

University of Rochester

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The Evolution of Entrepreneurship at the University of Rochester

The Nature and Scope of the KCI Impact

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With an Introduction by

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Introduction by President Joel Seligman

In today's global society, progress largely depends on entrepreneurs who know how to transform ideas into enterprises that create value. The University of Rochester has embraced this broad definition of entrepreneurship, recognizing that the value generated can be economic, social or cultural. When the opportunity arose to apply to the Kauffman Campuses Initiative, Thomas H. Jackson, who served as president of the University from 1994 to 2005, and William Scott Green, dean emeritus of the University's undergraduate College, drew from Rochester's entrepreneurial spirit to develop their visionary proposal, which has transformed our culture. Through the generous support of the Kauffman Foundation, we have been able to embed entrepreneurship into every facet of the University, encompassing an unusually broad range of fields from engineering to nursing to music. We have also established the Center for Entrepreneurship to serve as the nucleus for our efforts and shepherd the initiative across campus and beyond.

Interest in entrepreneurship at the higher education level has grown dramatically in the past decade, as evidenced by new programs at the undergraduate and graduate level, creation of centers for entrepreneurship across the country, an increase in research papers and conferences on entrepreneurship, a proliferation of academic and professional societies, the establishment of business plan competitions for undergraduate and graduate students, and the endowment of chairs in entrepreneurship. However, the field is still in a fledgling state, working to break free from the fringes of academia into the mainstream as a genuine scholarly discipline. I see the University as a leader in this regard, paving the way for entrepreneurship to become a unifying theme in higher education.

Entrepreneurship is not the first field radically to alter the academic world and certainly will not be the last. It can be compared to what computer science was in the 1970s. At Rochester, numerous parallels can be drawn from what the KCI grant has done for entrepreneurship and what the \$3 million Development Award from the Whitaker Foundation accomplished for biomedical engineering in the early 2000s. Both grants infused much needed funding into "hot," "new" fields. Yet both entrepreneurship and biomedical engineering had a history of support and success at the University that predated the awards. Most importantly, winning support from two reputable foundations indicated Rochester's leadership in these disciplines and cemented their legacy at our institution. The Kauffman Foundation grant greatly sped up the evolution of entrepreneurship into a legitimate academic discipline at the University of Rochester.

The impact of Rochester's KCI grant extends well beyond campus. With the waning fortunes of Eastman Kodak, the University has emerged as the largest employer in Monroe County, with more than 20,000 employees in 2011. The University, as a driver of the regional economy, uses its entrepreneurship initiative to benefit the community. By cultivating an atmosphere of entrepreneurship, we are in position to lead the region in overcoming obstacles and seizing opportunities when presented. Some examples of this broader impact include:

- A number of our entrepreneurially-minded and socially-conscious students have created business and marketing plans for local not-for-profit organizations through programs such as the Kauffman Entrepreneurial Year.
- We have developed enhanced processes to facilitate technology transfer across campus, resulting in the launch of a number of new companies in the Rochester area.
- The University is an active participant and leader in regional economic development initiatives, including Greater Rochester Enterprise, the Rochester Business Alliance, the Finger Lakes WIRED Initiative, High Tech Rochester (HTR), and Excell Partners. HTR and Excell are wholly-owned subsidiaries of the University and provide critical financial, managerial, and infrastructure support and services for local early-stage high-tech and biotech companies.

The University is blessed with a heritage of entrepreneurship, and the Kauffman Campuses Initiative has become a celebrated part of that tradition. The breadth of the grant enabled the University to establish entrepreneurship as an enduring educational enterprise and a defining characteristic of our core culture. In conclusion, perhaps our new mission statement best captures the entrepreneurial spirit at Rochester: "Learn, Discover, Heal, Create—and Make the World Ever Better."

Accomplishments Resulting from the Kauffman Campuses Initiative

The foundation of entrepreneurial programs, courses, and research at the University of Rochester received tremendous financial and institutional support when the Ewing Kauffman Foundation awarded a \$3.6 million Kauffman Campuses Initiative (KCI) grant to the University in 2004. In addition, the University agreed to provide \$7.2 million in matching funds. At Rochester, we understand entrepreneurship to mean the transformation of an idea into an enterprise that creates value—economic, social, cultural, or intellectual. The KCI grant provided funding to enhance existing entrepreneurship programs in the School of Nursing, the Eastman School of Music, and the Simon Graduate School of Business, and create new programs across the campus, namely within the College of Arts and Sciences, the Hajim School of Engineering and Applied Sciences, the Warner Graduate School of Education and Human Development, and the School of Medicine and Dentistry. It is important to acknowledge that this report is the culmination of contributions from deans, senior associate deans, and center directors, representing all of the above named divisions of the University, who provided details, quotes, and feedback about the impact of the KCI on Rochester.

The KCI grant was the cornerstone that led to the vast expansion of the University's financial and cultural investment in entrepreneurship. The enhancement and creation of programs and courses have transformed the campus into one where faculty and students from any discipline are familiar with the entrepreneurship initiative. Furthermore, the KCI grant ensured that entrepreneurship at the University was not housed within a single school—such as the business school or engineering school, as is the case with many of our peer institutions. Instead, entrepreneurship is under the direction of the Provost's Office, primarily implemented through the Center for Entrepreneurship (CFE), established in 2006, led by the Vice Provost for Entrepreneurship.

The very governance structure of entrepreneurship at the University has allowed the initiative to pervade each school, catapulting Rochester into a leading institution of entrepreneurship education, especially in nontraditional areas such as music, education, nursing, and medicine. Entrepreneurship has become a common thread among the separate units, resulting in unprecedented collaboration. The University is unique among the 22 KCI grant recipients in that Rochester is the only university to establish courses and programs throughout each of its Schools. Our adoption of a broad definition of entrepreneurship has assisted in transforming attitudes among most faculty, administration, and students University-wide. These accomplishments would not have been possible without KCI.

Points of Pride

The following are points of pride regarding entrepreneurship at the University of Rochester. We strongly believe that KCI was either a catalyst or direct factor in achieving these.

- Two signature programs resulted from the KCI grant: the Kauffman Entrepreneurial Year (KEY) program and the Young Entrepreneurs Academy (YEA!), which was spun off into its own business entity in fall 2008. To date, 75 undergraduates have been accepted into the KEY program since its launch in 2005. YEA! has continued to run a site hosted at the University of Rochester and has launched sites in multiple states, such as Illinois, Florida, and South Carolina.
- Since the inception of KCI through June 2011, students have submitted 274 business plans for curricular and co-curricular activities.

- Carlin Gettliffe graduated the University as the first student to major in entrepreneurship in 2009. Since then, three other students have designed their own interdepartmental majors in entrepreneurship: Benjamin Brown '11, Scott Strenger '12, and Susanna Virgilio '12. One of the keystones of a Rochester education is the flexibility of our curriculum and the University strongly encourages students to learn what they love.
- The Simon Graduate School of Business at the University of Rochester was recently ranked 24th on *CEOWORLD* magazine's 2011 list of top business schools for executives and entrepreneurs.
- The recently launched master's degree program in Technical Entrepreneurship and Management (TEAM) received the 2011 Award for Excellence in Specialty Entrepreneurship Education, presented to the University's Center for Entrepreneurship by the Global Consortium of Entrepreneurship Centers during its annual conference. The number of TEAM applications has risen dramatically since the program began, from 72 applications in the first year to 134 in 2011.
- KEY Scholar Stephen Macaskill '11, founder of Amagi Clothing, was a finalist in the 2011 Sammies Awards, an international program that recognizes the outstanding work of young activists around the country. Macaskill's clothing line promotes individual liberties such as life, peace, and equality.
- Brian MacMillin, a mechanical engineering student, was an international finalist in the 2010 Global Student Entrepreneur of the Year Awards contest. MacMillin, president and owner of Outdoor Equipment Supplier LLC, designs and manufactures ultra-lightweight, durable camping tarps for backpackers.
- A team of University of Rochester undergraduates was one of only two teams from the United States and 22 teams worldwide to be declared winners in the 2009 Stanford Global Innovation Tournament. The contest challenged students to "make saving money fun" and creatively convey their ideas in a short YouTube video. Their concept, "Pass the Pig," a website of their own design where people share ways to save money via virtual piggy banks, stood out from 1,000 entries.
- Three Kauffman Entrepreneurial Year (KEY) students who created ArtAwake, a visual and performing arts and music festival designed to connect the University community with the general public, were awarded the Association of College Unions International 2009 Student-Driven Program of the Year Award.
- In 2009, the Simon Entrepreneurs Association, a student-run club, opened its membership to graduate students at the University's other professional schools, promoting interdisciplinary innovation.
- Student applications to the Mark Ain Business Model Competition, launched in 2007, have increased every year of the grant period.
- The UR Entrepreneurs, an undergraduate club founded in 2005, has one of the fastest growing memberships of all undergraduate student clubs.

