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## THE STRATEGIC PLAN

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### ASPIRATION AND IDENTITY

The RBHS strategic plan takes its cues from, and is highly aligned with, the Rutgers-wide strategic plan. While focusing on a mission, a vision, and strategic priorities appropriate for an academic health center, the RBHS strategic plan embraces the Rutgers-wide ambition to be recognized as among the nation's leading public institutions. The plan targets Rutgers' integrating themes, endorses Rutgers' five foundational elements, supports Rutgers' strategic priorities, and seeks to build academic strength within RBHS and across Rutgers.

RBHS' objectives in developing its strategic plan were to translate the university-wide priorities and integrating themes into RBHS' unique context, identify specific initiatives that would address the Rutgers' overarching plan while focusing on RBHS' needs, create a funding strategy to support its initiatives, and construct specific metrics to measure the success of the RBHS initiatives.

Of specific relevance for RBHS are the themes of cultures, diversity, and inequality—local and global (i.e., respecting cultural differences and diversity, while minimizing inequalities); improving the health and wellness of individuals and populations; and creating a sustainable world through innovation, engineering, and technology. The strategic priorities that resonate academically build faculty excellence and enhance Rutgers' public prominence.

RBHS' objectives are reflected in its aspiration and identity statements, each endorsed by a large majority of the faculty:

#### **Aspiration**

*RBHS aspires “to be recognized as one of the best academic health centers in the U.S., known for its education, research, clinical care, and commitment to improving access to healthcare and reducing healthcare disparities. This will be achieved through dedication to elevated standards of excellence and innovation, interprofessional collaboration and integration, and deep engagement with the community.”*

#### **Identity**

*RBHS seeks an identity as a health care education, research, and clinical division able to “lead Rutgers' efforts to be a state, national, and international leader in the biomedical and health sciences and their related professions. The approach incorporates insights from laboratory sciences and the clinical, behavioral, public health, and social sciences, as well as from non-healthcare disciplines, including business, economics, engineering, law, the arts and the humanities. RBHS will advance population-based, value-driven healthcare by building on its recognized clinical and research excellence, engaging with local and global communities, taking advantage of and strengthening its uniquely diverse workforce, and realizing interprofessional synergies among its schools and institutes. Further, RBHS will strengthen its many professional ties with state and federal governments and foster new public-private partnerships with industries critical and vital to New Jersey's economy.”*

RBHS will achieve its aspiration and become recognized as declared in its identity statement through the implementation of its five-year strategic plan. Specific initiatives address RBHS academic programs, faculty, clinical programs, finances and development, and infrastructure.

## ACADEMIC INITIATIVES

The RBHS strategic planning process identified four initial signature programs, one emerging signature program, four complementary programs, seven educational initiatives, and enabling initiatives to provide infrastructure support for these programs and initiatives. These programs and initiatives will enable RBHS to achieve its aspiration to be one of the leading academic health centers in the U.S. and support Rutgers' strategic priorities. The signature programs, emerging signature program, and complementary programs also address two points of emphasis in the Rutgers strategic plan: strengthening selected programs while sustaining quality; and targeting academic excellence by recruiting, retaining, and supporting outstanding faculty.

## RESEARCH PROGRAMS

### Signature Programs

#### *Cancer*

Rutgers is extraordinarily well placed to develop an outstanding program in translational research in cancer, including research in tobacco, which is among the best in the U.S. The unified Rutgers Cancer Program, under the auspices of Rutgers Cancer Institute of New Jersey (CINJ), has a statewide catchment area. CINJ is New Jersey's only National Cancer Institute (NCI)-designated comprehensive cancer center. Since inception, CINJ's membership and expertise have broadened across the Rutgers continuum and it has forged collaborative relationships with Princeton University and the Institute for Advanced Study in Princeton. CINJ membership now spans 14 Rutgers schools and institutes. CINJ is comprehensive with scientific strength in basic, population, and clinical research in cancer and its current research programs have translational targets through intra-programmatic and/or inter-programmatic interactions. In 2014, the program generated approximately \$70 million in grant support and the scientific productivity of the members was illustrated with over 700 publications. CINJ's translational research program includes critical niches that enable it to achieve national prominence, including efforts in precision oncology, which is conducting clinical trials that provide genomic assessment leading to personally guided therapies for patients based on their cancer's characteristics. CINJ's precision oncology work is conducted in collaboration with Rutgers University Cell and DNA Repository (RUCDR) Infinite Biologics. It is anticipated that future collaborative activity in this regard will also include the planned Institute for Quantitative Biomedicine at Rutgers (RU-New Brunswick). The anchoring CINJ Early Phase Clinical Trial Program is top-ranked, having received highly competitive funding from the NCI and the Department of Defense. CINJ has received long-term funding from the NCI Cancer Therapeutics Evaluation Program and now leads one of the nation's early therapeutic clinical trials network (ET-CTN) sites. Clearly, Rutgers Cancer Institute is benefiting the state through acquisition of federal funding and the population by providing state-of-the-art opportunities, and is now positioned to further enhance the state and university.

The RBHS signature cancer program, to be led by the CINJ director, will take advantage of the programmatic structure of CINJ, tobacco control research at the School of Public Health, and the complementary programs in clinical research, drug development, informatics, and public health. The program will enhance team science through a series of targeted initiatives:

- changing the culture and at the same time eliminating silos;
- developing funding mechanisms to enhance collaboration and "prime" multi-investigator projects and funding vehicles;
- identifying and recruiting key faculty who will both increase the "breadth and depth" and provide guidance to vitally important team science grants such as P01s and SPOREs; and

- building and supporting key infrastructure, including shared resources and staffing, to assure success of the plan.

The cancer program will also expand to enhance research and patient care state-wide, including to the Newark RBHS campus. The integration of the Newark clinical programs into the CINJ network will allow for the CINJ clinical research programs and trials to be offered to a more diverse population.

Incremental investment will be needed to provide pilot funding to generate preliminary data, provide protected time for enhanced research productivity, recruit new faculty, and support critical infrastructure development and use.

Implementation of these targeted initiatives will be driven by a collaborative deliberation and assessment process by key stakeholders. Assessment of infrastructure will assure that appropriate resources are available. First, a top to bottom review of existing shared resources will be conducted. Second, necessary new and shared resources will be identified. An initial review has identified, for example, some specific needs: tissue banking, informatics, and analytic and synthetic chemistry.

