

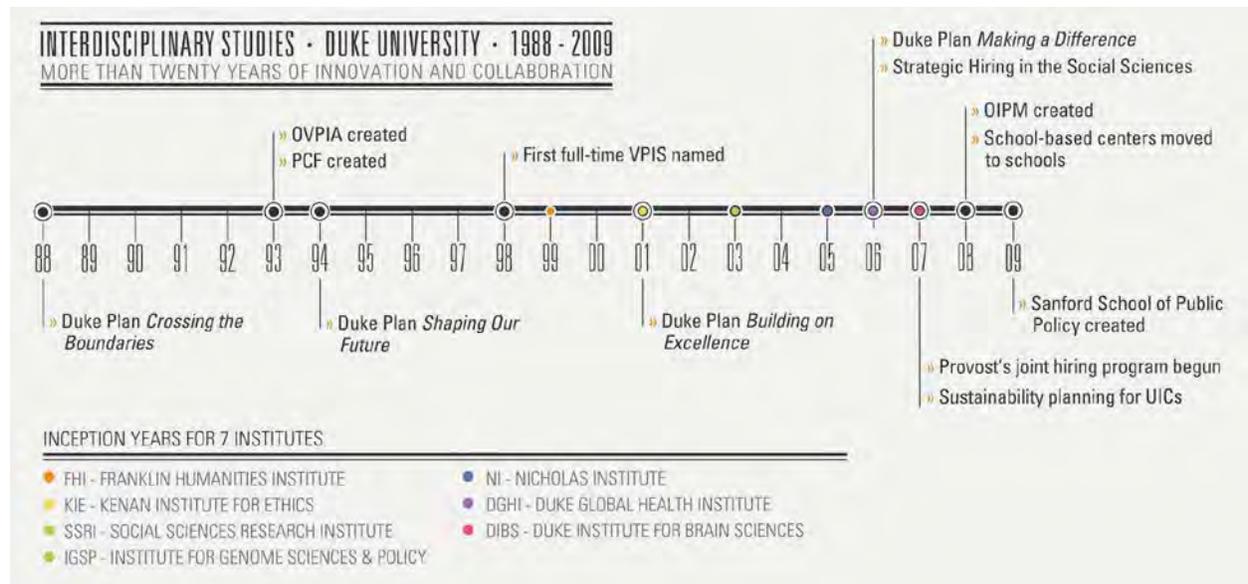
Executive Summary. Duke's reputation has been enhanced by its accomplishments in interdisciplinary studies; the interdisciplinary character of our institution attracts exceptional faculty and students, and aids Duke in its mission to provide knowledge in service to society. Success in interdisciplinary studies requires collaboration across disciplines, schools, and institutes; such collaborations have given rise to innovative initiatives in undergraduate and graduate education, and in faculty research and recruitment. Maintaining our current momentum requires embracing institutional challenges that derive from the tension between the priorities of individual units, on the one hand, and strategic collaborative opportunities on the other; these challenges are magnified in times of resource constraint. Goals for the next five years naturally follow and define the next stage of development for interdisciplinary studies at Duke.



Strategic Plan, 2010
Susan Roth, Vice Provost for Interdisciplinary Studies
interdisciplinary.duke.edu

Strategic planning for interdisciplinary studies at Duke University comes at a time when both schools and university institutes are sharpening their focus on their most valued research, teaching and engagement agendas, hoping to implement more forcefully than ever their commitments to the 2006 University Strategic Plan. It comes at a time when that strategic plan, *Making a Difference*, has fully permeated the culture of the university, making interdisciplinary studies *inside* the comfort zone of faculty and students, and on the minds of campus leaders who look to a future that is more collaborative across schools and disciplines, more global, and in service to society. It is in this context that a group of exceptional faculty (Attachment A), led by Vice Provost for Interdisciplinary Studies Susan Roth, met weekly over the course of the Fall semester of the '09-'10 academic year in order to formulate a set of goals for interdisciplinary studies for the next five years.

History and Inspiration



Above is a snapshot to trace Duke’s vision for interdisciplinary studies through three strategic plans, marking highlights in the implementation of that vision. Crossing the Boundaries set the stage for the commitment to a culture of intellectual innovation and collaboration, and in each of the subsequent strategic plans, we see the vision materialize at a new level of maturity, more and more firmly embedded in the very fiber of the institution. Making a Difference followed from a planning process that actively engaged the academic community. The process resulted in the building of an infrastructure for interdisciplinary scholarship, teaching, and practice that brought Duke’s commitment to a new level. (To view narratives that elaborate the timeline, see www.interdisciplinary.duke.edu/resources/documents.)