- Daniel Fink, a Rochester chemical engineering major with a minor in environmental engineering, was selected for the Kauffman-Singapore Scholars Program in 2009. Fink was one of only five students chosen from a national pool of over 160 applicants. He spent five months studying commercialization and entrepreneurship at the Nanyang Technopreneurship Center at Nanyang Technological University (NTU) in Singapore.
- The Eastman School of Music held a conference called “Preparing the Generation ‘E’ Musician: Entrepreneurship’s Place in the Music School Curriculum” in January 2009. The Eastman School invited deans, professors, and students from leading music schools from around the nation.
- In fall of 2007, the School of Medicine and Dentistry launched the Clinical and Translational Research Studies Seminar Series, which covered content important to entrepreneurs and faculty at both the Medical Center and on River Campus.
- In July 2007, Rochester was ranked as one of the “10 Cool Colleges for Entrepreneurs” on CNNMoney.com.
- In May of 2007, Patricia Chiverton, former dean and professor at the University of Rochester School of Nursing and vice president of Strong Health Nursing, was named the world’s first endowed chair in nursing entrepreneurship.
- In March 2006, the University of Rochester was named one of the top 10 colleges for budding entrepreneurs in *Fortune Small Business*.

KCI Impact on Faculty and Administration

Evaluation, Promotion and Hiring Decisions

The KCI grant largely did not affect changes in the evaluation of, promotion of, or hiring decisions on faculty at the University of Rochester. However, leadership at each of the Schools strongly feels that an entrepreneurial mindset is a valuable asset in candidates. Certain deans, such as at the Warner School, have been more alert to recognizing and rewarding faculty members’ willingness and ability to promote innovations.

KCI provided an impetus to create endowed professorships in entrepreneurship. The Pamela Klainer Endowed Chair in Nursing Entrepreneurship and the James N. Doyle Professorship in Entrepreneurship are currently vacant. A search is underway at the Simon School to fill the tenure-track Doyle Professorship.

Anecdotally, when Robert Clark, dean of the Hajim School and former dean of Duke University’s Pratt School of Engineering, made the decision to accept the position of engineering dean at Rochester, the University’s status as a KCI school played into his decision. Clark views innovation and entrepreneurship as critical components of a modern university. He saw that there was a foundation in entrepreneurship at Rochester with momentum for growth. He believes that that momentum provided the springboard for establishing the TEAM master’s program and the advocacy necessary to establish the Technology Development Fund, which provides grants to Rochester faculty, students, or staff who have submitted an invention disclosure to one of the University’s Offices of Technology Transfer.

Resistance and Transformed Perspectives

As stated in our previous annual reports to the Kauffman Foundation, there has been subjective information that indicates some faculty are embracing the entrepreneurship initiative while others have not been very receptive. Schools where entrepreneurship is not traditionally embedded and those that did not have entrepreneurship programming prior to KCI (namely the College and the Warner School) experienced the most initial resistance; but by persevering with supportive faculty members, the courses and programs at these Schools have grown, and are now widely accepted throughout our campus. The Simon School, the Hajim School, and the School of Medicine (when it joined the KCI)—areas traditionally more amenable to entrepreneurial concepts—did not experience as much faculty opposition.

With the official and public launch of the University's Capital Campaign in fall 2011, the words "entrepreneurship" and "innovation" have been included in all of the Schools' strategic plans. This signal of senior administration's commitment to entrepreneurship has resulted in more accepting attitudes toward entrepreneurship among faculty. Furthermore, as explained below, the use of an alternative term, such as "innovation," can assist in transforming perceptions. The availability of Kauffman Faculty Research Grants, offered on a semi-annual basis from 2005 to 2008 for clinical and tenured faculty who were conducting research that helped us better understand how entrepreneurship broadly defined may play out in different fields, also aided in changing attitudes. Bringing faculty together through the CFE Faculty Seminar Series, held in the fall and spring semesters, and monthly cross-campus luncheons for faculty and staff with an interest in entrepreneurship allowed for forums to voice concerns and learn other points of view. The establishment of deans and senior associate deans from each School serving on the Board of Directors for the Center for Entrepreneurship has also created stronger receptivity to the initiative.

Early push back from Eastman faculty for the School's entrepreneurial efforts was minimal, especially since entrepreneurship at the School predated the KCI grant. Eastman faculty recognized that the School's philosophy was to add entrepreneurship to the students' already high-level performance skills, musicianship and scholarship. They saw that this philosophy would greatly benefit the students and the School on multiple levels.

KCI has fostered an atmosphere at the School of Nursing in which faculty, staff and students appreciate the importance, relevance and opportunities inherent in incorporating the concepts of entrepreneurship and innovation in their daily thinking. Perhaps the most tangible impact from infusing concepts of entrepreneurship and innovation into the School's culture, curriculum and training has been the realization that all health care professionals have the ability to impact the delivery of care, patient outcomes and the cost of health care. The current health care system requires significant reform to meet the needs of our community. The financial incentives built into the reimbursement of providing care encourage efficiency and positive patient outcomes. This shift in reimbursement requires skills such as critical thinking and innovation.

Especially at the beginning of KCI, there were several Warner faculty members that had strong negative reactions to having anything to do with entrepreneurship, because they considered it appropriate to the world of business but not education, and were concerned about the ideologies associated with entrepreneurship. While some faculty members have maintained this position, the majority has come to appreciate the value of using some entrepreneurial mindsets and practices as a way to become more effective at promoting innovations in education—and thus become better at pursuing Warner's ultimate mission of improving education. A key in this shift was beginning to use the term "innovation" rather than "entrepreneurship" or "enterprise," as well as the results of the School's research study of "entrepreneurial educators" (shared on multiple occasions),

which identified specific entrepreneurial mindsets and practices relevant and useful for the education field.

KCI Impact on Student Thinking and Learning

The emphasis on entrepreneurship at the University of Rochester is demonstrated to students from an early point. Even prospective students are exposed to entrepreneurship messaging in marketing materials and upon visiting campus. According to Jonathan Burdick, dean of Admissions & Financial Aid, the first lasting impact of the KCI grant on prospective students' mindsets has been the initiatives that individual students and student teams are pursuing as part of the KEY program, many of which Admissions describes and highlights when reaching out to prospective students both directly and through media. Second, many of the students impacted by the KEY program and some from entrepreneurship classes across the College curriculum have served as campus representatives in our dialogues with prospective students and visiting high school officials, helping to attract the next generation of students with entrepreneurial expectations. Third, the TEAM degree has had a visible public impact on not only those students seeking to enter and complete the program as graduate education, but also others considering their options at the intersection of business and engineering, including current high school seniors interviewing for the GEAR (Graduate Engineering At Rochester) program that guarantees admission to graduate programs (including TEAM) upon completion of their undergraduate degrees. Finally, entrepreneurship faculty were a valuable voice in the long negotiations to establish the Florescue undergraduate business major—a unique approach to undergraduate business education in which traditional business skills and language are embedded within Rochester's emphasis on curricular self-direction and growing core of serious-minded, research-oriented, "multi-decided" students.

Once enrolled, the programs and incentives provided through KCI were instrumental in prompting students in the College to embrace entrepreneurship as a useful social construct for organizing their co-curricular learning. As a result, we have witnessed a gradual shift in students' understanding of leadership and civic engagement to encompass social entrepreneurship, not just community service. This is evident in that the majority of KEY projects proposed, about two-thirds, have a social entrepreneurship focus. Moreover, KEY students have incorporated entrepreneurship into a remarkably diverse set of disciplines. Another example of undergraduates' entrepreneurial thinking is that each year, the Rochester Urban Fellows take a tour of downtown Rochester hosted by the Rochester Downtown Development Corporation. This provides them with insight and understanding about the challenges facing our inner city. It also opens their eyes to the potential for downtown development, as well as to the richness and vibrancy that already exists there, but which they may have overlooked. Similarly, several Urban Fellows have undertaken projects with Greater Rochester Enterprise, a regional economic development organization, and these projects have provided them with a valuable opportunity to explore the potential of the Rochester region. For instance, one Urban Fellow researched the prospects for creating a high-tech corridor in Western New York, similar to Research Triangle Park in North Carolina. The Urban Fellows have also regularly visited the Rochester Regional Community Design Center, which affords them the opportunity to think creatively about future design prospects and projects in our community. Several students have completed their Urban Fellowship at the Design Center.