An aggressive timeline is planned. In year 1:

- a Strategic Plan Implementation Committee will be established to oversee the program;
- the first series of affinity groups across the Rutgers continuum will be identified;
- initial mini-retreats will be held; and
- an analysis of shared resource use and a user survey will be completed.

In year 2:

- the first series of group retreats will be assessed to identify competitive goals and needs;
- potential areas of research will continue to be identified;
- a Request for Application will be released to announce the availability of funding for high quality team pilot projects;
- critical faculty recruitments needed to enhance current and future programs will be identified;
- the recruitment process for identified faculty positions will begin;
- critical requirements for new shared resources will be identified; and
- a funding plan will be developed to allow for the use of these shared resources in obtaining data needed in support of team/translational applications for funding.

In years 3 through 5:

- ongoing team programs will be monitored;
- potential new areas will be considered, evaluated, and, when appropriate, supported;
- non-productive and non-competitive teams will be eliminated; and
- use of overall shared resources and infrastructure will be evaluated.

The goals and metrics for the translational research in the cancer program will include:

- support for the development of a world-class funded team of translational researchers in cancer;
- breaking down silos and building teams assessed by increased collaboration, multi-PI high impact papers, and externally funded multi-PI grants;
- developing a translational pipeline from Rutgers basic science to clinical trials assessed by increased investigator-initiated early phase trials; and
- translating public health and tobacco studies from population studies to change in policy.

An aggressive timeline will be pursued. Discussions are ongoing across Rutgers and Princeton to identify collaborative areas, faculty assets, and requirements that will lead to the submission of

institutional training grants (NIH T32 and R25 level mechanisms, in addition to grants from other agencies) as well as a number of multi-PI collaborative applications. As outlined in the strategic plan, significant incremental resources will be required for recruiting new faculty and providing support for infrastructure and critical seed funds to “prime” collaborative grant applications. With these in place, targeted applications such as R25 proposals are anticipated for submission: one would be submitted in the first 18 months and a total of three more would be submitted within the next three and a half years. Currently, four T32 training grants active with cancer center PIs focus on cancer-related areas. One cancer-focused T32 grant proposal will be submitted in the first two years of the program with an additional two more by year 5. Currently, no active multi-investigator P01 or SPORE grants exist within the cancer program. A skin SPORE application will be submitted by the end of year 2 and a second (prostate cancer) by the end of year 5. With added funding, a P01 grant proposal will be submitted by the end of year 2 and two additional P01s will be submitted by the end of year 5. To facilitate SPORE, P01, and multi-PI R01-level grants, one SPORE and two collaborative program retreats have been scheduled in the next three months. These retreats will focus on identifying current collaborators, faculty recruitment needs, and funding requirements for preliminary data.

CINJ currently leads 79 open therapeutic trials; six are peer review-funded and an additional 19 are investigator-initiated. It is expected that overall investigator initiated and externally peer-reviewed grants will be increased by 25% within two years and by 50% by year 5.

### ***Environmental and Occupational Health***

Rutgers is now among the most prominent university-based groups in environmental health, occupational health, risk assessment, exposure science, and toxicology (hereafter referred to as environmental health) in the U.S., and initial steps have been taken to be among the top globally. Between 2008 and 2013, Rutgers faculty members published more than 1,200 articles in environmental and occupational health, with many being joint publications indicative of the interdisciplinary and collaborative nature of research that currently exists. Publications have appeared in high impact journals across a variety of fields including: *Science*, *Nature*, *JAMA*, *Neurology*, *Risk Analysis*, *Environmental Science and Technology*, *Environmental Health Perspectives* and *American Journal of Public Health*. Based on this number of publications in occupational health, Rutgers would be ranked second among peer institutions and first among Big Ten institutions. Based on the number of publications during those years in environmental health, Rutgers would be ranked third among peer institutions and second among Big Ten institutions.

Rutgers faculty members have received substantial research funding in environmental and occupational health from federal, state, non-profit, and industrial sources. Since 2008, more than \$22 million in research grants have been received from the National Institute of Environmental Health Sciences and an additional \$98 million from other NIH institutes on projects related to environmental and occupational health issues. Other federal agencies, such as the CDC, Department of Energy, EPA, Federal Aviation Administration, Housing and Urban Development, National Institute of Occupational Safety and Health, Federal Emergency Management Agency, Department of Homeland Security, and NSF have funded in excess of \$37 million to research related to environmental and occupational health and policy. Additional funding has also been received from the State of New Jersey, foundations, and industrial sources to address specific problems or issues. Of the 22 resident Environmental and Occupational Health Sciences Institute (EOHSI) faculty, 19 receive extramural funding and five of the six Bloustein School of Planning and Public Policy faculty who have interests in this area receive extramural funding. Additional faculty members receive extramural funding from other sources to support their work in environmental and occupational health.

These and other factors, including the number of Rutgers faculty who have received lifetime achievement awards from the Society for Risk Analysis and the International Society of Exposure Science, and the number of faculty who have been or are editors or assistant editors for national journals, document the strength of environmental and occupational health at Rutgers. The program's advantages originate in the talents of the individual scientists and research groups that have built strong specialty areas, e.g., asthma. The specialized expertise developed by the faculty has been enhanced by adapting an interdisciplinary model that integrates environmental health with law, policy and planning, nursing, engineering, and other disciplines across the university.

An initial important step is to hire a visionary director for EOHSI who will lead this RBHS signature program and work collaboratively with the complementary programs in clinical research, drug development, informatics, and public health. This step will trigger other activities by sending a message to the scientific community within and outside Rutgers that RBHS has made a major commitment to environmental health. The new director's primary goal should be to bring faculty together and support research in environmental health across different departments, programs, and schools. This will include deepening the core strength within EOHSI and extending the impact of EOHSI to include faculty across Rutgers interested in environmental health. Over the next five years, it is anticipated that new U.S.-centric and global environmental and occupational health initiatives will be developed jointly across schools and departments led by the new director of EOHSI and a university committee to be created (see below) to maintain Rutgers' leadership in the field.

