

THE NEXT LEVEL
WHITE PAPER BY JOEL SELIGMAN
APRIL 14, 2015

Throughout all of our years together, we have sought to be a University whose quality placed it among the leading research universities in this country, consistent with our core values of academic excellence, academic freedom, diversity and commitment to our community.

In the past ten years, we have become a stronger University with the successful initiation and financing of major new projects in the Medical Center and each School.

We are now ready to ascend to the Next Level.

This white paper begins by providing the context for our future ascent.

I. WE HAVE ONLY BUT BEGUN: THE 2008-2013
STRATEGIC PLANS

In 2008 the University, the Medical Center and each of our Schools adopted ambitious strategic plans. We now have achieved virtually all of our 2008 goals:

- When normalized for faculty size in 2013, the most recent year for which we have data, we rank 16th in federal research and development expenditures among the 176 top funded research universities and were awarded \$350 million in total sponsored research in 2014.
- Our student body has grown from 8,329 total students in 2004 to 11,060 this past fall. Since 2005 we have received \$195 million in commitments for scholarships, fellowships and other support for students.

- Undergraduate student quality and diversity have been strengthened. At the College we have seen increases of high school GPAs from 3.56 to 3.83 and the two-score equivalent SAT increase from 1304 to 1375 between 2005 and 2014. Simultaneously the percentage of our underrepresented minority and international students has increased.
- Since 2005, applications to the Medical School have increased by 39 percent. The Medical School acceptance rate is now 5.5 percent, making the School one of the most selective medical schools in the country.
- Tenured, tenure track, medical and other instructional staff have grown from 2,009 in 2004 to 2,542 in 2014. Since 2005 the University has created or received commitments to create 93 new endowed professorships, deanships or directorships.
- New programs have been developed, including the Health Sciences Center for Computational Innovation, the Clinical Research Institute, the Center for Integrated Research Computing, the Del Monte Neuromedicine Institute and 17 new majors in Arts, Sciences and Engineering.
- Twenty-nine new major facilities projects have been completed, initiated or planned since 2005 with an aggregate budget of \$850 million. Outside the Medical Center this includes Goergen Hall, Eastman Theatre Renovation and Expansion, LeChase Hall, Rettner Hall and O'Brien Hall.
- The Medical Center has been particularly active with several new projects, including the James P. Wilmot Cancer Center (opened in 2008, expanded in 2012), the Saunders Research Building and the Golisano Children's Hospital, substantial implementation of the Electronic Medical Records system and new regional hospital affiliations, most notably F.F. Thompson.
- The University facilitated the separately financed development of Brooks Crossing and College Town and worked with local, state and federal governments to secure funding for the new

- Interstate 390 road network, which provides the basis for future growth at the University.
- We have grown as of December 31, 2014 to be the greater Rochester region's largest employer with 26,673 total headcount, an increase of 905 during the past year. This makes the University the 8th largest private employer in New York State and the largest private employer in Upstate New York, with an increasing role in the community as the provider of an estimated 50,300 direct and indirect jobs, more than \$2.8 billion in direct and spillover wages, \$70 million in uncompensated health care in 2011 and since 1996, 58 new startup companies using University-licensed technology.
 - We have reduced our endowment payout rate from 6.9 percent in 2000 to 5.8 percent in this year's budget.
 - We publicly launched *The Meliora Challenge* Campaign in October 2011, our first comprehensive capital campaign since 1924. On March 25, we announced that we had reached the initial \$1.2 billion goal 15 months ahead of schedule.

II. AIMING HIGHER: THE 2013-2018 STRATEGIC PLANS

In 2013 the University, the Medical Center and each school adopted new strategic plans that emphasize the greatest possible quality in our academic, clinical and creative arts programs, consistent with cost efficiency. In the University plan:

OUR FUNDAMENTAL OBJECTIVE IS TO STRENGTHEN OUR POSITION AS ONE OF THIS NATION'S LEADING RESEARCH UNIVERSITIES

- This means strength not only in research, but also as a University that is strong in the liberal arts, science and engineering undergraduate education, professional training in the schools of business, education, medicine and nursing,

outstanding clinical care throughout our health system, and commitment to the creative arts exemplified by the Eastman School of Music.