Duke has already achieved national recognition for its accomplishments in interdisciplinary studies. The tripartite mission of scholarship, education, and policy/practice which the group of signature institutes represent, the infrastructure and budgetary model to sustain and provide systematic oversight to the institutes, their ability to partner with the schools on joint hires, and the collaborations across the humanities, social and natural sciences are all distinctive. And ongoing efforts on the ground to increase innovation in both undergraduate and graduate interdisciplinary education, and build on the already considerable collaborative work of faculty, promise even greater recognition for Duke. As we move forward, it is useful to be mindful of several lessons learned: First, the focus by the Provost’s Office on a set of strategic institutes—on their management, their sustainability, their interaction with the schools, and their collective profile—greatly enhanced the normative status and value placed by the university community on interdisciplinary scholarship and education. Second, the transition to a School of Public Policy (formally approved in 2009) greatly enhanced the efforts to put interdisciplinary knowledge at the service of society. Finally, a true commitment to interdisciplinary studies changes how the University does business. Continuous innovation is required to incorporate interdisciplinary work into university administrative structures, practices, and culture in order to sustain its influence on the work of the university.



from Dean L. Gregory Jones' Opening Convocation address to Duke's graduate and professional schools, August 19, 2009:

"...I mentioned earlier that Duke University is vibrant and exciting and building strong foundations. That is because we are committed to the importance of interdisciplinary and interschool collaboration. To be sure, it is far from seamless, and we still have a long way to go. But our size, our geography, and the commitment of people from President Brodhead and Provost Lange through the deans and the faculty all contribute to a commitment to forming questions that will enable us to confront grand challenges our world is facing".

DEAN JONES CHALLENGES INCOMING GRADUATE STUDENTS TO COMMIT TO FORMING QUESTIONS THAT COMPEL THEM TO REACH BEYOND THEIR PARTICULAR DISCIPLINE AND SCHOOL, <http://www.divinity.duke.edu/news/noteworthy/20090819gradprofopeningconvocation>

Process and Scope

In forming a strategic planning group, the objective was to engage a group of faculty leaders in conversation about the opportunities, institutional challenges, and goals for interdisciplinary studies at Duke. The group was composed of faculty leaders with diverse interests and affiliations, leaders who represent the university and have an interest in the future of interdisciplinary scholarship and education. For each of ten weeks, the agenda was focused on a particular topic, with either a committee member or outside guest (e.g., dean, institute director, vice provost) leading the discussion. The scope of the discussions included undergraduate and graduate education; scholarship and policy/practice across the arts, humanities, social and natural sciences; and the institutional structures of schools and university institutes. The working definition of *interdisciplinary* was understood, for the most part, as *inquiry across disciplines*. Committee members appear below in alphabetical order.



Opportunities and Exemplars

Everything that we will do to distinguish our university in interdisciplinary studies will require a level of collaboration and teamwork that will challenge students and faculty alike to conceptualize their identity and commitment to Duke in broader ways than signaled by their primary disciplinary, departmental or school affiliations. There is much we can do with our current faculty resources to enhance the impact and visibility of our scholarship and deliver an innovative curriculum to our students. And there is much we can accomplish towards our strategic priorities by partnering across institutes and schools in thoughtful ways in the ongoing process of replenishing the faculty and setting expectations for their success. As a research university providing a liberal arts education, we have a mandate to synchronize these aspirations to create a community that remains intellectually vibrant and aware of both the short and long term benefits to our society of knowledge generation and dissemination.

Innovation in undergraduate education. Innovations that provide students with exposure to inquiry across the disciplines (e.g., via courses, programs, academic engagement outside of the classroom) are likely to have one or more of the following characteristics: 1) bring knowledge to bear on a real world problem; 2) be taught by a pair (or more) of faculty with different disciplinary training who model different ways of knowing or rules of evidence; 3) require that students work in teams to solve problems; 4) put contemporary culture relevant to students' daily experiences in a broad intellectual context. There is no question that the faculty is enthusiastic about being provided with opportunities to innovate in these ways, and that the students are ready and waiting for these kinds of academic experiences. It is arguable that these experiences will have the broadest of benefits in providing the students with new ways to discover their interests and try out commitments that will carry them into the future.