A university-wide committee should be established in academic year 2014-15 to coordinate and facilitate productive interdisciplinary and interprofessional programs in environmental health. The committee should have a broad mandate, including maintenance and enhancement of Rutgers' status as a national leader in environmental health and, specifically, brainstorming, hiring, and joint fundraising for interdisciplinary research. Initially, the committee should provide input into the search for a new EOHSI director. Ultimately, the committee should be chaired by the EOHSI director.

Major efforts in the upcoming five years should also include recruitment of junior faculty in at least some of the following key areas of existing strength: exposure science, environmental epidemiology, environmental toxicology, epigenetics, environmental engineering, and risk analysis. These are needed to fill existing gaps and replace senior faculty likely to retire in the next five years. In addition, recruitment and investment are needed in two emerging areas within environmental health: individual susceptibility to environmental disease and nanomaterial impact on environmental health. These emerging areas will include existing researchers from multiple Rutgers departments that can be broadened with additional collaborations from the complementary areas and new recruitments, as well as from other departments and schools. A major five-year goal is to develop Rutgers-wide initiatives to obtain multi-investigator grants, center grants, program project grants, and investigator-initiated grants.

The university-wide committee should be permanent, meet regularly, and generate an annual report of activities in environmental health, Rutgers-wide, outlining progress towards quantifiable metrics. These metrics would include success in grant funding, research, highly cited publications, recruitment, education, and international leadership. It is anticipated that grant funding would increase by 20% annually during the next five years. Two new multi-investigator/program projects will be developed and submitted for funding over the next five years. Research will lead to two highly cited publications every other year. Five faculty members will be recruited over the next five years, three new interdisciplinary courses will be developed to meet the educational requirement of this evolving field, and international leadership will be demonstrated by the development of a new global initiative in a developing country.

### ***Infection and Inflammation***

Infectious and inflammatory disease is one of the leading NIH-funded areas of research excellence at Rutgers, which ranks well among other members of the Committee for Institutional Cooperation (CIC) and institutions of national recognition. The newly established Institute for Infectious and Inflammatory Disease (I3D) brings together Rutgers faculty from various schools, departments, and centers on multiple campuses. This interprofessional institute will promote seamless communication, including state-of-the-art technologic capabilities for seminars and other presentations. Faculty members with these interests have also obtained sponsorships from industry and other sources for recent and upcoming retreats and symposia.

Publication by Rutgers faculty with interests in infectious and inflammatory diseases is highly competitive with other CIC members, both in total publications in infectious and inflammatory disease and also when expressed relative to all publications from 2008 through April, 2014, for each institution. Further, nearly 80 Rutgers faculty members currently receive NIH funding for research in infectious and inflammatory diseases. Over the last five years, the total NIH funding of Rutgers faculty engaged in infectious disease and inflammation research was nearly \$150 million. Additional faculty members receive extramural funding from HRSA, CDC, and other sources to support research and other work in this area. With appropriate investment, Rutgers is poised to become a top institution in this area compared to the public top-tier institutions included in the CIC and to private institutions with strong reputations nationally.

Particular strengths exist in host-microbe interactions, immunopathology, and global health; these research programs actively compete with the leading schools in the country to recruit outstanding faculty. These attributes and established reputation provide a strong platform for building this signature area of research excellence. By working together with other signature programs and the complementary areas in informatics, drug development, and public health, the infectious and inflammatory disease faculty can use this potent research program as leverage to develop partnerships with industry and to seek philanthropic contributions. In fact, the process of initiating collaborative partnerships and identifying funding sources is actively occurring within this signature area of research. As such, the foundation needed to further promote and develop this established area of research excellence at Rutgers already exists. Further, scientists in these areas are confident that with targeted investments and institutional support, Rutgers can become one of the top institutions in infectious and inflammatory disease in the country.

The following initiatives are planned:

- increasing the number of outstanding faculty,
- encouraging and rewarding interdisciplinary and interprofessional collaboration, and
- developing state-of-the-art resources.

Recruiting new faculty will facilitate continued growth of external grant support, increased publications in high impact journals and the generation and commercialization of intellectual property (IP). Recruitment will include: multiple outstanding junior/mid-level research faculty with expertise in infection and immunity focusing on targeted research areas of host-microbe interactions, immunopathology, and global health (within the first three years); and outstanding senior- or mid-level clinical scientists who can lead research programs in clinical/translational research and/or possess expertise with clinical trials (within the first three years). These recruitments will be conducted in close collaboration with the complementary areas through the recruitment of faculty members with joint appointments to facilitate maximal synergy between the signature area and each complementary program.

To encourage and reward interprofessional collaboration, this program will:

- seek to move faculty with common interests to a common location in Newark (including NJMS, RSDM, and SON faculty) and New Brunswick (RWJMS) to generate the critical mass needed for the development of increased multi-investigator grants, including center grants and program project grants (by year 5);
- establish a strong Internet connectivity network with all Rutgers faculty engaged in research in this signature area of research excellence (end of year 1);
- establish yearly retreats for Rutgers faculty in this signature area where different groups can share their ongoing findings and develop novel ideas;
- work closely with the Office of Technology and Innovation to generate IP portfolios specific for the signature area and establish broad partnerships with Pharma/Biotech companies to promote collaborative projects that can enhance IP development and commercialization (by year 4); and
- financially support collaborative efforts with internal grants of at least \$100,000 per project, particularly for the purpose of seeding multi-investigator grants (applications for these grants should be submitted within the first year and funding should commence by the second).

To develop state-of-the art resources, the program proposes to:

- develop new core facilities for metabolomics, bioinformatics, and clinical research/trials units (with proper funding, these new cores could be established in two-three years);
- upgrade/maintain equipment in existing core facilities, specifically the flow cytometry core at NJMS and a new satellite flow core facility in Piscataway/New Brunswick (three years);
- upgrade the animal facilities at the New Brunswick and Newark campuses (three years);
- introduce sustained efforts to raise funds in this signature area of research excellence from private donors in New Jersey and nationally (one year); and
- hire an administrative assistant in the I3D to facilitate collaborations, help develop Internet connectivity, support multi-investigator cross-campus grant initiatives, and interface with the Rutgers Foundation (one year).