Eastman students recognize the importance of a "take charge," "can do" attitude. The School now regularly sees on student admissions applications and in letters to the Institute for Music Leadership that students are applying to the School, in part, because of its forward-thinking

reputation. Students want an edge when they transition to the real world, and the Eastman School can provide that with its entrepreneurial courses and programming. In the Arts Leadership Program (ALP) courses, of which entrepreneurship is a major part, the School has documented, without double counting, that one-third of all juniors and seniors and one-third of all graduate students take at least one ALP course. Most of these courses are capped at 15 students and are electives. Furthermore, Eastman's January 2009 conference, "Preparing the Generation 'E' Musician: Entrepreneurship's Place in the Music School Curriculum," brought together high-level administrators and students from leading music schools around the country. Administrators from peer institutions nominated one student from each of their schools to attend and Eastman paid the students' expenses. The result was 74 attendees, and the inclusion of students made for rich discussions. One student from another music school was so inspired that she actually launched her idea. Eastman is not only influencing and listening to the entrepreneurial thinking and educational desires of its own students, but of other institutions' students as well.

Undergraduate students at the Hajim School are also thinking more entrepreneurially due to KCI. With the shift in the Charles and Janet Forbes Entrepreneurial Award Competition from a prototype contest to a full business plan that evaluates market opportunity, students are learning to apply business principles to their senior engineering design projects. Furthermore, the new TEAM master's program has created a lot of buzz among students in the School. December 2011 graduates of the TEAM program described their entrepreneurial lessons during exit interviews. A TEAM student concentrating in optics said, "Getting to work with veterans in the field of entrepreneurship was a great experience. Writing the business plan with the coach was a fantastic means of imparting his knowledge." Another TEAM student who focused on mechanical engineering noted, "The TEAM practicum course (TEM 441) was very interesting and had the greatest impact on me. It enlightened me to the basic concepts in new product development and the analyses of both technical and business attributes in developing products."

With new courses at the School of Medicine, such as Medical Entrepreneurship, students are more frequently being exposed to entrepreneurial thinking. A first-year anesthesia resident, Falan Mouton, who recently completed the required Process of Discovery course, said the class showed her that doctors are not just clinicians; their role is also to develop the future of the field. The course was created to help medical students develop an understanding of how new discoveries and innovations can change clinical practices.

At the School of Nursing, faculty and students gain an understanding that expertise and critical thinking can lead to innovative ideas that can impact change, improve access and outcomes for patients and offer entrepreneurial opportunities. In addition, students gain an early understanding that innovation in health care can lead to various career options. Students also learn that welcoming and allowing new ideas to culminate offers a foundation for innovation. In the post-KCI era, the School continues to promote environments and processes necessary to give students the tools to redesign and improve health care systems through innovation.

The Simon School has a long history of incorporating concepts such as entrepreneurship and ethics into all of its courses. However, the increased visibility of entrepreneurship at the School, due in large part to the activities that the KCI grant set in motion, may help current students consider entrepreneurship sooner than they otherwise would have. The dean, faculty and staff frequently disseminate written and verbal communications about entrepreneurship programs and gifts from alumni entrepreneurs. Additionally this year, the Simon Entrepreneurs Association has been working more closely with the undergraduate student club, which has opened up business students' eyes to a broader definition of entrepreneurship and how it can be applied to any discipline.

Before KCI, Warner students never considered entrepreneurship as relevant to their work; many of them are now exposed to entrepreneurial concepts as they relate to educational change, innovations, and evaluating opportunities.

We believe that entrepreneurship has been brought into the mainstream of higher education at every School at the University of Rochester. The programs and courses enhanced or created through KCI have better prepared our students, even those who have been indirectly exposed to the entrepreneurship initiative, to anticipate and manage their futures.

Substantive and Durable Outcomes of KCI

There have been many positive substantive and durable outcomes of KCI at the University and in our upstate New York region. Therefore, we have created subheadings of “Governance of Entrepreneurship at Rochester” and “Mission and Culture” within this section since those topics fall under enduring effects of KCI.

One of the most significant long-term outcomes of KCI at the University is senior leadership’s commitment to maintain the philosophy of the University-wide initiative, with a broad interpretation of entrepreneurship, in the post-KCI period. The Provost, Vice Provost for Entrepreneurship, and the Deans and Senior Associate Deans reached this decision in 2008. Furthermore, the inclusion of entrepreneurship in the University’s and all Schools’ strategic plans is another long-term outcome where KCI was certainly a catalyst. This inclusion demonstrates that entrepreneurship is a highly visible priority for the University.

With our designation as a KCI I school, the University was and is in a better position to pursue additional development opportunities in entrepreneurship, including support from a five-year Department of Labor grant (Workforce Innovation in Regional Economic Development, or WIRED) that provided funding for some of the entrepreneurial programs at the University (i.e., YEA!, the Master’s of Science in Technology Commercialization, and the Golden Horseshoe Business Challenge) and numerous economic development initiatives in the nine-county greater Rochester region; and gifts from individual donors. The University is currently working on an entrepreneurship proposal for the new Max and Marian Farash Charitable Foundation, of which education and entrepreneurship are targeted giving areas.

Many of our alumni and friends of the University are passionate about entrepreneurship. The Center for Entrepreneurship and the Advancement Office have collaborated to compile a number of gift opportunities to enhance programs launched during the KCI grant and to create new ones. To date, we have had numerous individual gifts to support entrepreneurship and technology transfer. Highlights include support for business plan competitions, entrepreneurial awards, the Technology Development Fund, an endowed chair professorship at the Simon School, a summer entrepreneurship intern program, and TEAM scholarships. These gifts have further propelled Rochester’s reputation as a leader in entrepreneurship education.

From 2001-2010, the University of Rochester has been among the top fifteen institutions in the country in the amount of royalty revenue it received from licensed technologies according to the Association of University Technology Managers (AUTM). The University aims to remain a leader in this area by employing initiatives such as the Technology Development Fund.

The programs and courses enhanced and launched during KCI are also significant outcomes of

the grant, especially the signature KEY and YEA! programs. Many of our programs with a social entrepreneurship aspect have directly benefited the community beyond campus. There are numerous examples of YEA! graduates who chose to attend the University of Rochester for their undergraduate education. Additionally, a number of KEY students—not native to the area—who forged strong ties to the Rochester community while working on their KEY projects decided to remain and work in Rochester after graduation (resulting in “brain gain” instead of “brain drain”). As described in President Joel Seligman’s introduction, the University of Rochester is a major economic driver in the region. The University feels a great responsibility to promote regional economic development and our entrepreneurship initiative is a key tool in achieving that goal.

Finally, KCI has positioned the University of Rochester as a leader in nontraditional areas of entrepreneurship education. Presentations conducted by the Eastman School and the Warner School at national conferences have opened the lines of communication with our peer institutions. Many have approached us to learn how they can replicate our success (see section called “Entrepreneurship at Rochester as a Model”).

Governance of Entrepreneurship at Rochester

The entrepreneurship initiative at the University of Rochester gained the full endorsement of President Joel Seligman, Provost Ralph Kuncel, and the Board of Trustees in 2007. In January of that year, the Board of Trustees established the new position of Vice Provost for Entrepreneurship. Also that year, the vision of Dean Emeritus Bill Green was realized when physical office space for the Center for Entrepreneurship was established in Carol Simon Hall, the location of faculty and administrative offices for the Simon School. The physical proximity of the Center to the business school has led to a close working relationship between the two entities. However, the Center serves as a hub for all Schools and the entrepreneurship initiative remains deeply ingrained in the nontraditional disciplines. Under the Vice Provost for Entrepreneurship, the deans and senior associate deans from each School formed the Center for Entrepreneurship’s Board of Directors. Since 2007, the Board continues to meet on a quarterly basis.

The deans of all of the Schools, at a meeting with the President and Provost in fall 2008, agreed to continue funding the University of Rochester Center for Entrepreneurship in the post-Kauffman grant period. The long-term sustainability plan for the University’s entrepreneurship initiative and CFE rests on the tuition revenue stemming from the master’s degree program in Technical Entrepreneurship and Management. We envision that the TEAM program will serve as a model for joint entrepreneurship degree programs in other disciplines such as social entrepreneurship (within the education school) and nursing entrepreneurship.

KCI has helped the University make entrepreneurship accessible to all disciplines and extended the reach of entrepreneurship across all campuses. The initiative provided a meaningful and unprecedented linkage among the distinct Schools. Ultimately, the Kauffman grant created a foundation to build a unique and effective collaborative governance of entrepreneurship at the University of Rochester.