In the four schools invested in undergraduate education, it is, of course, more challenging to achieve cross fertilization across the divisions of scholarship (humanities, social sciences, sciences) than within them, and it is also more challenging than to draw on the faculty resources in the professional schools in order to enhance the undergraduate experience. What is perhaps of most immediate concern is that the unique ways in which the arts and humanities capture the imagination and enrich understanding will somehow be lost on young minds so eager to have a tangible influence on the world in which they live. It is incumbent on us to think creatively about how to further infuse humanistic perspectives and scholarship into our multidisciplinary efforts.

Recent examples of innovation in undergraduate education:

EXEMPLAR 1: PROVOST UNDERGRADUATE TEAM TEACHING INITIATIVE (PUTTI) COURSE, “NEUROETHICS”.

Neuroethics will be a new elective course for the neuroscience major with anticipated cross-listings in PHIL and PSY, to be taught in Spring 2011. The course will provide an introduction to the core ethical challenges and controversies that have arisen concurrent with advances in neuroscience, and will be co-taught (i.e., both instructors will attend and contribute throughout the semester) by two instructors, Professors Huettel and Sinnott-Armstrong, who come from different disciplinary perspectives but who share a common interest in the course topics.

EXEMPLAR 2: GRAND CHALLENGE SCHOLARS PROGRAM. This is a new program in the School of Engineering designed to foster undergraduate research, study, and experiential learning related to the National Academy of Engineering Grand Challenges for Engineering. Scholars take a Grand Challenge-focused interdisciplinary curriculum.

EXEMPLAR 3: HUMANITIES LABS. The general purposes of the FHI Humanities Labs are to create a physical environment and a conceptual space for research and pedagogical innovation among small groups of faculty pursuing a common interdisciplinary knowledge project. Each lab will propose, prepare, and teach undergraduate courses with the intention of simultaneously advancing the cross-school, interdisciplinary humanities mission of the FHI and of adding a range of new, innovative courses to the curricular offerings of the home departments and schools of connected faculty.

Graduate programming. There are multiple motivations for launching new programs at both the masters and doctoral levels; many of these motivations reflect the increasingly interdisciplinary and cross-professional nature of the training required to meet the needs of newly emerging career paths and related areas of scholarly expertise. These initiatives often require a great deal of cross-school collaboration at all levels of administration, and will benefit greatly from the current plan to create a Masters Advisory Network to provide central support from the Provost’s Office even for those programs that do not provide research degrees. The development of Masters programs that are tied to a Duke undergraduate degree are in a nascent stage of discussion, and will potentially provide not only opportunities to speed someone on their way to a professional career, but, alternatively, opportunities to broaden their academic experiences in the arts and humanities as part of a professional trajectory.

What is most elusive, although no less important as an opportunity for our institution, is the change occurring for all graduate students in the way they understand the role of specialization in an environment where many faculty are actively engaged in multidisciplinary seminars, projects, centers and university institutes. In some areas, graduate students are routinely involved with their mentors in interdisciplinary scholarship, or may even be driving their mentors to it! But not all graduate students work in a close apprenticeship model, and some may need more guidance to recognize the value of interdisciplinary study. Again, from Dean Jones’ convocation address: “...universities will rise from the rubble only insofar as we help equip students like you to recognize that the best way to develop genuine excellence in your

specialization is precisely also to connect its guiding insights, practices, and questions to those of other disciplines and professions.”

Recent examples of interdisciplinary graduate programming:

EXEMPLAR 1: ENVIRONMENTAL POLICY PH.D. The University Program in Environmental Policy (UPEP) is a multidisciplinary, research-focused five-year doctoral degree, intended to prepare candidates for positions in applied academic departments and professional schools (e.g., environment and natural resources, public policy, public administration, international affairs), domestic and international public agencies and environmental organizations, research institutes, and policy consulting firms.

EXEMPLAR 2: MASTER OF SCIENCE IN GLOBAL HEALTH. The Master of Science in Global Health (MSc-GH) is designed to appeal to an array of students, researchers, policy makers, managers, analysts, and clinical practitioners who desire a more complete understanding of the diverse causes of and solutions to health problems from an interdisciplinary global perspective. Upon completion of the MSc-GH, graduates will be prepared to engage in clinical, epidemiological, social-behavioral, and policy-oriented research, as well as contribute to the design, implementation, and management of health programs.