A combination of internal and external funding sources will be needed to support these initiatives and make Rutgers one of the top institutions nationwide in this rapidly growing area of research excellence. In order to ensure the successful implementation of the proposed initiatives, the signature area strategic team will continue to meet monthly over the next five years to evaluate the impact of implemented actions, measure outcome metrics, and identify new action items or evolving strategies. Similarly, the signature area strategic team will meet frequently with leaders of the complementary areas in informatics, drug development, and public health to promote collaborative growth and maximize resources within the Rutgers community. In fact, the process of meeting with leaders of each of these complementary areas to develop an action plan tailored to the needs and strengths of this signature area is already underway.

The outcome metrics will include NIH grant funding; publications, particularly in high impact journals; generation and commercialization of intellectual property; and national and international recognition of faculty accomplishments. It is anticipated that with proper resources, current levels of NIH funding could be increased from \$150 million to \$200 million during the next five years (cumulative). As junior faculty become established during the five-year period, the expectation is that grant funding will continue to rise and could potentially reach \$300 million in six or seven years (cumulative). It also is anticipated that the number of publications in high impact journals (defined as having an impact factor of 8.0 or higher) will increase. This is readily measurable and will be tracked throughout Rutgers and assessed on a yearly basis. Measures of faculty reputation will also include number of invited talks to be delivered at national and international conferences/meetings and other research institutions. To track intellectual

property growth, patent applications, and licenses, revenue will be assessed on a quarterly basis with assistance from the Office of Technology and Innovation.

### **Neuroscience**

The goal of the neuroscience initiative is to create a nationally recognized center of research into the biological bases of brain function and dysfunction in the service of providing new treatments for prevalent nervous system disorders. Areas of focus will include: neurodevelopmental disorders (autism spectrum disorder and schizophrenia), neurodegeneration and nervous system injury (multiple sclerosis, Parkinson's and Alzheimer's diseases, spinal and brain injuries), cognitive and sensory disorders, and motivational disorders (addiction, obesity). Funding to support this program will be sought from the NIH BRAIN initiative and other public and private entities.

The program will be led by the director of the new Brain Health Institute (BHI), which will be the home for this initiative. BHI was created in 2013 as an RU-New Brunswick and RBHS partnership. BHI will work collaboratively with other Rutgers entities with appropriate neuroscience interests in order to achieve the program's objectives. These include, in particular, the to-be-created Rutgers University Consortium in Autism and the Center for Molecular and Behavioral Neuroscience (RU-Newark). BHI will also work with RU-New Brunswick to hold a multi-day conference on computational cognitive neuroscience, planned for FY 2015, to which national experts who utilize biological, psychological, and computational approaches to conduct brain research will be invited.

The selection of the focus areas was based on an analysis of strengths at Rutgers currently, as well as the recognition of common nervous system disorders with a large need for novel treatments. An analysis of publications from Rutgers faculty over the past five years in neurodegeneration, dysfunction and aging revealed 103 papers related to Parkinson's disease, 101 papers related to Alzheimer's disease, and 90 papers related to multiple sclerosis. Of these, Parkinson's disease and multiple sclerosis were identified with the greatest strength in grant funding: 11 grants were identified that focused on Parkinson's disease (est. \$6.4 million) and 24 on multiple sclerosis (est. \$10.1 million), whereas three grants focused on Alzheimer's disease (\$1.6 million). In addition, other investigators are studying processes related to central nervous system degeneration and aging (19 PIs; 28 grants) or adult brain function (19 PIs; 32 grants). Several clinical trials were identified in the fields of multiple sclerosis and Parkinson's disease.

Analysis of publications from Rutgers faculty over the past five years in loss of neural function during development revealed 37 papers in the area of autism and 54 papers in schizophrenia. Forty-one currently funded or recently closed grants associated with this sub-area were identified: 15 grants directly related to autism (est. \$10.5 million) and seven grants (est. \$5.4 million) directly related to schizophrenia. Additional investigators are studying processes related to developmental disorders or injury (15 PIs; 19 grants). New Jersey also supports grants in autism, including one program project grant, indicating their endorsement of this area.

Analysis of publications from Rutgers faculty over the past five years in loss of neural function after injury revealed 77 papers in spinal cord injury, 45 in brain injury, and 113 in stroke. The greatest strengths in grant funding were in spinal cord injury and traumatic brain injury. Eighty-five currently funded or recently closed grants in this area were identified: 50 directly related to spinal cord injury (est. \$18.1 million) and 16 related to traumatic brain injury (est. \$12.3 million). The remaining grants encompassed more general themes within strategies to promote regeneration (8 PIs; 19 grants). The State of New Jersey has supported a number of the grants on both spinal cord injury and traumatic brain injury, including two program project grants on traumatic brain injury (both basic and clinical studies). Several clinical trials and private donations were identified in spinal cord injury.

Comparisons of publications in these areas of strength were conducted with peer institutions in New York, Connecticut, Philadelphia, and New Jersey, as well as institutions in the Big Ten. In the area of Parkinson's disease, Rutgers ranked 5<sup>th</sup> in publications regionally and 4<sup>th</sup> in the Big Ten. An analysis of multiple sclerosis-related publications revealed that Rutgers already is "first in class" both regionally and in comparison to the Big Ten. In spinal cord injury, Rutgers ranked 4<sup>th</sup> regionally and 6<sup>th</sup> in the Big Ten in publications. An analysis of publications associated with TBI revealed that Rutgers is 5<sup>th</sup> both regionally and in the Big Ten. Spinal cord injury, traumatic brain injury, and autism are particularly attractive because the State of New Jersey supports Commissions on Spinal Cord Injury (NJCSCR) and Brain Injury (NJCBI) and the Governor's Council on Medical Research and Treatment of Autism that have provided significant grant funds to many Rutgers faculty members.

