

Leading through Collaboration

Interdisciplinary innovation attracts top talent, but working together isn't always smooth sailing. Collaboration is required, and the Graduate School is taking the lead to discover what works and to share it.



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Jeff Kahn navigates an interdisciplinary world every day. He heads the University's Center for Bioethics, working closely with faculty colleagues and students not just from different departments but from multiple colleges—the Medical School, Law School, School of Public Health, School of Nursing, and College of Liberal Arts—on thorny dilemmas of life, death, and well-being in the modern world.

Should dying patients be able to buy the organs they need? Should healthy people be able to sell organs they don't need? Who determines need? Who decides? Who has priority?

Organ transplant is just one of many subjects surrounded by innumerable ethical issues. Beginning in fall 2009, students in a new master's program in bioethics will begin to navigate those issues with Kahn and other faculty experts in the Center for Bioethics. They'll prepare for interdisciplinary careers that explore the high stakes and deep questions of topics from genetic testing to pandemic readiness.

"Interdisciplinary" also describes Kahn himself as a scholar whose work crosses the usual disciplinary boundaries. That realization began when he was an undergraduate, majoring in molecular biology and aiming for medical school.

"I took a hospital job drawing blood and hated it," he remembers. "I realized medicine wasn't for me. I was interested in the moral issues of medicine but not the blood and guts."

As it turned out, Kahn was more than interested in the moral issues in medicine. He was driven to explore, test, and develop approaches to addressing them. He completed a Ph.D. in philosophy at the same time as he pursued a master's in public health—at two different universities.

"So our lives as individual scholars are interdisciplinary, and so is our collaboration with colleagues," he says.

Navigating convergence

Kahn is one of those scholars who thrive on the friction and energy released where two or more disciplines come together. His drive is to master the languages and methodologies of each and go where the convergence leads.

Ray Newman is another brave traveler across the boundaries of conventional disciplines as he studies the impact and control of invasive species. Though he's a professor of fisheries, wildlife, and conservation biology—an interdisciplinary department in itself—Newman regularly works with colleagues and graduate students in fields including applied eco-

Read more ... U of M interdisciplinary research and education: www.interdisciplinary.umn.edu ■ Office of Interdisciplinary Inquiry: www.grad.umn.edu/oii
■ Center for Bioethics and the new master's program: www.bioethics.umn.edu ■ Water Resources Center: wrc.umn.edu
■ U of M Rochester and BICB: www.r.umn.edu & www.r.umn.edu/19_BICB.htm ■ Large Lakes Observatory: www.duluth.umn.edu/llo



Photo courtesy Large Lakes Observatory

DULUTH GEOLOGICAL SCIENCES PROFESSOR Tom Johnson, center, and Martijn Wolterling, a Ph.D. student in water resources science, discuss a sediment core split open aboard the R/V *Blue Heron* on Lake Superior. The Large Lakes Observatory (LLO) brings together researchers in aquatic chemistry, circulation dynamics, geochemistry, acoustic remote sensing, plankton dynamics, sedimentology, and paleoclimatology to solve problems of freshwater lakes—on the biggest freshwater lake in the world. Johnson is a member of the University’s Network of Interdisciplinary Initiatives.

nomics, entomology, plant biology, public affairs, and biology in Duluth. “Increasing globalization has made the need for studying invasive species more urgent,” he says, “and expertise from molecular biology to aerospace science will be used to better predict and manage the risks.”

Claudia Neuhauser brings intellectual strength in mathematics to the fields of biology, medicine, and ecology. An award-winning faculty member on the Twin Cities campus, Neuhauser took a new position this fall as vice chancellor for academic affairs at the University’s unfolding campus in Rochester. It’s a location that promises to harness the region’s power in medicine and technology, known around the world for the Mayo Clinic, IBM, and Hormel. A new program in biomedical informatics and computational biology (BICB), anchored in Rochester under Neuhauser’s leadership, will join health informatics as the first elements under the University-wide interdisciplinary informatics umbrella.

Kahn, Newman, and Neuhauser make their own professional paths and accomplishments look natural—which, in some ways, they are. All have built careers around responding to real-world issues of urgency and relevance in everyday lives. All have pushed the boundaries of knowledge in a public university while preparing the next generation of educators, professionals, and scholars.

Yet all have been forced to navigate barriers, from financial systems and outdated bureaucratic practices to narrow reward policies and habits of thinking.

“In a single generation, we’ve moved from disciplinary practice to this more fluid interdisciplinary approach,” says

Kahn. “How to manage the ongoing evolution is a live issue.”

That’s why the University’s Network of Interdisciplinary Initiatives (NII) was formed in 2007. The grassroots group of about 250 faculty and staff members—seeking to expand its reach to postdoctoral appointees and students—was an idea conceived and tested by University vice provost and Graduate School dean Gail Dubrow toward the end of her time at the University of Washington. As a peer network at the University of Minnesota, the NII has blossomed as a result of collaboration within the Provost’s Interdisciplinary Team and with leadership from the Graduate School’s newly established Office of Interdisciplinary Initiatives (OII).

As Newman sees it, the NII offers a valuable overview of interdisciplinary research, teaching, and training. “It’s useful to get a variety of perspectives,” he says. “Challenges in applied sciences, for example, are different from those in other areas. It’s eye-opening.”

Last year, NII members pooled their knowledge and experience to identify many of the institutional policies and practices that are obstacles to interdisciplinary activity, and offered recommendations for change that would make the University of Minnesota a leader among research universities.

Now the NII’s working groups are refining their recommendations and developing strategies for implementing them in critical areas, such as research centers and institutes, incentives and rewards, teaching, public engagement, and collaborative leadership—with a focus on ways to overcome the barriers to working effectively across disciplines. With the changes they seek, NII members aim for a stronger, more flexible, and more competitive University as a whole—a safer harbor for those who do innovative work within existing disciplines as well as faculty, staff, students, and postdoctoral appointees whose work routinely involves what Dubrow calls “border crossings.”