EXEMPLAR 3: COGNITIVE NEUROSCIENCE ADMITTING PROGRAM. Students enrolled in Duke's Graduate Admitting Program in Cognitive Neuroscience will gain a thorough understanding of the intellectual issues that drive this rapidly growing field, as well as expertise in the major methods for cognitive brain research. Students who enter Duke through this admitting program engage in cognitive neuroscience research in an interdisciplinary environment through the completion of coursework and research rotations in their first year of study. Students then affiliate with a permanent department and mentor during their second year and receive their Ph.D. from that department.

Collaboration in research and faculty hiring. In the three exemplars below, groups of faculty have joined together to develop broad initiatives spanning the social and natural sciences. The exemplars vary in their level of development; in all cases, the initiatives have the potential to magnify the individual contributions of scholars by the collective nature of their work. Not only is there a potential increase in the impact and visibility of Duke's scholarship in a particular area, but there are opportunities to make the collective even stronger by 1) identifying gaps in faculty expertise, 2) facilitating cluster hiring, 3) generating center grants that fund junior hires, and 4) more easily engaging in joint hiring that crosses both the institutes and schools, more easily because the collective truly represents those partnerships and has the effect of aligning priorities. These exemplars, moreover, bind research, educational, and engagement missions, and are well positioned to generate science that is new and innovative, extending our knowledge in ways that scholars working independently cannot.

EXEMPLAR 1: THE ENERGY AND ENVIRONMENT WORKING GROUP. This new initiative aspires to a broad set of functions and a broad intellectual focus. Its faculty participants are drawn from six schools (A&S, Fuqua, Law, Nicholas, Pratt and Sanford) and one university institute (Nicholas Institute) and are embracing a daunting goal of improving how innovations in energy generation, distribution and use are achieved. They are interested in capturing basic and applied research, education, external engagement, and consulting in their mission. The group has been charged by the Provost to propose a structure, key needs, and a strategy to move the initiative forward.

EXEMPLAR 2: THE NETWORK RESEARCH INITIATIVE. Social network approaches have figured prominently in sociology, psychology and anthropology since the early 1930s, and some have argued that the very essence of social life turns on how people are connected. With spotty growth throughout the century, the field officially organized in the mid 1970s, and has now expanded throughout the social sciences. Similar insights into the importance of connectivity across settings have sparked a rapid growth in the use of network tools in physics, computer science, biology, ecology and medicine. The tools initially developed to map connections between people can also be used to map connections among proteins, diseases, servers or species. This represents a truly interdisciplinary science, where insights and tools developed in the natural sciences can be leveraged in the social sciences and vice versa, making collaboration and communication across such fields extremely important. Professor James Moody has proposed a new Duke Network Research Center, as an affiliate of the Social Science Research Institute (SSRI), whose purpose is to draw together those currently using network approaches across the university to (a) help make more visible the world-class network scholarship already occurring at Duke, (b) promote new collaborations in network science across the Triangle, and (c) introduce and train new researchers in network approaches.

EXEMPLAR 3: THE POPULATION SCIENCES INITIATIVE. In an effort coordinated across departments, Duke University began recruiting population scientists of national and international reputations to campus in 2006. Since this time, Professors V. Joseph Hotz, Seth Sanders and Duncan Thomas (Economics), Elizabeth Frankenberg and Giovanna Merli (Public Policy), Terrie Moffitt and Avesholm Caspi (Psychology & Neuroscience), and Linda Burton and James Moody (Sociology) have joined the Duke faculty. While this group of researchers is extremely strong, they joined a set of researchers already at Duke with equally strong reputations. This included James Vaupel (Public Policy), Linda George, Ken Land, Phil Morgan and Zeng Yi (Sociology), and Marjorie McElroy (Economics) among others. Together, this set of researchers comprises a center of excellence in the Population Sciences at Duke. The Duke University Population Research Institute (DuPRI) is an interdisciplinary research collective whose mission is to organize all population research at Duke, attract to the Duke faculty some of the field's most acclaimed researchers and new talent; and expand the intellectual activity at Duke devoted to population research in the classroom, laboratory and field.