Other areas that represent major clinical problems with very limited therapies are ripe for development at Rutgers. Cognitive neuroscience is the study of brain mechanisms of high-level mental function that are critical for human experience but are primary contributors to the morbidity of many neural disorders including Alzheimer's and Parkinson's diseases, autism, and schizophrenia. Rutgers' strengths in cognitive neuroscience can be linked to extensive expertise in behavioral neuroscience and neuroimaging. Development of new therapies for these disorders requires an understanding of complex cognitive phenomena and the way in which altered neural function gives rise to cognitive deficits in such diseases. Motivational disorders also rank high in the need for new clinical treatments. Addiction and obesity are rampant nationally and internationally, but little is known about the brain substrates that lead to these disorders. Strengths at Rutgers in both of these and related areas indicate that further development would be fruitful for developing novel treatments for these disorders. New therapies require research focused on mechanisms of motivated behavior, which are at the root of these behavioral problems.

A further focus for BHI will be to utilize new techniques in basic neuroscience to develop novel therapies for brain and spinal disorders. Over the past seven years, developments in viral vector neurotransduction, optogenetics, and chemogenetics (designer receptors), among other areas, are revolutionizing neuroscience. These new methods have proven effective in altering brain function and dysfunction in highly specific ways in animal models, indicating that such methods may lead to a new generation of neurotherapeutics. Indeed, viral vectors are already being used in clinical trials to treat Alzheimer's and Parkinson's diseases by expressing growth factors to halt degeneration of neurons in the basal forebrain and midbrain. Similar viral vectors can be used to express opsins or designer receptors in a cell type-specific manner to allow control of selective populations of brain or spinal neurons with unprecedented specificity. This will allow new therapies, based upon knowledge from basic neuroscience research, with many fewer side effects compared to almost any current treatment. Rutgers can take the lead in the development of such new therapeutics.

The neuroscience initiative's ultimate mission will be to unite and expand the large Rutgers neuroscience community and become "best in class" nationally within the identified focus fields. The program will have three major goals:

- to create research programs focused on the biological underpinnings of healthy central nervous system functions and dysfunctions associated with the above disorders;
- to develop new treatments for these disorders based upon this research and new neuroscience tools; and
- to establish a rich neuroscience resource in New Jersey that educates the public, clinicians, faculty, and students, as well as state, national, and international health officials.

By studying different disorders in parallel, we can identify commonalities for the underpinnings of disease. Moreover, the new neuroscience techniques that will be used as the basis for novel

neurotherapeutics will be applicable across all of these and other neural disorders. The goal is to identify the genetic, environmental, and other aspects related to neuropathology and repair so that effective strategies can be developed for prevention and treatment.

The newly formed RBHS complementary programs will provide significant synergies. The informatics group will assist in state-of-the-science imaging data acquisition and storage as well as with increased communication capabilities; the Clinical Research Group will support the development of a clinical and translational science award that will support clinical trials arising from basic research; the public health group will advise in the fields of epidemiology, biostatistics, and quantitative methodologies; and the drug discovery group will assist in target identification which will fuel translational research and coordinate institute studies with New Jersey biopharmaceutical companies and the Rutgers Biopharma Educational Initiative.

The following will be goals for year 1:

- recruit a leader for the university-wide BHI, who will also serve as leader of the RBHS signature program;
- begin recruiting senior faculty (ideally, one for each identified focus area) with established track records of extramural funding to provide leadership for each initiative sub-area (faculty to arrive by year 2);
- establish administrative support for the program;
- evaluate and plan for state-of-the-science imaging at needed sites and other needed cores (supported by equipment grants by faculty and a Rutgers campaign to raise funds), which will be monitored by core directors with the goal of becoming self-sufficient from user fees by years 2-3;
- strengthen alliances with principal teaching hospitals (level 1 trauma centers: NJMS and RWJMS, Kessler Rehabilitation Institute, JFK Johnson Rehabilitation Institute, and Children's Specialized Hospital) by identifying one collaborating faculty member affiliated with each site who will work with the institute leadership to promote identification of research questions and recruitment of clinical trial participants from this site (descriptive statistics of participant involvement from each site and faculty input from each site will be collected to monitor the effectiveness and strength of these alliances); and
- establish stronger liaisons with the biotech and pharmaceutical industry in collaboration with the drug development and clinical research complementary programs (biotech and pharmaceutical companies will be introduced to the institute through an invitational "meet-and-greet" the institute faculty and staff open house, followed by designation of a Rutgers drug development faculty member to be the ambassador of the institute to that company regarding drug or biotech research and development).

To facilitate communication, one to two-day strategic planning conferences will be conducted. These will include Rutgers faculty, staff, students, and multidisciplinary collaborators from various Rutgers schools, community and professional organizations, foundations, and governmental agencies. Teams will be developed for each of the focus areas, which will advise on goals, objectives, and outcome measures specific to each focus area; processes will be put in place, including telecommunication capabilities from all sites, to coordinate communication among international, national, and state educational, clinical, and research neuroscience programs, using the expertise of IT and in collaboration with public health experts; a website will be developed with a virtual resource center along with directory of all staff, faculty, clinicians, and researchers involved in the program in collaboration with the complementary programs; and a Telehealth grand rounds neuroscience seminar series will be planned to bring leaders external to Rutgers to speak and meet with Rutgers scientists in the BHI areas of focus.

The following will be goals for year 2:

- recruit the first group of junior faculty hires to fill some of the gaps in viral vectors and plasmids, cognitive neuroscience, motivational neuroscience, genetics, neuropathology, imaging, clinical research, and translational research especially in the area of drug development (faculty to arrive in years 2-3);

- establish an internal neuroscience study section to support new grant applications;
- establish a pilot grant mechanism that funds collaborative projects;
- form affinity groups to enhance collaborations across campuses and with external entities;
- apply for federal, state, and private foundation grants to fund individuals, multi-PIs, and training grants;
- establish an endowed one-year fellowship to support post-neurology residency training of physician-scientists and a three-year endowed fellowship to support training of an MD/PhD student;
- establish strong drug discovery teams to foster translational/clinical trials in collaboration with the drug development and clinical research complementary programs;
- establish access to core resources in key areas such as biostatistics, epidemiology (public health complementary program), data management, clinical trials (clinical research complementary program), and bioinformatics (informatics complementary program);
- provide regularly scheduled “Telehealth Grand Rounds” for neuroscience researchers, clinicians, educators, and advocates within the BHI;
- organize symposia on each of the areas of focus with invited expert speakers (the director will meet with the president of the New Jersey chapter of the Society for Neuroscience, public health professionals, as well as with other stakeholders to discuss how outreach activities can be best coordinated); and
- identify continuous quality indicators for best practices in clinical care, education, and quality of life for persons with neurodegenerative conditions, neural injury, motivational or cognitive disorders, and neurodevelopmental disabilities.