Mission and Culture

Carried by the momentum of KCI, we believe the University of Rochester has made entrepreneurship part of its core mission and imparted it into the very fiber of our culture. As a world-class research university with a long-standing heritage of enterprise creation, Rochester has embedded the principles and practices of entrepreneurship into each of its Schools—from

medicine to music to education to nursing to engineering to the arts and sciences to business. We have built on prior models of success to create a robust entrepreneurship initiative that goes beyond our courses and programs to exist as a defining trait of a Rochester education in the minds of our key constituents—students, faculty, staff, alumni, and community members. Highlights from select Schools are outlined below.

The College believes that the KCI grant has certainly shifted the institutional culture of the University of Rochester in such a way that entrepreneurship is now an acceptable topic of academic discourse, and an inviting educational opportunity for students and faculty. Beyond this, entrepreneurship has become an institutional point of pride and an important facet of the University's identity. It has the potential to play a key role in how the University defines and presents itself to prospective students in the years to come.

Entrepreneurship has become part of the Eastman School's mission to transform the way musicians are educated. The School has accomplished this largely through presenting workshops at national conferences and hosting its own conferences in Rochester. From the very outset, the Eastman School has never tried to create entrepreneurs. Instead, the School concentrates on fostering entrepreneurial attitudes through a culture receptive to innovation and out-of-the-box thinking. Eastman's focus has been to help outstanding musicians develop entrepreneurial skills and mindsets to help them craft their careers and develop as listeners.

Advancing entrepreneurship has been a focus of the School of Nursing since the early 2000s. Former Dean Patricia Chiverton was determined to help the nursing community utilize their knowledge and expertise to explore innovation that can lead to improvements and change. Dr. Chiverton strongly endorsed nursing entrepreneurship, as evidenced by the inclusion of entrepreneurial studies in the School's 2007 strategic plan—far before many of the other Schools incorporated entrepreneurship in their strategic plans. The School believes that an important evaluation criterion for each proposed goal during Nursing's strategic planning will be based on the extent to which innovation and entrepreneurial ideas are incorporated. This will include the ability to generate profitable growth opportunities, organizational competitiveness, and financial and non-financial benefits to the organization. Nursing faculty, students and staff are supportive and embrace the opportunity inherent in adopting entrepreneurial and innovative concepts in health care.

What the Warner School learned about implementing value-adding innovations and assuming an entrepreneurial approach as a result of KCI has significantly affected the School's practices, especially in terms of strategic planning. For example, the dean has been using a tool developed during KCI to evaluate opportunities for major innovations when proposed, and this tool is now going to be used School-wide as Warner enters a new stage of its strategic planning process. The School has also embraced entrepreneurial values such as planning for where the field is going, proactively seeking and acting on opportunities, bootstrapping, taking into consideration "missing the boat" risks, and making quick decisions. The Warner School's participation in KCI has not changed its mission, but rather provided the School with new tools and insights to better pursue its mission. KCI has somewhat changed the culture of Warner, in that, for example, there is a clearer expectation that successful faculty and staff need to take initiative in promoting value-added innovation (although there is still some resistance to this idea); there is greater acceptance of the need to make decisions quicker than it is usually the case in academic settings; and there are shared entrepreneurial values.

By partnering with the Kauffman Foundation, the University of Rochester has made its idea of a broad definition of entrepreneurship into a lasting educational enterprise that permeates the pedagogical missions and institutional cultures of each School.

Entrepreneurship at Rochester as a Model

The entrepreneurship initiative at the University of Rochester has continued to thrive in the post-KCI era. Our KCI grant ended on June 30, 2010. We have learned that the other KCI I schools are continuing their entrepreneurship initiatives with varying levels of success. Therefore, we believe Rochester is uniquely positioned to serve as a model for other institutions of higher education.

One of our original goals in seeking the KCI grant was to transform the role of entrepreneurship in universities, and in doing so, elevate the role universities play in their communities and the nation at large. Through this essay, we have described our successes and have summarized replicable best practices below.

However, as any true entrepreneur knows, success does not come without failures. We have made conscious decisions to discontinue select courses and programs that were not sustainable, such as the Extreme Entrepreneurship Tour, the Master of Science, Science & Technology Commercialization degree program (replaced by the TEAM program), and the Kauffman Faculty Research Grants. Our advice to our peer institutions is to put a concerted effort into evaluating and re-evaluating entrepreneurship initiatives.

Replicable Best Practices and Insights

Curricular and Co-Curricular Initiatives

The University believes the majority of our courses, curriculum modules, and programs, as outlined in the “KCI Impact on Curriculum and Co-Curriculum” section, can be replicated by our peer institutions. Other schools—some KCI, some members of the Global Consortium of Entrepreneurship Centers organization—have expressed interest in launching programs similar to our signature KEY and YEA! programs. They have looked to Rochester for guidance on logistics, budget, and marketing. For example, during the KCI Best Practices Workshop on Achieving Multidisciplinary Entrepreneurship meeting hosted by Purdue University in August 2008, Purdue University Calumet contacted Rochester after the meeting to arrange a discussion with the director of YEA! since Purdue was planning to start a high school entrepreneurship program. Rochester aims to launch additional interdisciplinary graduate degree programs similar to TEAM. Other colleges have seen the high demand for such joint master’s programs and we are beginning to see announcements for similar degrees. For example, Lehigh University has recently publicized a new Master’s of Engineering degree in Technical Entrepreneurship to begin this summer and the Virginia Commonwealth University has started a Master of Product Innovation degree. Both the Urban Fellows program and Rochester Youth Year provide successful models for entrepreneurship education that could be replicated elsewhere as well.

Find a Niche and Define Entrepreneurship

The University was fortunate to find a niche prior to receiving the KCI grant. Pre-existing entrepreneurship programming in nontraditional areas such as nursing and music allowed Rochester to concentrate on improving the programs in those disciplines and extending entrepreneurship to other nontraditional realms such as education. This approach also lent itself to

us adopting a broad definition of entrepreneurship which was conveyed early on to the University community.

Governance

The establishment of the entrepreneurship initiative outside of any one school and under the Provost's Office has been instrumental to Rochester's success in embedding entrepreneurship University-wide. It is also important to identify and designate champions of the initiative throughout the university.

Overcoming Faculty Resistance

The University was able to overcome faculty resistance by communicating senior administration's support of the entrepreneurship initiative; involving deans from each School to act as the Board of Directors for the Center for Entrepreneurship; offering faculty incentives such as the Kauffman Faculty Research Grants; and hosting forums for faculty to engage in discourse surrounding Rochester's broad definition of entrepreneurship.

Share Insights

Rochester has become a leader in nontraditional entrepreneurship education partially due to our willingness and efforts to share our practices with other institutions and the general public. University Communications and the Center for Entrepreneurship have worked diligently to tell our stories through press releases that have resulted in regional, national, and international media coverage and through internal print and electronic publications. The Center for Entrepreneurship attends and presents at international entrepreneurship conferences such as GCEC, NCIIA (National Collegiate Inventors and Innovators Alliance), and USASBE (United States Association for Small Business and Entrepreneurship). Recently, the CFE shared information about its nursing entrepreneurship program with Villanova University at the 2011 GCEC Conference. The Eastman School and Warner School have presented on entrepreneurship to senior administration, faculty and students from their fellow music schools and education schools, respectively. Anecdotally, when the Eastman name is mentioned in conversations with peer music institutions, they talk about the Eastman School's gold standard reputation in performance, scholarship, leadership, and entrepreneurship. Additionally, Warner's research on entrepreneurial educators has identified a set of mindsets and practices that could and should inform entrepreneurship education in other schools of education. The dean of the Warner School believes other schools of education would benefit from recognizing the contributions that the field of entrepreneurship could provide to effecting change in education, as well as the value of assuming entrepreneurial mindsets and practices in the running of schools of education and any other academic unit.

Assessment

The University of Rochester strongly believes in continual assessment of its entrepreneurship courses and programs and the entrepreneurship sentiment on campus. Through quantitative and qualitative evaluation of various aspects of the initiative, entrepreneurship at Rochester can be analyzed for problems and new opportunities, and adjustments are made.

The University of Rochester is extremely proud of its reputation in entrepreneurship and thanks the Kauffman Foundation for the opportunities it has afforded us. The KCI grant was a chief contributor in catapulting the University's entrepreneurship initiative forward, and it is quite

obvious that without the support of the Kauffman Foundation, Rochester would not be where it is today. We feel it is our duty to keep the momentum going.