Obstacles and Institutional Challenges

The modern private research university is tasked with providing an undergraduate education that is at once 1) sensitive to the post-graduate goals of its students, 2) mindful of the need for a broad intellectual exposure to enhance whatever it is those students ultimately choose as their life's work, and 3) committed to an articulation of the intersections of the academy with the real world. And the organization of the university around Arts & Sciences disciplines and relatively independent professional schools continues to serve it well. Happily, interdisciplinary studies, with its emphasis on *inquiry across disciplines*, very much rests on the integrity of the disciplines and the professional schools for its intellectual excitement and achievements. However, it is at times this same organization that carries consequences, unintended or otherwise, that inhibit interdisciplinary innovation in the undergraduate

experience, including its extension to the master's level. It is perhaps our greatest institutional challenge with regard to interdisciplinary studies to achieve significantly more flexibility in the requirements of majors, the scheduling of courses, the way we envision faculty teaching, and the administrative structures within the schools to the end of facilitating such innovation. Currently it is difficult even for the university institutes to implement their educational goals because of competing demands on student and faculty time, as well as budget models and administrative structures that don't easily lend themselves to collaboration. And the current economic climate has even threatened our highly successful Focus program that has for so long served as a source of pride for Duke.

The other great challenge to our university with regard to interdisciplinary studies is to grow in strength and number our collaborative research efforts such that they come to define, more and more, the character of Duke for our faculty, graduate and postdoctoral students. Many of our ongoing efforts are facilitated by the administrative structures of our current group of seven signature institutes, which provide both support and a testing ground. Their continued funding is vital, although the source is not yet clear. And while the number of signature institutes is not likely to change within the next five years, we will be faced in the future with new demands for financial and administrative resources as the number of university-wide collaborations grows. University budget strategies must allow for the needs of both individual units and these collaborative ventures.

Another pressing focus is on a set of obstacles to interdisciplinary scholarship and associated faculty hiring which we have already begun to tackle. Without being exhaustive, the following five categories capture many of these encumbrances. Examples in parentheses illustrate their meaning:

(1) **space** (e.g., it would be enormously productive for the Social Science Research Institute to be co-located with the social science departments on West Campus);

(2) **distinct incentive structures across the university** (e.g., if the course buy-out rate were standardized across schools and departments within the constraints of necessary differences in salary levels and course loads, it would simplify the process of pulling together teams of researchers for collaborative purposes);

(3) **untested models for seeding initiatives** (e.g., it is not clear under what conditions centralized funding such as the common fund motivates sustainable collaboration);

(4) **difficulties coordinating hires across units** (e.g., departments may be unwilling to sacrifice an appointment that meets their local strategic goals for a position that better aligns the priorities of two potentially collaborative units);

(5) **risks to faculty development** (e.g., if we encourage the hiring of interdisciplinary junior faculty, they must have at least one champion among the senior faculty who can help minimize barriers to interdisciplinary work and provide mentoring as they develop their credentials for promotion and tenure).

More so than the obstacles for innovation in interdisciplinary undergraduate programming, these obstacles reflect the difficulty in shifting the priorities of individual faculty, departments, or schools in favor of priorities defined as most strategic for the university as a whole. And while Duke's senior leadership, carefully chosen school deans, and forward thinking faculty ensure that there is considerable support for such a collective way of doing business, it is nonetheless an incredible challenge to align priorities, streamline and coordinate administrative processes, invest wisely in collaborative opportunities, create appropriate infrastructures and locations for collaborative work, and nourish junior faculty as ways of knowing evolve. Duke's national leadership in taking on these challenges must be sustained.

Goals and Strategies

In broad strokes, the goals for the next five years are now likely evident, following naturally from the history, opportunities, and institutional challenges associated with interdisciplinary studies that have just been articulated. In explicit and concise form, these goals follow, along with initial considerations of strategy to achieve them.

- Enhance the impact and visibility of faculty scholarship by: 1) placing a high value on the collaboration of faculty across disciplines and schools, the alignment of priorities across schools and institutes, and cluster and joint hiring designed to fortify areas of strategic importance to the university; and 2) devoting energy to removing all administrative barriers to collaboration.