The following are goals for year 3:

- continue to recruit faculty hires to fill gaps in viral vectors and plasmids, cognitive neuroscience, motivational neuroscience, immunology, genetics, neuropathology, imaging, clinical research, and translational research especially in the area of drug development; continue to apply to NIH for individual (R01, R21), training (T32, F30), program project (P01), exploratory (P20), specialized center (P50), and center core (P30) grants from the relevant NIH institutes (at least 20 NIH grant applications per year, including all institute individual, training, and collaborative grants);
- and formulate state and national policy efforts to address earlier screening and evidence-based diagnosis of neurodevelopmental disorders (autism), as well as earlier recognition of neurodegenerative and neural injury disorders.

Also, by the end of year 3, the Brain Health Institute director and/or program faculty will be serving on state, federal, and international committees.

The following is planned for year 4:

- develop curricula and training guide toolkits for pre- and post-graduate health profession education regarding cognitive function and dysfunction, motivational disorders (addiction and obesity), neurodegeneration, neurodevelopmental disorder, and neural injury diagnosis and care (faculty development for this curricula development starts in year 1 or 2);
- policy center faculty will serve as experts for local, state, national, and international consultation; and
- continue applying for individual (R01, R21) and collaborative NIH grants (P01, P20, P50, P30) and for centers of excellence grants directed to autism, multiple sclerosis, Parkinson’s disease, spinal cord injury and traumatic brain injury where available.

In year 5:

- an application will be submitted for an NIH-funded comprehensive center grant (P60);
- and state, national, and international policy will be set to increase earlier screening, diagnosis, and referral for neural injury (traumatic brain injury, spinal cord injury), neurodevelopmental disorders (autism), cognitive, motivational, and neurodegenerative disorders (multiple sclerosis, Parkinson’s disease).

By the end of year 5, program faculty will:

- receive multiple NIH research center-related awards, positioning Rutgers among the top ten, NIH-funded U.S. research centers.  
(<http://report.nih.gov/award/index.cfm?ot=&fy=2014&state=&ic=&fm=RC&orgid=&distr=&rfa=&pid=#tab2>).
- receive more than double the current funding from federal and state grants;
- increase the number of publications (at least 10 articles per year from at least three focus areas of the institute or at least 30 articles/year in years 3-5);
- have established cross-communication and increased campus-wide collaborations (these collaborations will be measured quantitatively using the number of Rutgers schools, departments, faculty, and staff involved in institute initiatives over each of the five years, and qualitative assessments will be conducted semi-annually by institute staff to identify strengths, weaknesses, and barriers to successful collaborations);
- be recognized at the state and national levels as a critical resource to inform public policy; and
- be recognized as best in class regionally and within the Big Ten in neuroscience.

## Emerging Signature Program

Community Health and Health Systems has been selected as an emerging signature program. While RBHS does not currently have the capacity to develop a program in this area that is likely to compete with the top programs nationally within the next five years, expertise exists within RBHS specifically and the balance of Rutgers more broadly as well, and large numbers of faculty have interests and expertise in areas of relevance. Most importantly, work in this area will address a vital RBHS/Rutgers mission and is of great consequence to the state. Further, RBHS is well-situated to take advantage of funding opportunities.

### *Community Health and Health Systems*

Health care in the U.S. and New Jersey is undergoing its most significant changes in half a century, and the integration and emergence of RBHS offers a singular opportunity for Rutgers to emerge as a regional and national leader guiding health system change. The federal government and major philanthropies, including the New Jersey-based RWJF, are investing significant resources to shift from a health care paradigm that focused solely on the patient-provider dyad to one that emphasizes a more holistic, population health perspective. National health reform is also fueling this shift by making health care systems broadly accountable for disease prevention and improvement of the health of communities. These forces create new opportunities for Rutgers to advance as a leader in designing, implementing, and evaluating new strategies to improve health and reduce system costs.

Rutgers-wide, more than 300 faculty members identified themselves as having interests in community and urban health, health disparities, health services research, and/or quality and safety, each of which is relevant for this emerging signature program. Further, more than 100 Rutgers faculty members receive extramural funding in these areas. Examples of Rutgers substantial capacity include: University Behavioral Health Care (UBHC); The Institute for Health, Health Care Policy and Aging Research (IFH); the RWJMS Department of Family Medicine and Community Health; the Rutgers School of Dental Medicine (RSDM) Department of Community Health; the School of Nursing (SON)-led community service programs; and the Eric B. Chandler Health Center.

UBHC provides academically-based clinical programs and services throughout the State of New Jersey and is one of the largest providers of behavioral health care services in the country, including services that reach underserved populations. UBHC develops and supports New Jersey initiatives, public sector programs, and programs for employers and the corporate community.

IFH is a national and international leader bringing together the social and behavioral sciences, clinical disciplines, basic sciences, and related fields to promote research on critical health and mental health

issues. IFH has substantial extramurally funded multi-disciplinary research programs making nationally acclaimed scholarly and applied contributions. Notably, three of Rutgers' elected members of the National Academy of Sciences' Institute of Medicine are currently IFH core members; in 2013, two IFH associate members, an historian and a physician, were awarded MacArthur Fellowships. Extramural support for research and training in FY 2013 totaled \$12.5 million.

RWJMS' Department of Family Medicine and Community Health is a nationally recognized leader in medical practice transformation, having conducted intervention trials in more than 1,000 medical practices across the country resulting in more than 150 scientific publications. This work is being applied to the development of Robert Wood Johnson Partners, a Medicare Shared Savings Program ACO; and New Brunswick Health Partners, an emerging Medicaid ACO. These and other initiatives create within RBHS laboratories of innovation and reform, to help reshape healthcare delivery in New Jersey and offer lessons for the nation.