KCI Impact on Curriculum and Co-Curriculum

The College

Several courses on entrepreneurship have been established during the KCI grant period, most recently “ENT 227: Entrepreneurship in the Not-for-Profit Environment” and a one-credit course designed to assist students in the KEY program. Furthermore, the University launched the undergraduate business major in 2011, supported by a \$5 million gift from Barry Florescue '66, a University of Rochester alumnus and current member of the University's Board of Trustees.

Examples of Courses for Undergraduates Offered or Launched During KCI

- ENT 223: Planning & Growing a Business Venture
- ENT 225: Technical Entrepreneurship
- AH 305/SA 305: Art New York Colloquium
- ALC 211/JCM 261: Entrepreneurship in Music (Eastman Campus)
- ANT 281/CHE 281: Solving UR's Enviro-Footprint
- ANT 310/SOC 310: Social Network Theory & Entrepreneurship I
- ANT 311/SOC 311: Social Network Theory & Entrepreneurship II
- BIO 104: Ecosystem Conservation and Human Society
- BME 296: Senior Design Project
- EAS 201/401: Entrepreneurial Product Development
- PSC 239/CAS 239: Nature of Entrepreneurship
- ENT 227: Entrepreneurship in the Not-for-Profit Environment
- PSC 244: Politics and Markets: Innovation and the Global Business Environment

KCI funding allowed the College to develop coordinated community-engagement programs such as the Urban Fellows and Rochester Youth Year, and spurred the creation of the signature Kauffman Entrepreneurial Year (KEY) program. Many of these projects have had a social entrepreneurship or community focus. In this way, KCI has enhanced our co-curriculum to support social entrepreneurship and leadership activities. Our students are inspired and empowered to undertake new projects, while receiving crucial support for contextual learning and leadership coaching provided by University staff and faculty and community members.

Students participating in the KEY program enroll in the College for a tuition-free fifth year of study. They devote the equivalent of an entire academic year to internships, special projects, business plan development, research into various facets of entrepreneurship, or analysis of how culture and public policy influence entrepreneurial activity. They can apply for and be admitted to the program prior to their senior year, and thus devote two or more years to their KEY project activities. KEY students' disciplines are in all areas of the curriculum and their projects are extraordinarily diverse. A few highlights:

- One group of students, concerned about sustainability and energy usage, created the University of Rochester Virtual Institute of Energy (URVIE), a web-based clearing house of energy resource at the University.

- Another group of students developed a campus micro-garden in which University students and community members can cultivate crops such as vegetables and herbs to either be consumed or sold to dining services. The students who developed this program have graduated, but others have taken on its management.
- The Biodiesel Project is a multidisciplinary entrepreneurial venture founded and operated exclusively by University students, most of who are in the KEY program. Representing a broad spectrum of fields of study, the students comprising the “Biodiesel Team” have campaigned for the University to switch from conventional diesel fuel to a more environmentally-friendly biodiesel blend in the operation of various University facilities and systems. The launching of the first B20 blend powered bus in 2009 was an important milestone for the team. The group has moved on to new projects, including an effort to develop a safe, clean and efficient method of creating liquid soap from biodiesel byproducts.
- Another KEY student founded the UR Consulting Group, a student-run, pro-bono consulting service for the Rochester business community. The consultants focus on support services for entrepreneurs, businesses, and non-profits including business plan development, advertising, market research, and communication services that integrate the newest digital media and student innovation. This project has sustained after the founding student’s graduation, with the training of underclassmen to manage the firm.
- ArtAwake, an event where students transform an unused urban space into an overnight art and music festival in early spring, was also founded by KEY students. Now in its fourth year, ArtAwake is orchestrated through the Urban Exploring Club to ensure its continuity. The event annually attracts more than 1,500 attendees, including students from various local colleges, as well as many community members. It has become a major local attraction, and is an established, student-run project.
- Other KEY students are working to develop a program supporting the creation of community morals in the city of Rochester; a music business major in the College; a music program in the City schools bringing at-risk elementary school students together with College students in a highly successful a cappella group; and a marketing plan for a student-run company aimed at selling clothing that promotes individual liberty and equality.

The other most significant co-curricular developments resulting from KCI are associated with the creation of, and continued expansion of, the Rochester Center for Community Leadership (RCCL). The establishment of the RCCL in 2005 resulted from the convergence of various influences, and KCI was an important influence because it lent credibility to the importance of personal entrepreneurship and leadership in the co-curriculum, and the role of social entrepreneurship in our students’ work in the community. The RCCL brought together several longstanding initiatives, and gave rise to new initiatives. The Center became a focal point and a resource for leadership and civic engagement in the undergraduate college. Under the RCCL, a division of the Office of the Dean of Students, the Rochester Urban Fellows program was enhanced and the Rochester Youth Year program was established.

The KCI funding helped to sustain and develop the Rochester Urban Fellows program following its successful pilot years. The program engages students in the civic life of Rochester, promotes learning about cross-cultural issues, and fosters an appreciation for urban life. Students intern

four days per week at community-based organizations in the City, and attend weekly seminars about the history, politics, demographics, and sociology of the urban neighborhoods in Rochester. The program is for undergraduate students attending Rochester area colleges, as well as Rochester residents who attend college elsewhere. Since 2002, the program has engaged 159 students with a diverse network of community organizations throughout the city of Rochester.

With the support of KCI funding, Urban Fellows grew from a pilot program into an established program that provided an outlet for students to think innovatively about their roles and relationship with the Rochester community during their time as students at the University and beyond. At the conclusion of KCI funding, the Urban Fellows program was in a position to withstand an administrative transition, while becoming ever more well-known among students, faculty, staff and community members. In each of the past two years, we have had a record number of students apply to the program. Meanwhile, the program has continued to receive funding from the Rochester Area Community Foundation, and has attracted new funding from the JPMorgan Chase Foundation and from the U.S. Corporation for National and Community Service. As a result, we have been able to expand the size of the program to host up to 22 Urban Fellows. None of this would have been possible without the funding provided by KCI.

KCI funding likewise was instrumental in the development of the Rochester Youth Year (RYY) fellowship, which grew out of the Urban Fellows program. Rochester Youth Year mobilizes recent graduates of the bachelor's degree-granting institutions in the Rochester area to expand the capacity of community organizations to empower youth to strengthen communities, to promote civic engagement and community-centered leadership. Founded in 2007, the program is a collaborative effort of seven bachelor's degree-granting institutions in the Rochester area. KCI funding assisted in the planning stages of this program, and in its pilot year, when the first three RYY Fellows undertook their community-based projects.

During the first year of the RYY program, the University was able to secure an AmeriCorps*VISTA grant from the U.S. Corporation for National and Community Service, and in 2008, as KCI funding was concluding, Rochester Youth Year became an AmeriCorps*VISTA program. This allowed RYY to establish itself and expand. As Rochester Youth Year now marks its fifth year of engagement with the community, 38 RYY Fellows have completed a year of service at 22 different community partner organizations. Half of the RYY Fellows have chosen to remain in Rochester following their service, whether to pursue graduate studies, or to continue to work in the community. In the three years since Rochester Youth Year became an AmeriCorps*VISTA project, it has mobilized more than 2,500 community volunteers, who in turn have logged nearly 33,000 hours of service. Rochester Youth Year Fellows have generated over \$380,000 of cash and in-kind resources for their projects in the community. Most importantly, youth have been engaged as an essential asset to improve their communities, whether through service learning, youth entrepreneurship, health promotion, or creative expression.

Another co-curricular example is the Biz Kid\$ program, which is a project supported by Rochester Youth Year. Biz Kid\$ is a youth entrepreneurship program for low-income urban youth, run by the department of recreation in the City of Rochester. Rochester Youth Year Fellows have supported the leadership development of the youth involved in Biz Kid\$, particularly the "Biz Kid\$ Real" initiative, in which youth manage their own businesses. In recent years, these youth have produced a line of fruit juices called "Vive", in partnership with Red Jacket Orchards near Rochester, and have produced and marketed fruit shish-kabobs at the New York State Fair. In addition, in an initiative developed by the Rochester Youth Year Fellows, the University has hosted a business simulation for Biz Kid\$, called "Sim Biz." All of this has

happened at a time when, due to municipal budgetary constraints and reorganization, Biz Kid\$ might have otherwise disappeared altogether.

Two other undergraduate programs supported by the University's Center for Entrepreneurship include the UR Entrepreneurs Club and the coordination of undergraduate volunteers to judge local high school students' Virtual Enterprise business plans. UR Entrepreneurs is a popular club that meets every other week and invites alumni entrepreneurs to campus for lectures and networking opportunities. The business plan judging is a joint event with undergraduate volunteers from Nazareth College. The level of participation in these two College initiatives would not be where it is today if not for the University-wide commitment to entrepreneurship ignited by KCI.