- For the entire University, the recruitment, support and retention of the most accomplished and diverse faculty, staff, and administrative leadership is a top priority.
- A top University priority is the creation of the Institute for Data Science, the expansion of Data Science faculty and programs across the University, and the construction of a new Data Science facility.
- We will implement a University Research Strategic Plan to strengthen the vitality of the research mission at the University of Rochester.
- We will emphasize improvements to infrastructure and renovating classrooms, laboratories and library space to provide our faculty, students and staff with state-of-the art facilities.

A UNIVERSITY THAT EMPHASIZES QUALITY EDUCATION

- The College of Arts, Sciences and Engineering is building on its momentum in residential education to enhance its curriculum by adding new majors, including a new undergraduate business degree developed with the Simon Business School; teaching, learning and research opportunities that employ digital technology; increasing student retention; affording opportunities for student research; and strengthening career preparation. By 2018, Arts, Sciences and Engineering will increase its faculty from 350 to 380; increase its two-score equivalent SATs for entering students from 1368 to at least 1400; increase applications from approximately 16,000 to 20,000; and increase six-year student graduation rates from 85.6 percent to 88 percent.

- The School of Medicine and Dentistry and the School of Nursing are implementing the Institute for Innovative Education to provide education across the entire Medical Center and better employ information technology in medical education. The Institute will oversee the development of an ambitious program in simulation education.
- The Simon School is developing new programs in Business Analytics and Pricing and leading efforts to develop a branch campus in New York City.
- The Eastman School of Music is developing new undergraduate and master's programs in fields such as convergent media, music leadership and online education.
- Our schools generally, led by the School of Nursing and the Warner School, are expanding or implementing hybrid or other online education, especially in master's programs.

A UNIVERSITY KNOWN FOR IMPROVING HEALTH CARE

We will improve health care for our community through transformative approaches to clinical care that are nationally recognized:

- The new Accountable Health Partners will become the region's leading accountable care network, recruiting a substantial number of additional primary and specialist physicians into its network by 2018.
- The University of Rochester Medical Faculty Group will become a model of an integrated University-based practice that includes centralized administration and a compensation plan based on performance, service and quality.
- The Medical Center will further its current recognition of specialty areas in the top 50 in the *U.S. News Best Hospitals* rankings, especially within its Centers of Excellence, including the Wilmot Cancer Institute and the Golisano Children's Hospital.

- We will open the new Golisano Children’s Hospital in 2015 and achieve recognition for our Pediatric Programs of Excellence.
- The School of Nursing is expanding its UR Medicine Center for Employee Wellness, which began with University employees in 2013 to additional employers throughout the region.
- The Eastman Institute for Oral Health is expanding its community services to underserved patients with special needs and strengthening its position as a leading institution in oral health research and specialty dental training.

A UNIVERSITY KNOWN FOR SERVICE TO THE COMMUNITY
 We will strengthen our service to the community and society by:

- Enhancing programs to support Rochester K-12 education, health care and community programs.
- Enhancing our position as the regional and national leader in economic development and technology commercialization.
- Strengthening technology commercialization and new venture creation consistent with our academic mission through active engagement of the business community and expansion of the technology development fund.
- Completing major projects, including the expansion of Brooks Crossing and College Town.