The school deans, along with the Provost, must play a strong leadership role in the following areas: 1) increasing the scope of current joint hiring efforts across schools and with university institutes, 2) publicly valuing model collaborative efforts, 3) continuing to put a high priority on appropriate infrastructures and locations for collaborative work, and 4) in other ways using influence and resources to encourage collaboration in faculty research and hiring. What would be most useful as an additional strategy is exploration, by a faculty committee, of different incentives for scholarly collaboration and different mechanisms for making investments in collaborative opportunities. What, for example, are the best ways to motivate faculty to engage in a collective research effort?

- Increase attention to the development of faculty who have multiple affiliations, especially junior faculty, through the articulation of clear expectations for their success and of norms for citizenship in their multiple homes.

It would be very productive for the Provost to charge a task force of faculty of different ranks with working with departments, institutes, schools, APT, and members of the Provost's

Office in developing and disseminating such standards regarding interdisciplinary faculty with multiple affiliations.

- Tie the training and socialization of graduate students to the collaborative work of faculty through such mechanisms as admitting programs, masters programming in well-established multidisciplinary hubs of scholarship, and graduate student networks in university institutes and their affiliated centers.

In collaboration with the Dean of the Graduate School and the Vice Provost for Interdisciplinary Studies, a group of school deans, institute directors and graduate students could productively explore opportunities for networking and more formal connections among graduate students with interests in interdisciplinary scholarship.

- Deliver an innovative curriculum to our undergraduate students that 1) provides exposure to inquiry across the disciplines, 2) draws on faculty resources in the professional schools, and 3) infuses the arts and humanities into multidisciplinary, educational efforts.

This will involve the efforts of the Office of the Dean and Vice Provost of Undergraduate Education, the Office of the Vice Provost for Interdisciplinary Studies, and the offices of the school deans responsible for undergraduate education in Trinity, Pratt, Nicholas and Sanford. It is suggested that the Provost charge these administrators to develop a plan to move this agenda forward.

- Sustain the current focus on the management of a set of signature university institutes to ensure their viability and success.

The Provost's Office has a well-established structure for the management and ongoing evaluation of the university institutes and affiliated centers. The best strategy for long-term stability of funding for a set of such strategic university institutes, as well as other collaborative initiatives, however, must be considered over the next several years.

ATTACHMENT A: Interdisciplinary Studies Strategic Planning Group, Fall 2009

Name	Primary Appointment	Other Duke Affiliations
Ana Barros	Professor, Civil & Environmental Engineering	Center on Global Change Nicholas Institute Nicholas School of the Environment
Ian Baucom	Professor, English	Franklin Humanities Institute
Gary Bennett	Associate Professor, Psychology & Neuroscience	Duke Global Health Institute
Leslie Collins	Professor, Electrical & Computer Engineering	Duke Institute for Brain Sciences Biomedical Engineering School of Medicine
Fred Dietrich	Associate Professor, Molecular Genetics & Microbiology	Institute for Genome Sciences & Policy University Program in Genetics & Genomics Program in Cell & Molecular Biology Computational Biology & Bioinformatics Duke University Mycology Research Unit
Elizabeth Frankenberg	Associate Professor, Public Policy	Sociology Duke Global Health Institute Social Science Research Institute
Scott Huettel	Associate Professor, Psychology & Neuroscience	Neurobiology Psychiatry Center for Neuroeconomic Studies Brain Imaging and Analysis Center Center for Cognitive Neuroscience Duke Institute for Brain Sciences
Steve Nowicki, ex-off.	Dean and Vice Provost, Undergraduate Education	Biology Psychology & Neuroscience Neurobiology
John Payne	Professor, Business Administration	Psychology & Neuroscience Law School Statistics & Decision Sciences
Susan Roth, Chair	Vice Provost for Interdisciplinary Studies	Psychology & Neuroscience
Seth Sanders	Professor, Economics	Sanford School of Public Policy
Jacqueline Waeber	Associate Professor, Music	
Jonathan Wiener	Professor, Law	JD-LLM Program in International & Comparative Law Nicholas School of the Environment Sanford School of Public Policy Nicholas Institute Global Health Institute Center for European Studies Center for International Studies Micro-Incentives Research Center
Erika Weinthal	Associate Professor, Environmental Policy	
Jo Rae Wright, ex-off.	Dean and Vice Provost, Graduate School	Cell Biology Pediatrics & Medicine Cell & Molecular Biology Pharmacology