RSDM is a national leader in community-based service-learning. The school's Community Oriented Dental Education program enables students to live and learn in community based practice settings. With existing clinics in Newark, Northfield, Stratford, and Galloway and planned operations in New Brunswick and Camden, RSDM, which is already the largest provider of oral health care to low-income underserved populations, will have a state-wide presence. In addition, the school's From Practice to Preceptor program, funded by the Health Resources and Services Administration, enables the dental school to address the acute shortage in dental school faculty, preparing essential manpower required to educate the next generation of oral health professionals. The proposed New Jersey Center for Oral Health Policy will provide an advocacy voice for oral health and serve as a resource for dental public health and oral health services research initiatives.

SON has a strong commitment to the Newark and New Brunswick communities. The FOCUS Wellness Center, a partnership between SON and the FOCUS Social Service agency in Newark, provides primary care and interprofessional services, including social work, pharmacy, behavioral health, and domestic violence counseling. The New Jersey Children's Health Project is a mobile van project that provides primary health care services to underserved and uninsured residents of Newark. The Jordan and Harris Community Health Center in Newark facilitates community empowerment and participation in health promotion programs designed to reduce health disparities. The François Xavier Bagnoud Center's mission emphasizes its commitment to improving the health of vulnerable women, children, youth, and families and to build capacity in the communities and systems that serve them. SON also leads a community health worker/promotoras de salud training program for immigrant Hispanic women in New Brunswick. This began as a NIH-funded intervention to promote physical activity among immigrant women. The intervention was highly successful and was subsequently adopted as a standing community program sponsored by Lazos America Unida, a Mexican-American organization headquartered in New Brunswick and the Mexican Consulate of New York City. The promotoras are currently assisting SON faculty in developing and pilot testing physical activity, nutrition, and acculturation stress reducing intervention to address obesity among Mexican immigrant women. In partnership with the consulate and the National Alliance of Mental Illness, SON faculty have also trained community men as promotores de salud to deliver research-based primary prevention programs aimed at decreasing the incidence of depression related to acculturation stress among immigrant Mexican men in New Jersey. Other SON programs include collaborations with community organizations to promote health, including AIDS service organizations and community social service agencies.

The Eric B. Chandler Health Center, one of approximately 1,300 federally qualified health centers (FQHCs) and one of 26 in New Jersey, is operated by RWJMS in conjunction with a community board. It is one of the few FQHCs operated by a medical school. The Chandler center provides primary

medical and dental care to the most needy New Brunswick residents, is a training site for RBHS health professions students, and serves as a site to develop and test innovative strategies to improve the health care safety net.

These entities will collaborate with each other and with other Rutgers units to address important community health issues. For example, IFH and faculty based in arts and sciences departments can work together to address questions in two interacting translational research programs: applications of genetics and cellular biology to the clinic and community, and applications of cultural and cognitive sciences to the clinic and community.

Environmental factors play a critical role in gene expression affecting human development from in utero through adult life. Analysis of these environmental factors and differences in their frequency and content in diverse communities can lead to development of treatments targeted to environment-gene interactions both common and specific to ethnic communities and across generations in these communities.

Non-adherence to treatment and failure to initiate and maintain use of available, effective, and often relatively low cost treatments for asthma, diabetes, hypertension, depression, and other cardiovascular conditions are estimated to drive 70% of the costs of care for the U.S. health care system. Although non-adherence to treatment impacts all sectors of the population, its adverse effects are felt more strongly among black and Hispanic citizens and the elderly. Multi-disciplinary teams can address the cultural and cognitive factors underlying non-utilization of effective medication and address and improve the very mixed findings of information technology for addressing non-adherence.

Matching technology to the brain's system for processing information is poorly understood. These issues range from the selection of the sensory channel for delivery of information to procedures allowing patients to see the connection between adherence behaviors and understandable changes in biomarkers, function, and other health outcomes.

Additional productive units across RBHS include many service programs that offer substantial capacity on which to build this emerging signature area. Further, over 40 projects funded by NIH, AHRQ, and private foundations currently provide over \$20 million in extramural research support for studies addressing health disparities and equity. Numerous additional projects support scholarly and applied work for community health and health systems' quality and safety.

A community health and health systems program will be initiated to develop and sustain capacity to generate high-impact, rigorous research; attract significant extramural support; effectively translate research to policy and practice; and make major contributions to improving population health, eliminating health disparities, and promoting health equity. The program's goal will be to move Rutgers toward becoming a best-in-the-nation academic institution in community health and health systems by promoting evidence-based population health improvement, engaging diverse communities, and advancing delivery system innovation.

A director for this emerging signature program will be identified in year 1. Other development activities, also to be addressed in the program's first year, will focus on identifying and building capacity within Rutgers and refining programmatic targets and metrics. Capacity building will include the development of new models of interprofessional care, new platforms for population health, including the Robert Wood Johnson Partners ACO, and sites to deliver community oriented care, including programs that encompass both traditional care models and mobile and community-based models run by SON programs and School of Health Related Professions.

Metrics and measurement strategies will be developed in three domains: the number of high-impact, peer reviewed publications in specific fields; the extent of extramural funding, including, in addition to the NIH, support from AHRQ, CDC, other relevant federal entities, and private foundations; and efficacy of engagement with diverse communities as well as practice and policy audiences. Options will be examined and metrics will be selected during the early months of plan implementation.

Initial objectives, key tasks, and a timeline have been developed for year 1. *The first objective* is to engage Rutgers scholars in a community health and health systems working group. Key tasks include inviting participation from strategic planning groups, including health disparities and equity, quality and safety, community and urban health, under-represented minority training, and relevant complementary areas (especially public health and clinical research); establishing communication mechanisms; and creating a steering committee and other subgroups as needed. These tasks will be completed during the first month.

*The second objective* is to identify and implement clearly defined metrics to compare Rutgers to other institutions. Tasks include identification of appropriate metrics for: extramural funding productivity (e.g., NIH, AHRQ, CDC, HRSA, and public and private foundations); high-impact publication productivity; and effective community/delivery system/policy engagement. These will be accomplished during months two to five and reported annually.

*The third objective* is to identify and investigate AAU aspirational peer institutions. Tasks could include selected site visits and identification of characteristics of highly effective institutions and to draw lessons for Rutgers. These tasks will be accomplished during months three to seven.