In the 18 months since the adoption of the October 2013 strategic plans we have made significant progress implementing these and related plans. Notably:

- The University adopted its first University Research Strategic Plan in October 2013. Among other key initiatives, the Institute for Data Science has been created. To date we have raised approximately \$25 million in philanthropic commitments and \$1.5 million in new State support toward the additional \$50 million goal that we announced in October 2013 on top of the

- earlier \$50 million raised in this area. These funds have allowed us to initiate planning for a new facility to house the Institute and to endow the Institute's Directorship. We will dedicate the Institute for Data Science Building and celebrate the naming of the Institute for Data Science in October 2016.
- The Medical Center has taken a series of decisive steps toward a comprehensive Population Health Management strategy, including completion of a new regional affiliation with Strong West, substantial reorganization of the Medical Faculty Group, growth in membership of Accountable Health Partners to 1,700 Medical Center and other doctors, and refining its goals to include being the referral center of choice for the specialty care of the majority of patients in our region.
 - We dedicated College Town in October 2014 and will dedicate the Golisano Children's Hospital in May 2015.
 - In 2015, the State Education Department approved the Educational Partnership Organization agreement that the Warner School has entered with the Rochester City School Board to serve as superintendent of East High School, the largest high school in Rochester. We will begin our work as superintendent in July 2015.
 - The River Campus Libraries have proposed a new Strategic and Master Plan and begun implementation of designated aspects of these Plans, including the iZone and a proposal for a Center for Student Driven Learning that is intended to create a hub of expertise for the University in aspects of student-directed learning from program design to classroom engagement.
 - We have begun work on improving infrastructure and renovating facilities, notably with key improvements to our dining facilities, Ronald Rettner's gifts that have spurred renovation of Morey and Bausch & Lomb Halls and upgrades to key aspects of our information technology.
 - The School of Medicine and Dentistry and the School of Nursing, through the aegis of the Institute for Innovative

- Education, have begun planning creation of state-of-the-art simulation centers, potentially housed in a new facility.
- For our undergraduate and graduate students, we are enhancing efforts to strengthen career preparation and have continued to stress enhancements to quality of life at the University, including the Brian Prince Athletic Complex and plans for the renovation of Douglass Hall, which will include a new student activities space, language center, and the Paul J. Burgett Intercultural Center.

Our 2013-2018 University, Medical Center and School strategic plans remain in full force. Full implementation will continue through June 2018. This means our top priorities of the University for these years will include:

- Significant further steps at the Medical Center to implement its Population Health Management strategy, including further potential regional affiliations.
- Significant progress in improving the quality of life on the River Campus.
- Continued emphasis on fundraising to support student scholarships, faculty and key programs.
- Development of new Advancement strategic and operational plans to provide a revised roadmap for our programs during the next five years.
- Continuing the transformation of University libraries to be leaders in our increasingly digital campus and initial implementation of the River Campus Libraries Strategic Plan.
- An unwavering commitment throughout the University to seek the greatest possible quality in our academic, clinical and creative arts programs, consistent with cost efficiency.

THE NEXT LEVEL

We are ready for the Next Level. During 2016-2020, before we are likely to initiate our next capital campaign, the senior leadership and I have worked to articulate the key University initiatives that we believe will be most effective in accelerating our progress.

We view these key University initiatives as having three characteristics: (1) An ennobling social purpose; (2) where the University of Rochester can make a material difference; (3) necessarily at sufficient scale.

Rigorously applying these criteria, we particularly commend four new or enhanced major initiatives:

(1) **Data Science:** Once we raise the additional \$50 million sought in our October 2013 strategic plan, we still will have a long way to go to fully be one of the nation's leading data science programs. A major effort here is essential. Information technology is redefining the way we think, analyze information and make decisions. Data science is ubiquitous. We would like to focus on specific areas in which we are most likely to achieve best in class or near best in class programs:

A. **Predictive Health Analytics:** Some of the biggest advances in health care will come from using data to predict individual health outcomes on the basis of treatments, genomics, as well as lifestyle and behavioral factors. We will build on programs at the Medical Center to utilize data science and biomedical informatics to improve health and healthcare delivery. The Clinical and Translational Science Institute's Bioinformatics Group, for example, provides systems and support to enhance research and data acquisition from the Medical Center's health records system. Professor Henry Kautz, Director of the Institute for Data Science, is a nationally recognized leader in data mining social media to identify global disease outbreaks in their earliest stages.

