26)	8 (47)	7 (56)
Kansas St.	1 (183)	4 (85)	5 (66)	5 (68)	4 (93)
Ohio U.	3 (104)	4 (85)	6 (56)	1 (175)	2 (132)
Okla St.	6 (60)	5 (70)	4 (79)	5 (68)	7 (56)
Texas Tech	4 (87)	3 (107)	5 (66)	3 (95)	4 (93)
Wash. St.	9 (45)	7 (55)	6 (56)	11 (35)	10 (41)
West Va. U.	2 (128)	4 (85)			1 (176)
SIUC	5 (74)	4 (85)		1 (175)	3 (107)
LSU	10 (43)	10 (43)	7 (50)	7 (53)	11 (35)
UC-Boulder	15 (25)	17 (24)	26 (5)	19 (14)	18 (22)
U. Ky.	14 (29)	12 (37)	10 (36)	11(35)	5 (80)
UM-Columbia	9 (45)	10 (43)	13 (26)	14 (24)	8 (51)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE G**Postdoctoral Appointees (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	33 (108)	36 (108)	34 (109)	38 (104)	48 (100)
Iowa St.	179 (43)	180 (42)	180 (45)	203 (41)	225 (37)
Kansas St.	88 (69)	100 (68)	122 (61)	133 (56)	138 (57)
Ohio U.	34 (107)	31 (114)	14 (142)	19 (141)	28 (123)
Okla St.	35 (106)	42 (100)	43 (98)	55 (93)	55 (95)
Texas Tech	88 (69)	80 (78)	67 (79)	60 (90)	53 (97)
Wash. St.	163 (47)	157 (50)	161 (49)	161 (49)	147 (54)
West Va. U.	7 (155)	45 (97)	32 (110)	31 (112)	27 (127)
SIUC	8 (150)	8 (155)	26 (123)	14 (148)	11 (157)
LSU	72 (79)	88 (74)	84 (71)	86 (79)	132 (59)
UC-Boulder	274 (21)	744 (5)	678 (5)	680 (7)	703 (6)
U. Ky.	186 (41)	224 (34)	250 (31)	230 (35)	170 (46)
UM-Columbia	152 (49)	179 (43)	142 (53)	157 (51)	156 (52)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE H**National Merit Scholars (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	38 (30)	26 (40)	29 (37)	28 (37)	26 (38)
Iowa St.	125 (7)	125 (6)	99 (10)	75 (12)	70 (11)
Kansas St.	14 (58)	13 (59)	9 (66)	22 (46)	14 (54)
Ohio U.	18 (54)	9 (69)	17 (51)	7 (73)	8 (66)
Okla St.	18 (54)	19 (50)	13 (58)	20 (49)	8 (66)
Texas Tech	19 (50)	22 (46)	16 (54)	17 (53)	11 (61)
Wash. St.	2 (106)	1 (110)	2 (104)	6 (75)	3 (89)
West Va. U.	11 (65)	11 (62)	14 (57)	16 (55)	20 (46)
SIUC		1 (110)			1 (118)
LSU	34 (33)	41 (26)	44 (23)	39 (29)	40 (24)
UC-Boulder	11 (65)	6 (78)	3 (93)	3 (92)	4 (80)
U. Ky.	60 (16)	49 (22)	54 (18)	45 (22)	36 (29)
UM-Columbia	30 (38)	20 (48)	21 (43)	18 (52)	32 (33)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.

TABLE I**National Academy Members (and Rank among Public Research Universities)**

	2000	2001	2002	2003	2004
Auburn	0 (112)	0 (111)	0 (114)	0 (116)	
Iowa St.	7 (41)	7 (42)	9 (35)	10 (36)	11 (34)
Kansas St.	0 (112)	0 (111)	0 (114)	0 (116)	
Ohio U.	0 (112)	0 (111)	0 (114)	0 (116)	
Okla St.	3 (61)	3 (63)	3 (64)	3 (62)	3 (62)
Texas Tech	0 (112)	0 (111)	0 (114)	1 (83)	1 (88)
Wash. St.	7 (41)	6 (47)	6 (47)	8 (41)	8 (42)
West Va. U.	0 (112)	0 (111)	0 (114)	0 (116)	
SIUC	0	0	0	0	0
LSU	1 (83)	1 (82)	2 (70)	1 (83)	1 (88)
UC-Boulder	24 (16)	24 (78)	26 (16)	24 (20)	28 (19)
U. Ky.	4 (58)	4 (57)	3 (64)	3 (62)	3 (62)
UM-Columbia	5 (50)	5 (52)	5 (53)	5 (51)	5 (53)

Based on "The Center" data that are corrected vs. NSF data to add more institutions.