Eastman School of Music

The Eastman School of Music created a tighter focus on its entrepreneurial courses by bringing them together under one banner. Some courses took on new titles and their content was fine-tuned. "Entrepreneurship in Music" became "Entrepreneurial Thinking," and "Trends in American Music Presentation & Teaching" became "Leadership Issues in Music." We expanded our entrepreneurial offerings during the KCI grant period to now include "Gifts and Grant Seeking in the Non-Profit Arts World," "Grant Seeking and Proposal Writing for Individuals," "Grants Practicum," "Intellectual Property & The Law: What Are Your Digital Rights," "Speak For Yourself: Public Speaking For Musicians," and finally "Music Presentations That Connect: How To Engage Your Audience."

Examples of Eastman Courses Offered or Launched During KCI

- Advanced Guide to Digital Portfolio Creation
- Arts & Media Promotion: "Perfecting & Pitching Your Message"
- Career Skills for the 21st Century
- Entrepreneurial Thinking
- How to Engage Your Audiences
- Intellectual Property & The Law: What Are Your Digital Rights
- Intermediate Recording
- Introduction to Digital Music Creation
- Intro to Recording: Beginner's Guide
- Gifts and Grant Seeking in the Non-Profit Arts World
- Grant Seeking and Proposal Writing for Individuals
- Grants Practicum
- Leadership Issues in Music
- Music Presentations that Connect: How to Engage Your Audience
- New Skills, New Choices, New Careers for Musicians
- Outreach: Sharing the Magic of Music
- Speak For Yourself: Public Speaking For Musicians

From its founder and namesake George Eastman, one of the most creative entrepreneurs in international history, an entrepreneurial spirit has been at the heart of the Eastman School since it opened its doors in 1922. The Eastman School's mission is built on Performance, Scholarship, Leadership and Community. Entrepreneurship is also in its DNA. KCI provided funding to propel the Eastman School's collective entrepreneurial thinking to the next level. Courses and workshops that were once just ideas could now actually be undertaken. The Eastman School's

reach and influence were dramatically expanded during the grant period and we are poised to move forward in the post-Kauffman era.

In 2006, the Eastman School created the Eastman New Venture Challenge (believed to be a “first” among music schools), a contest to encourage new thinking and innovative ideas in music. It gives music students the opportunity to develop a project proposal that offers a first prize of \$2,000 and a chance at venture capital funds. This type of business plan competition is certainly not a new idea in business or engineering schools, but it is definitely out the norm for a music school. Additionally, KCI provided funds to allow the Eastman School to bring in many guest speakers with entrepreneurial mindsets.

The Eastman School recently established the Center for Music Innovation and Engagement (CMIE) under the Institute for Music Leadership. CMIE’s purpose is to nurture ideas and encourage students to be entrepreneurial in their pursuits. It seeks to provide young musicians with the tools they need to succeed in today’s music marketplace.

Within the CMIE, Eastman has begun developing online courses; the first was “eTheory.” This innovative online course prepares music school entering freshmen for their music theory placement exams. A second project was “Speed Lessons.” Speed Lessons are 15- to 45-minute videotaped lessons on orchestral excerpts taught by Eastman professors. These internet-delivered products leverage the Eastman brand, the expertise of faculty, and the high-level performance skills of Eastman students to promote the School. In addition, they are offered for sale through the internet on the Eastman Store. They demonstrate that Eastman not only talks about the importance of entrepreneurial initiatives, the School puts them into practice. It is hoped that over time, as more electronically delivered courses are developed, a significant revenue stream will be established, thus helping the CMIE to be self-sustaining. Several other courses are currently in development.

The CMIE continues to be a work in progress. When fully realized, the School envisions the following components:

- Arts Leadership Program curriculum courses
- A certificate in music entrepreneurship
 - Includes a course in collaboration with the Simon Graduate School of Business
 - Includes a project and/or internship
- A parallel website to Polyphonic.org, focused on entrepreneurial activities, versus professional orchestral issues
- Gen-E Club
- Include alums in New Venture Challenge
- Projects incubator – connecting students with mentors – to make dreams reality
- Online courses and career materials developed by Eastman faculty, staff and students

The Eastman School organized and presented four conferences and workshops over the course of the KCI grant. The first was a pre-conference workshop entitled “Entrepreneurial Leadership in Music Schools,” and was presented at the annual meeting of the National Association of Schools of Music (NASM), in Salt Lake City during November 2007. NASM is the accreditation body for higher education music schools and its membership consists of presidents, directors, deans and other high-level music school administrators. Sixty people attended the workshop. The goal of this workshop was to have each participant leave with an actionable entrepreneurial idea that they could develop and implement at their home institution.

With the above as background, the Institute for Music Leadership did a follow-up conference in January 2009 in Rochester called “Preparing the Generation ‘E’ Musician: Entrepreneurship’s Place in the Music School Curriculum.” This conference was attended by high-level administrators and students. Professor Heidi Neck of Babson College was the chief presenter and facilitator. She conducted sessions on “The Entrepreneurial Teacher,” “The Entrepreneurial College,” and “Creating Opportunities to Enhance Entrepreneurship in Music Education.” To kick off the conference, the Eastman School presented a concert featuring Grammy winner Maria Schneider, who thinks quite entrepreneurially to fund her recording projects, and her jazz orchestra. The concert was open to the public and netted approximately \$20,000 for the CMIE.

The third conference workshop was “The Entrepreneurial Music School in a Challenging Economy,” and it was also presented at the NASM Conference. Bob Johansen, a Distinguished Fellow and former CEO of the Institute for the Future (ITF), was engaged as the chief presenter and facilitator for the workshop. The Institute for the Future is a think tank that advises corporations, not-for-profits and the U.S. military, among others, to help them understand what the world landscape may be in the future. They forecast and do not predict. The ITF has the distinction of being one of the oldest firms in this field and has some of the largest U.S. corporations as clients. Johansen painted the overall big picture of the world 10 years in the future; then helped attendees relate it to the music and music education worlds. The highlights of the conference were two major sessions: “Foresight to Insight: How Leaders & Entrepreneurs Can Use Foresight to Create a Clear, Compelling & Productive Strategy” and “Foresight to Insight to ACTION: How Entrepreneurial Music School Leaders Can Bring Their Strategy to Action.” The 75 music school leaders who attended the San Diego workshop came away enlightened. This workshop stimulated their thinking and got them reflecting on big, big issues.

The Eastman School presented a fourth workshop that brought together 26 musicians from major U.S. orchestras. The School invited the Chairs of Orchestra Committees of the 50 largest U.S. orchestras to come to Rochester, all expenses paid, to discuss the effectiveness of Polyphonic.org, an Eastman School website for the entrepreneurial development of professional orchestral musicians. The School wanted input from the musicians to plot the course of the site for the coming years. The chairs also interacted with Eastman students through master classes.

In addition to offering suggestions to improve the Polyphonic site, the Eastman School also gleaned information about the state of orchestral music in the United States. Faculty, students, and administration were also subliminally exposed to a more moderate view of musician management relationships. Paul Boulian, a facilitator well versed on orchestra issues, led the discussion. The School came away with two pages of suggestions on ways to connect better with orchestral musicians. But more importantly, the School established personal relationships with these very influential musicians. This conference was primarily funded by a source other than KCI, but the entrepreneurial mindset to host such a conference came out of the Eastman School’s Kauffman experience.

Hajim School of Engineering and Applied Sciences

The Hajim School of Engineering and Applied Sciences has a strong commitment to entrepreneurship at the University. The School works with the School of Medicine and the Simon Graduate School of Business to develop new degree and curricular offerings. Under KCI, new courses, such as EAS 201/401: Entrepreneurial Product Development, were created.

Collaboration among the Hajim School, the Simon School, and the Center for Entrepreneurship led to the development of the Technical Entrepreneurship and Management (TEAM) master of

science program, the University's first graduate degree program in entrepreneurship. Launched in 2010, TEAM students are able to look through the archives of available University patents, find ones that can be turned into profitable technologies, and then develop business plans around them. The program is designed for students that have a bachelor's degree in a technical field. Program participants take both graduate level engineering courses from the Hajim School as well as specially developed business courses from the Simon School.

While the TEAM program was created to fulfill a growing demand among technical students, as evidenced by the number of applications increasing from 72 the first year to 134 the second year it was offered, the program was also designed to start a revenue stream to support and sustain the Center for Entrepreneurship and University-wide entrepreneurship initiatives in the post-KCI era.