B. Cognitive Systems and Artificial Intelligence: The University has long been home to internationally recognized research in cognitive science and artificial intelligence. Modeling and replicating human perception is an illustration of one of the most ambitious domains in data science. To illustrate, Rajeev Raizada uses Magnetic Resonance Imaging analysis to understand the way the brain encodes and processes information. This type of work in the next decades will provide the foundation for neuroscientists to use brain scans to diagnose the underlying causes of learning disabilities such as dyslexia and to detect impairments before children struggle or fail in school.

C. Analytics on Demand: The ultimate goal for large-scale data analysis is to relieve the end user from the need to understand details of a platform in order to have the computer system determine the optimal use of resources. Sandhya Dwarkadas, Chair of the Department of Computer Science, for example, works at the interface of hardware and software. A focus of her research is scalable support for parallelism – that is, communication and coordination mechanisms that allow computational tasks to be executed simultaneously, easily and in a portable manner. Her research helps build the basic infrastructure needed to help end users, such as medical practitioners, extract scientific knowledge from data. Along with Professor Michael Scott, Dwarkadas helped pioneer a revolutionary new approach to parallel computing called “transactional memory.” In 2011, IBM’s BlueGeneQ became the world first computer to implement hardware transactional memory.

(2) Neuroscience and Neuromedicine: The brain has a unique ability to “rewire” and heal itself in response to injury, disease, and normal aging – a phenomenon known as neuroplasticity. New technologies such as robotics, neural prosthetics, and stem cell biology, together with advances in functional brain imaging and the cognitive sciences portend major advances early in the 21st century in neuroscience and neuromedicine. Our University has outstanding neuromedicine clinical programs, a world-class brain and cognitive sciences infrastructure, as well as basic and translational neuroscience

research programs which address learning and memory, brain development and fundamental wet-bench research into neural structure and function. These strengths will be further enhanced with the priority the Medical Center has attached to the recruitment of an outstanding inaugural science Director for the Del Monte Neuromedicine Institute and the recently announced Rochester Neurorestorative Institute. We particularly will focus on three applications of neuroplasticity:

A. Stroke and Neurorestoration. Stroke is the leading cause of major disability in our country and the fourth leading cause of death. The Medical Center's Comprehensive Stroke Center offers world-class treatment and prevention of stroke, is the region's only Comprehensive Stroke Center and has the area's only dedicated Neuromedicine Intensive Care Unit. The vision of the Medical Center is that all those who suffer strokes will leave the hospital walking, talking, and comprehending. To achieve that, University and Medical Center faculty will collaborate across campus on (1) stroke rescue and secondary stroke prevention, (2) regulating neural regrowth and repair, and (3) ways to preserve and recover higher cognitive and language functions. Research programs in the Rochester Neurorestorative Institute will focus on neural pathways, neural prosthetic and neuromodulatory devices (human-machine interfaces) and robotics, harnessing the resources of Hajim School of Engineering and Applied Sciences and the School of Medicine and Dentistry.

B. Institute for Developmental Disabilities. Individuals with developmental disabilities require comprehensive lifelong support that ranges from health, to education and employment, to recreation. The Institute for Developmental Disabilities will provide the full range of needs to adults and children, including those with autism spectrum disorders – which now affect around 1 in 68 American children. Existing programs at the Medical Center will conduct research into brain development and communication (including the acquisition of language and the processing of sound) as well as studies of neural connectivity and neuroplasticity, and the underlying genetic and cellular root causes

of developmental disabilities. The long range goal is to be at the forefront of efforts to develop new therapies that can better treat or prevent developmental disorders.