Conflict and curiosity

Water may be where the disciplines come together for Newman, but he never assumes smooth sailing.

“Some challenges you could describe as bureaucratic,” he says. “But there are differences of vocabulary, worldview, and approaches to problems” that need to be addressed by those who voluntarily collaborate on water issues across disciplines.

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FACULTY MEMBERS Mary Jo Kreitzer from the Center for Spirituality and Healing, right, and Jean Bauer from family social science are working through the Network of Interdisciplinary Initiatives to identify and adopt best practices for scholarship and collaboration across disciplinary and college boundaries.

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In a training program that Newman leads, for example, 40 faculty members from 16 departments are collaborating on new research and courses supported by a five-year, \$2.99-million grant from the National Science Foundation. A graduate minor in risk analysis for introduced species, approved last year, engages faculty and students.

As everyone knows, brilliant people don't always make good leaders. And in academe, where traditions place a premium value on individual achievement and original contributions, the ability to collaborate effectively has not commonly been taught or modeled. Newman's collaborative skills make him valuable both as a leader of specific initiatives and as a resource within the wider university.

Last spring, a series of workshops on collaborative leadership debuted in which Newman and other key faculty leaders were able to share their approaches and experience. Topics covered teambuilding, collaborative grant-writing, and conflict management.

"It's all about collaboration," says Vicki Field, director of the Graduate School's Office of Interdisciplinary Initiatives. The OII itself collaborated with the Office of the Vice President for Research and the Office of the Senior Vice President and Provost to cosponsor the workshop series.

Conflict is normal in academic and group work—but so is curiosity, and they should be related, said Howard Gadlin at the first workshop. Gadlin has

helped to resolve many conflicts in his role as ombudsman and director of the Office for Cooperative Resolution at the National Institutes of Health.

"When you hear something that upsets or angers you, when you are in the middle of a dispute with someone else, the stance you want to take is not to rebut, not to debate, not to fight back, but to become curious," Gadlin told the audience. "You want clarity, and then you want to understand why the person might be holding that position."

If expected, welcomed, and used well, conflict can enrich the power of collaboration, he said. Rather than viewing conflict as an unexpected disruption in the normal work flow, Gadlin encouraged the audience to view conflict as an

opportunity to deepen understanding across lines of difference and a vehicle for strengthening relationships within teams.

The first year was so successful that the workshops expanded in 2008-09.

A national opening

The OII was created in the Graduate School in 2006, after the need to foster interdisciplinary inquiry was identified as a critical institutional priority during the strategic planning process.

"The University of Minnesota has benefited from a generation of leadership that has recognized the strategic importance of fostering interdisciplinarity," says Field. "Fortunately, our leaders have recognized that success cannot be left to chance."





SPACE IS A CRITICAL FACTOR in fostering interdisciplinary collaboration. **Left**, existing space—such as this open area in Nolte Center, now home to the Institute for Advanced Study—is adapted to provide an “academic hearth” that fosters the exchange of ideas among students and faculty in many fields. **Below left**, new buildings, such as the state-of-the-art McGuire Translational Research Facility, are incorporating features such as this flexible-space wet lab for use by researchers in a variety of disciplines.

opportunities. The University of Minnesota was joined by Berkeley, Brown, Duke, and the universities of Illinois, Michigan, North Carolina, Pennsylvania, Washington, and Wisconsin in conducting self-studies in eight functional areas—research, education and training, administration and governance, finance and budget, space and planning, development and fundraising, equity and diversity, and collaborative technologies.

Past studies have focused on interdisciplinary research and the departmental reward structure for faculty. In contrast, the consortium’s work has brought to light the myriad ways that barriers to interdisciplinary work are embedded in the standard operating procedures of universities, which were designed to optimize the flow of resources to individual colleges and the discipline-based departments within them.

At every step in organizing the consortium, collaboration rather than competition among peers has been the method as well as a goal.

As results of the study roll out this year, Dubrow hopes the consortium will be able to welcome new institutional members who agree to adopt one or more of the recommendations identified as a result of this project to improve higher education as a whole.

“The goal is nothing short of transformation,” says Dubrow. “The work of the consortium is our opening.” ■

Field speaks from years of experience supporting the academic governance system for graduate education. She has observed up close the evolution of traditional disciplines as they have embraced new approaches and methods, as well as the barriers that make it more complicated to develop and sustain graduate programs that extend beyond established departments and colleges.

Interdisciplinary innovation has a long and strong track record at the University. Epidemiology, classical studies, water resources, conservation biology, and biotechnology are just a few of the fields that emerged early. The University’s unusually comprehensive character—all the health professions, law, and agriculture in addition to liberal arts, sciences, and engineering—and its location in a state with a diverse economy have undoubtedly contributed to creativity.

But with the birth of the information age and the boom of the knowledge economy, rising costs of research, and an

ever more complex academic infrastructure to support them, interdisciplinary endeavors have had to rely more on intention than serendipity to ignite and flourish, especially at big research universities. Beginning in the 1980s, Graduate School leadership recognized the critical need to support interdisciplinary scholarship.

In 2005, the University gained an edge over its peers—who are exploring these same issues—with the arrival of Dubrow as vice provost and dean of the Graduate School. Dubrow herself is an interdisciplinary scholar whose work in the preservation of places significant in the history of underrepresented groups crosses the fields of architecture, landscape architecture, history, and planning, an unusual mix reflected in faculty appointments in four departments across three U of M colleges.

In 2007, Dubrow convened a consortium of major public and private research universities to map the landscape of interdisciplinary challenges and