The Hajim School has also run the successful Charles and Janet Forbes Entrepreneurial Award Competition since 1989. The competition encourages current, full-time undergraduate engineering students to consider the commercial potential of topics or processes they are studying. During the KCI grant period, the Center for Entrepreneurship began coaching engineering students for this competition. The contest evolved from the evaluation of technical prototypes to a true business plan competition based on technologies. Hajim students now learned business and entrepreneurial concepts through the competition. Engineering students also received an additional opportunity to learn about business through an undergraduate course, ENT 225: Technical Entrepreneurship, offered through the Simon School starting in spring 2009.

School of Medicine and Dentistry

Although the School of Medicine and Dentistry was not included in the original grant application, the Vice Provost for Entrepreneurship received permission from the Kauffman Foundation and the dean of the School of Medicine and Dentistry to expand the KCI grant to include the School in 2007. The inclusion is significant, as all of the schools at the University have been part of KCI and have committed to the campus-wide entrepreneurship initiative.

The heightened level of collaboration on entrepreneurship initiatives between the Medical Center Campus and River Campus due to KCI contributed to the development of an MD/MBA program. The cross-campus relationship also led a professor at the Simon Graduate School of Business and a professor at the School of Medicine to jointly design a new course called Medical Entrepreneurship. In spring 2010, 21 business and medical students enrolled in the course to learn how to identify and transform ideas from health care into a viable business or practice. There have also been discussions between the Hajim School, namely the Biomedical Engineering Department, and the School of Medicine and Dentistry to launch a master's program in medical device development.

KCI also served as a linkage to the River Campus for the Office of Research Alliances which has served as the Public-Private Partnership Key Function for the University of Rochester Clinical and Translational Science Institute (UR-CTSI). The Medical Center was awarded a \$40 million grant from the National Institutes of Health to create the UR-CTSI to assist researchers at the University to produce innovative technology and methods that more efficiently and more quickly advance treatments to patients. The Institute has engaged students from the Simon School on several occasions for advice and analysis to create more efficient policies and programs in the management of our clinical research programs and development of educational programs in cost-effectiveness and comparative effectiveness analyses of novel diagnostic, drugs, and devices. The

UR-CTSI continues to sponsor a yearlong seminar series, open to the University community and the general public, on the creation of new companies.

In the summer of 2007, the School of Medicine established the Rochester BioEnterprise Center, an incubator that fosters the development of early stage biotechnology and life science companies. We foresee that these initiatives fostered by the KCI will expand as innovation is increasingly sought to reduce cost and improve the quality of our beleaguered health care system.

School of Nursing

Entrepreneurial and innovation concepts have been woven throughout the School of Nursing's curriculum for several years predating the KCI. However, the grant certainly provided a boost to curricular and co-curricular activities at the School of Nursing. As the complexity of delivering care increases, so does the demand for innovation in the education required to shape future health care providers capable of impacting change. Today's health care landscape is a challenging arena. Health care organizations require successful and sustainable innovation strategies to create viable solutions offering improved outcomes for patients, effective system navigation for patients, families and providers while at the same time maintaining a system that is financially sustainable.

The School of Nursing has challenged the traditional methods of teaching and training in all levels of nursing education, undergraduate and graduate. Innovation in teaching requires bringing new programs and new creative methods of learning to students. The School incorporates practical experience, technology-driven education, and research into all aspects of student education. We teach and integrate evidence-based clinical practice across all levels of our nursing curriculum. For example, one of our recent doctoral graduates, Sally Fletcher, wrote her thesis on nursing entrepreneurship, called "Nursing faculty and nursing students' perceptions & experiences of entrepreneurship in nursing." Our research environment is intervention-oriented and stays close to practice. Our goal is to prepare nurses, practitioners and health care professionals to positively impact patient outcomes, delivery models and access to care. This can be accomplished through innovation.

It was innovation that led to the development of the Doctor of Nursing Practice Program (DNP) in 2007. The DNP program was designed to educate nurses and build skills in the following areas (all of which will lead to further innovations in health care):

- Demonstrate the highest level of clinically expert practice, including sophisticated diagnostic and treatment competencies.
- Evaluate current and new practice guidelines and policies, care delivery models and strategies, health outcomes, and approaches to reducing disparities in the care of populations.
- Use information technology and analytic methods to evaluate multiple sources of outcome data.
- Design evidence-based, ethical, safe and cost-effective strategies that improve health care outcomes for individuals or populations.
- Implement emerging scientific discoveries and practice innovations in health care.

Students are given the tools necessary for innovation throughout the program and demonstrate their acquired knowledge with their final capstone project. Prior to graduating, students submit their final project which demonstrates their ability to reflect on best practice approaches and consequences and generate solutions for creatively dealing with barriers that interfere with the delivery of equitable, evidence-based, patient-centered care.

In addition, the School of Nursing transformed the curriculum in the master's level leadership program to focus on building health care leaders prepared to assume new leadership roles in health care, and making substantial contributions to health care reform.

The School created two courses that ran in the 2007-08 academic year, open to all health care professionals, entitled "Marketing Essentials for the Health Care Entrepreneur" and "Become a Successful Health Care Entrepreneur." Though the demand for these courses diminished, several key elements have been incorporated into both the leadership and DNP programs.

In 2007, the School's Center for Outcomes Measurement & Practice Innovation was established with the goal of bringing together faculty, clinicians, administrators, students and staff for the purposes of 1) generating knowledge concerning the impact of care delivery processes on individual (provider, patient), organizational and community outcomes; and 2) developing and testing innovative approaches to care. Addressing outcomes of care across the continuum, the Center focuses on patient, provider and systems outcomes that are central to translational research by linking processes and structure to outcomes using sensitive, reliable and valid outcome indicators.

In 2010, the research mission at the School developed the Center for Research Implementation and Translation (CRIT and often referred to as the Implementation Center) which encourages and supports research translation through the development of implementation science. The Center's scientists conduct rigorous, hypothesis-driven studies in which clinical research findings are tailored, tested, and systematically incorporated in clinical practice, and novel research methods are developed for the field. The Center is an important link required to convert innovative advances from science and research conducted in laboratories to implementable improvements in the health of communities.

Notably, we were the first nursing school in the world to create an Endowed Chair in Nursing Entrepreneurship. In 2007, the School of Nursing installed the Pamela Klainer Endowed Chair in Nursing Entrepreneurship. Patricia Chiverton, former dean of the School of Nursing, was the first professor to hold the established Chair. The position has remained vacant since Dr. Chiverton retired in 2009.

In addition, the School offers the Dr. Jeremy A. Klainer Endowed Dean's Discretionary Funds as an annual award to be presented to a School of Nursing student, alumni, faculty, researcher, clinician or University of Rochester community partner to help advance the mission of the School. This award provides financial support in advancing an idea that builds on the School's strategic priorities. Additionally, this award encourages the development of innovative ideas by providing seed monies to develop and potentially implement new strategies for continual improvement and growth. The most recent award was provided to Dr. Sally Norton and Dr. Craig Sellars for the development of a center which will focus on improving care and quality of life for patients who have advanced serious illnesses. The center will also incorporate the need to care for families dealing with members having advanced serious illnesses.

Our first-of-its-kind Center for Nursing Entrepreneurship applies business strategies in nursing care by helping providers learn how to bring services to a wider population outside traditional health care settings while providing new opportunities for themselves. The Center inspires innovation and supports it with expertise and funding.

Business lines established within the Center for Nursing Entrepreneurship continue to play an important role in educating the surrounding community in public health issues, wellness programs, and school-based initiatives. One business line, Passport Health, provides travel health information and immunizations services for international travelers, major corporations, universities and other international organizations. In May 2007, two new programs were created: I KNOW, a childhood obesity tele-health intervention; and Well Balanced, a diabetic case management program for the seriously mentally ill. One new program is in the exploration stage—the use of technology in maintaining the elderly at home. The childhood obesity and diabetic case management programs are at the end of their pilot phases. Both programs demonstrated outstanding health improvement outcomes and we are discussing moving both programs to the marketplace. The Center for Nursing Entrepreneurship is further developing a business line pertaining to corporate health. This will expand on current expertise gained from employee health screenings, early detection and intervention for major health risk factors.

Simon Graduate School of Business

The KCI grant coincided with great growth in the Simon School's entrepreneurship program. The number of Simon students taking entrepreneurship courses has doubled since the start of the Kauffman grant and the number of faculty involved in the entrepreneurship program has also expanded with the launch of new courses, especially at the undergraduate level, for example, ENT 223: Planning & Growing a Business Venture; ENT 225: Technical Entrepreneurship; and ENT 227: Entrepreneurship in the Not-for-Profit Environment, and with courses covering specialty topics in entrepreneurship, such as Medical Entrepreneurship and the TEM business courses designed for the Technical Entrepreneurship and Management master's program.