C. Neurodegenerative and Neuromuscular Diseases. Our University is one of the world's leading research centers in neurodegenerative diseases such as Parkinson's and Huntington's diseases and neuromuscular disorders. For Parkinson's patients, our Deep Brain Stimulation program gives hope and shows promise for treating depression and obsessive compulsive disorder. With respect to Parkinson's and Huntington's diseases, computational models and wearable electronic devices are enabling doctors to develop more personalized therapies for those with movement disorders. Advanced telemedicine is dramatically increasing access to care. At the same time, fundamental research into neural-immune interactions is revealing how the brain becomes damaged as a consequence of chronic neuroinflammation and how neuroplasticity is regulated through the interplay between neurons and immune cells in the brain. Collectively, these combined strengths position our University to take a leadership role in this critically important area.

(3) Humanities and the Performing Arts. Through our classroom experience, scholarship and creative works, the humanities and the performing arts are essential to the success of virtually every major research university. Our University long has had world-class programs in performing arts through the Eastman School of Music and increasingly has established prowess in Arts, Sciences and Engineering through our Music, Theatre, and Dance programs. Our Humanities departments long were among the most notable at the University, but particularly in the post-2008 recessionary world, we have seen a decline in student enrollments in the Humanities as students have focused more on the career relevance of their studies. We will have stronger students in the professions of medicine, nursing, engineering, business or law or among those who seek an advanced degree in science or in the humanities if we reaffirm our commitment to the liberal arts ideal of our

undergraduate education through major new commitments to the humanities, including the humanities oriented social sciences and the performing arts in Eastman, the Memorial Art Gallery, and Arts, Sciences and Engineering. Specifically we recommend:

A. Creation of an Institute for the Performing Arts on the River Campus that includes Music, Dance and Theatre. This Institute will provide a vehicle to enhance our support for the performing arts by making them more visible and prominent both within the University and outside the University. Within Arts, Sciences and Engineering, the Institute will strengthen the quality of student life and strengthen co-curricular activities. The Institute also will strengthen collaborative bonds between Arts, Sciences and Engineering and the Eastman School of Music and Memorial Art Gallery. Initially the Institute will develop a strategic and operational plan. An important step will be to invest in infrastructure for the performing arts. Arts, Sciences and Engineering has developed a plan for a new theatre on the River Campus, inspired by the philanthropy of Tom and Linda Sloan. Arts, Sciences and Engineering also is moving to create a new major in Dance and is reviewing other curricular initiatives.

B. Creation of a Humanities Center in Arts, Sciences and Engineering, located in Rush Rhees Library, for students and faculty from all schools in the University. In the humanities and humanities oriented social sciences, there is a rich history of successful multidisciplinary engagement. We have recognized this in the support we provide through our Humanities Project. Our challenge is to build on the success of our departments and create a Humanities Center that becomes a functional and physical hub of these aspects of multidisciplinary life in the University. This type of approach has been developed at several peer universities. A review of the 26 AAU private research universities, for example, found that 13 had established a Humanities Center to champion the humanities and often also the performing arts through public outreach, curricula, faculty and student support, conferences, workshops or symposia, often organized around

year-long themes, provided support for fellows (both internal and external) and to augment departmental contributions to the undergraduate humanities curriculum. A first step in developing the Humanities Center will be the appointment of a Director for the Humanities Center who will work with faculty, students and key Board members on development of a strategic plan that will provide the basis for an enhanced commitment to the Humanities and address prioritization of new or augmented programs.

C. Strengthening programs that involve Arts, Sciences and Engineering and the Eastman School of Music as well as the Memorial Art Gallery. It is anticipated that the Eastman School of Music will complete a new strategic plan and develop a Request for Proposals for development of Block F, the 1.6-acre undeveloped property near Eastman Theatre on Main Street. The Memorial Art Gallery also is anticipated to revise its strategic plan.

(4) The Revitalization of our Community: Progress for our University is bounded by the progress of the greater Rochester community. The stronger our community is, the stronger the University will be. While Rochester's suburbs today generally are doing well, the City of Rochester is struggling with the highest rate of extreme poverty of any comparably sized city in the United States. The Rochester City School District perennially has graduation rates below 50 percent. We will focus on three core areas which can contribute to strengthening the greater Rochester community:

A. Community Engagement: Virtually every school at the University has developed or is developing ways to strengthen community engagement. The College in Arts, Sciences and Engineering, for example, has more than 15 volunteer programs that involve placements for undergraduates in the community and in recent years has been notable for pioneering ways to integrate teaching and scholarship with the community. Among other examples, Arts, Sciences and Engineering students study criminal justice in a course taught by

Rochester faculty and leaders in the criminal justice system and put their knowledge of biomedical engineering into practice by building adaptive technologies in partnership with faculty and local organizations. The College is currently establishing a Center for Community Engaged Education. The Medical Center continues to play a central role in community health improvement. Recently the Medical Center established the Rochester Center for Health Informatics, whose mission is to use data science to measure, study and improve population health in our community and to serve as a model for other communities. The Medical Center also has developed STEP, an introductory component of the School's pipeline programs that involves medical students, residents and fellows in providing support for underrepresented and economically disadvantaged 7th through 12th graders, and the Center for Community Health, which has become a community leader in expanding and developing community-health partnerships. The frieze of the Eastman Theatre reads, "for the enrichment of community life" and Eastman's Community Music School and Eastman Pathways for K-12 students are widely admired. The Memorial Art Gallery hosts more than 9,000 K-12 students a year in its education programs.

B. K-12 Education: A paradox for Rochester and indeed many cities is that inadequate high school graduation rates often coexist with a growing need for new entrants to the workforce at levels beginning with high school graduation. The Finger Lakes Regional Economic Development Council has made workforce development a priority. Drawing on the University's experience developing the detailed Educational Partnership Organization plan for East High School, which incorporates best practices from the most successful public, private and charter schools, Warner can become a national leader in the development, assessment and implementation of best practices for public, including charter, and private K-12 schools in our most challenged cities, potentially through the establishment of a Center for the Revitalization of Urban K-12 Schools or through specific new programs.

C. Entrepreneurship and Economic Development: Job creation and economic development are state and local priorities. The University long has been among the nation's leaders in patent royalties, regularly placing among the top 15 in the country. We have built on our success as an initial recipient of support from the Kauffman Foundation for campus-wide entrepreneurial activity. In recent years we have created a Vice Provost for Entrepreneurship, the Technology Development Fund, the Technical Entrepreneurship and Management (TEAM) Program, the Center for Medical Technology Innovation, UR Ventures, Excell Partners, our Entrepreneurs Network, the Center for Business Engagement, and most recently, formally established the Mark Ain Center for Entrepreneurship. Entrepreneurship and economic development are integral to our success as a University. Late in 2014, with support from the State, our affiliate, High Tech Rochester (HTR), opened offices that will serve as the cornerstone of the City's new innovation zone. HTR will be housed in 68,000 square feet of the historic Sibley Building in downtown Rochester with new offices that will consist of co-working space, traditional office space, dry and wet labs, conference rooms and a 100-seat auditorium. The Mark Ain Center for Entrepreneurship will provide more opportunities for students by connecting them to the community through internships, partnerships with community organizations such as the Hillside Work-Scholarship Connection and helping provide a framework for community organizations to develop entrepreneurial ideas for their own students or organizations. Our student incubator at HTR and the Rush Rhees Library's proposed iZone further will foster student innovation.

CONCLUSION

We have progressed in the past ten years because of the increasingly unified commitment of our Board, volunteer leaders, alumni, friends, faculty, students, and staff. The success of *The Meliora Challenge* Campaign is a testament to the loyalty, generosity, and hard work of all in the Rochester family. As we enter the final months of our

Campaign, let us never forget that the human beings who support the University of Rochester are our most valuable resource. Let us always live in the spirit of *Meliora* and seek to be ever better.