The active student-run club, the Simon Entrepreneurs Association, works closely with the Center for Entrepreneurship, Simon Advancement, and Simon Alumni Relations to bring in speakers and implement co-curricular activities. The Simon School has hosted a number of entrepreneurship case competitions. Through generous donor support, Simon has established an executive professorship, held by Dennis Kessler, M.S.L., Yale University Law School, and LL.M., Northwestern University School of Law, and a tenure-track, endowed chair professorship (currently, there is a search committee in place to fill the latter). The Center for Entrepreneurship runs a summer entrepreneurship internship program for rising second-year MBA students. The CFE has also supported Simon students in the VISION-CONNECT program. These students have worked to write business and marketing plans for not-for-profits in the greater Rochester community. Additionally, the Simon School joined with the Hajim School to establish the Technical Entrepreneurship and Management master's program in 2010.

In fall 2011, the University announced new student incubator space, being carved out of the Lennox Tech Enterprise Center, part of High Tech Rochester, a local non-profit organization that assists in the development of new and emerging technological businesses. The incubator initiative was largely driven by the Simon School and was made possible by Simon alumnus Mark Ain's \$3 million gift to support entrepreneurship. Aught9, founded by a pair of recent Simon alumni and one of two companies occupying the incubator, is a virtual database company that uses information people have uploaded to social networking sites to update alumni records. The information allows students to network efficiently and assists the School in keeping track of alumni's professional achievements. This software brings the University one step closer to creating a current alumni entrepreneur network, a goal outlined in our original KCI proposal.

The Simon School, particularly the student club, and the Center for Entrepreneurship run the Mark Ain Business Model Workshop Series and Competition. This initiative was also an objective in Rochester's original proposal to the Kauffman Foundation and came to fruition in 2007 with support from alumnus entrepreneur Mark Ain. The first-place cash prize is \$10,000; second is \$2,500; and third is \$1,000.

The Women Entrepreneurs Blog @ Simon (webatsimon.com) is another example of the School's commitment to entrepreneurship. Dennis Kessler, the Edward J. and Agnes V. Ackley Executive Professor of Entrepreneurship and co-owner of Kessler Restaurants LLC, conceived the idea for a blog in late 2007 as he encountered more and more individuals who were seeking business advice. The blog provides a fact-filled online forum for people interested in starting their own businesses or furthering an existing entrepreneurial venture. Leading Western New York female entrepreneurs post helpful information on starting a business, creating a business plan, finding financing, legal direction, issues pertinent to women entrepreneurs, and much more. The site is edited by a Simon student interning in the School's Marketing and Communications Department.

Not all of these accomplishments are a direct result of KCI—other grants and alumni support were received, the growth in interest in entrepreneurship had already begun (partly due to a prior grant from the Kauffman Foundation for an internship program), and new leadership at the Hajim School strongly encouraged the TEAM master's degree program. However, the designation of Rochester as a KCI I school clearly provided synergies to help shape the entrepreneurship program at Simon. These changes will resonate long into the future as they have formed the basis for the continued expansion of our entrepreneurship initiative.

Warner School of Education and Human Development

Before the KCI grant, the Warner School had never consider entrepreneurship as a relevant perspective or paradigm for the work it was doing in education. It was only after talking with colleagues about the broader definition of entrepreneurship assumed by the University of Rochester for this grant—i.e., transforming ideas into enterprises that add value—and recognizing that “value” could be interpreted as social and intellectual as well as economic, that we recognized that Warner's mission of preparing educators as “change-agents” was consistent with an entrepreneurial approach, and became interested in learning what the field of entrepreneurship could contribute to the School's work.

The KCI grant gave Warner access to colleagues in other schools that had a background in entrepreneurship and were willing and able to help the School get started in this new domain, as well as funds that enabled Warner to both develop new courses and modules on entrepreneurship and conduct research on entrepreneurship in education that led to professional presentations and publications. As the dean took a leadership role in the KCI project, she was also directly affected by what she learned about entrepreneurship in how she approached innovations and change within the Warner School itself.

At Warner, the KCI project affected the curriculum as follows:

- As part of the KCI original plan, the Warner School created two entrepreneurship elective courses (EDU 436: Entrepreneurial Skills for Educators and EDU 437: Grant-writing and Other Funding Strategies for Educators) that have continued to be offered on an annual basis.

- Also during the funding period, the Warner School created entrepreneurship modules within required courses taken by all of its students preparing to be teachers, counselors, school leaders and higher education administrators; all of these modules except for the one in counseling are still being taught.
- After the grant funding was over, the Warner School designed and offered a new course entitled “The Entrepreneurial University”, which will be offered every other year.
- A Warner doctoral student, Nikhil Varerkar, wrote his thesis on entrepreneurship, called “Entrepreneurship Education at the Simon School.”

The Center for Entrepreneurship has hired the Warner School to administer and analyze the Kauffman Freshmen and Senior Surveys. Bill Lucas at MIT recognized the high response rate at Rochester during the inaugural year of the survey. He also used Rochester’s data to refine the design of the survey instrument. This evaluation work will continue in the post-KCI era. Additionally, the Warner School’s Program Evaluation course assesses entrepreneurship programming in other areas of the University, such as the KEY program. An assessment for the TEAM master’s degree program is planned for 2012-13. Finally, Warner faculty have engaged in research based on several case studies of entrepreneurial educators. Funding for this research was provided by the KCI grant.

Technology Transfer

Two new technology transfer initiatives have recently been launched at the University of Rochester. The Technology Development Fund, announced in fall 2010, provides grants to scientists in an effort to help advance a technology closer to the stage where it can be transferred to the market. The Fund solicits proposals twice a year. Qualified applicants include University of Rochester faculty, students, or staff who have submitted an invention disclosure to one of the University’s Offices of Technology Transfer. Proposals are reviewed by a screening committee of external professionals, including members of the commercial sector, entrepreneurs, venture capitalists, scientists, and angel investors, who identify scientific objectives that, with additional support, have strong commercial potential. Awards from the fund range from \$40,000 to \$100,000. The Fund was made possible through collaboration among the Offices of Technology Transfer, the Hajim School, the Simon School, and the School of Medicine. This Fund fulfills Rochester’s intent to create a “Technology Advancement Fund,” as outlined in our proposal for the KCI grant.

In addition, the Center for Entrepreneurship has worked with the Offices of Technology Transfer and the Provost’s Office to launch the Entrepreneur-Ready Technologies website (www.rochester.edu/entrepreneurship/ereadytech) in April 2011. The site is aimed at helping companies and entrepreneurs find and cash in on “top” innovative technologies developed by scientists on campus. The technologies are presented in clear language with graphic depictions so that entrepreneurs can easily choose those that suit their needs.

Other Co-Curricular and Regional Entrepreneurship Programs Assisted by KCI

- Center for Entrepreneurship Lecture Series: Occurring in both the fall and spring semesters, the CFE Lecture Series features a leading entrepreneurship educator or entrepreneur as a guest speaker. The lecture is free and open to the general public and University community.

- For Inventors, Researchers, and Entrepreneurs (F.I.R.E.) Lecture Series: The F.I.R.E. Series is designed to educate the university community about the many aspects of Technology Transfer, what it means to be an inventor, what every researcher should know in order to protect potential intellectual property rights, and the complexities of starting a business. Typically, the sessions are held at 9:00 a.m. on the second Thursday of the month at the School of Medicine and Dentistry. They are free and open to the general public and the University community.
- Global Entrepreneurship Week: Rochester holds campus-wide entrepreneurship events as a proud participant of Global Entrepreneurship Week. During the GEW kick-off event hosted by the Kauffman Foundation in June 2010, we had the opportunity to meet the founders of Startup Weekend. The University is now on the planning committee to hold a Rochester Startup Weekend in late April 2012.
- Rochester Regional Business Plan Contest: The CFE and the Simon Graduate School of Business are proud sponsors of this local business plan competition. The first-place prize consists of cash and in-kind donations totaling more than \$50,000. This event is organized by High Tech Rochester (HTR) and Greater Rochester Enterprise (GRE).
- Advising and Consulting Services: The University community and general public can receive advice and guidance—at no cost—on their business ideas, plans, or other entrepreneurial pursuits at the Center of Entrepreneurship (formerly through the Entrepreneur-in-Residence and currently through entrepreneurship faculty and Simon students). Additionally, a Venture Capitalist-in-Residence provided consulting services for the University community in spring 2010 and the 2010-11 academic year.