*The fourth objective* is to build an interprofessional learning community across Rutgers and enhance Rutgers' capacity to engage effectively in high-impact research. Tasks include creating a list-serve, hosting symposia and other collaboration opportunities, identifying skill-building needs (e.g., community-based participatory research, patient centered outcomes research, etc.), and initiating skill improvement strategies; and identifying and filling other gaps in research capacity (e.g., data sources). These tasks will begin in the third month and continue throughout the year.

*The fifth objective* is to identify and pursue funding opportunities. Tasks include: tracking and distributing funding opportunity announcements; engaging in dialogue with funding agency leaders; and developing capacity to pursue large scale collaborative research opportunities. These tasks will begin in the second month and continue throughout the year.

*The final objective* is to enhance engagement with local communities and practice and policy audiences. Tasks will include: broadening collaborations with community leaders in New Brunswick, Newark, Camden, and other communities; identifying/implementing opportunities to build skills of Rutgers faculty and staff in translation of research to practice and policy (e.g., through workshops or symposia); identifying near-term and long-term opportunities to build real community collaborations.

First-year activities will continue through year 5. Additional objectives will be pursued in years 2-5:

- identifying and implementing strategies for RBHS to be a “learning healthcare system” by promoting a culture of collaboration and methodologic development;
- building data and analytic capacity; building partnerships with other delivery systems/networks, state governments (e.g., Medicaid agencies, departments of health), and other entities to engage in collaborative work;
- working with other RBHS signature and complementary programs to advance excellence in community health and health systems;

- identifying, developing, and evaluating the most promising and feasible conceptual approaches for promoting population health and delivery systems innovation using the most up-to-date science;
- supporting, through an internal competition, priority investments (e.g., pilot project and selected faculty hires) for two or more focused initiatives that rapidly advance Rutgers on the path to “best-in-class;”
- pursuing other capacity building efforts based on lessons from the assessment of aspirational peer institutions and other initial activities; and
- significantly improving programmatic metrics to be selected relative to peer academic institutions.

## Complementary Programs

The RBHS strategic plan will support the development of four complementary programs. These complementary programs focus on areas that, while relatively strong, are not of sufficient strength currently to have the potential to be among the best in the nation within the next five years. However, they are essential for the growth and development of RBHS as well as the success of signature and emerging programs throughout RBHS. Each is critical to the RBHS mission more broadly.

### *Clinical Research*

Rutgers’ mission includes providing education and instruction, conducting cutting-edge research, and performing public service in support of the needs of New Jersey’s citizens. Clinical research is necessary to improve treatments and the health status of populations. Expanding clinical research will provide access to novel treatments to the state’s citizens, and in particular disseminate the benefits of Rutgers biomedical research to the RBHS clinical enterprise and, specifically, to its health care providers, benefiting patients throughout New Jersey. It also will help advance one of the major industries in the state. For these reasons, the expansion of clinical research was also an important motivation for the Rutgers-UMDNJ integration. While Rutgers does not have the depth and breadth of the strongest clinical research programs nationally, considerable clinical research is being conducted at Rutgers. This includes a large number of IRB-approved active clinical protocols (3,394), peer-reviewed grant funding (\$21.65 million in 2013; \$112.85 million since 2009), and high impact peer-reviewed publications (73 in high impact clinical journals (impact factor >8) and 7,062 publications cited in PubMed from 2009 through 2013). Rutgers-wide, at least 60 faculty members currently receive NIH funding for clinical research. More than 65 faculty members who responded to a survey distributed to all Rutgers faculty in February 2014, reported that they currently receive extramural funding to support their clinical research activities.

Further, considerable clinical resources are available through the large hospital and community-based centers in Newark and New Brunswick, as well as through over 16 integrated medical centers throughout the state. RBHS has the capacity to provide leadership and oversight for a clinical research infrastructure sufficient to support signature programs and has the potential to expand the signature programs through foundation- and government-sponsored clinical research programs and partnership with biotechnology and pharmaceutical companies, and building clinical research bridges that would allow Rutgers to become a significant national leader.

*Two major initiatives* will be undertaken to support the mission of clinical research for the signature programs, the emerging signature program, and other RBHS research programs. *The first initiative* is the development of the infrastructure needed to support a NIH application for a Clinical and Translational Science Award (CTSA). When awarded, the CTSA would be a resource accessible to and supportive of research programs within all RBHS schools and units, and all schools and units Rutgers-wide with health-related research programs. The CTSA would provide expanded core resources in key areas, including biostatistics, bioinformatics, data management, clinical trials and epidemiology, research nursing, and pharmacy and pharmacology.

*The second initiative* would be a collaboration with Rutgers University Cell and DNA Repository (RUCDR) Infinite Biologics, the world's largest university-based biorepository. In operation since 1999, RUCDR has perfected the science of biobanking, bioprocessing, gene sequencing, and analytics. RUCDR currently works with several centers and institutes at Rutgers. The collaboration would enable RUCDR to support RBHS researchers focusing on the genetic causes of common, complex human diseases and enable genomic discoveries that would lead to diagnoses, treatments, and cures for these diseases. The collaboration with RUCDR will also enable us to advance our ability to determine individual/genetic susceptibility to the benefits or risks of therapies. Through this collaboration with RUCDR, resources would be available to assist investigators and provide access to high quality biomaterials, technical consultation, and logistical support.

Discussion is underway to address the clinical research infrastructure campus-wide. An initial step would include the creation of a biostatistics consulting service that would merge existing services and coordinate activities university-wide and, in particular, clinical research in the School of Public Health, RU-New Brunswick, and RU-Newark.

The following tasks will be conducted in year 1:

- identifying a leader for this program who, with other senior clinical researchers, will visit academic sites with similar centers in development;
- establishing a CTSA Advisory Committee;
- recruiting a CTSA director;
- beginning recruitment for nursing, pharmacy, and other relevant staff from internal and external sources;
- identifying clinical research unit space for CTSA development at both New Brunswick and Newark campuses;
- developing a financial model for CTSA support; and
- initiating work with the cancer signature program to recruit new clinical investigators.

Additional critical tasks in year 1 will include efforts to improve and increase clinical research activity and infrastructure to streamline clinical trial negotiations with pharmaceutical companies and enforcing competitive timelines attractive to the pharmaceutical industry, in an effort to increase activity and preliminary data necessary for a CTSA application.

The following tasks will begin or be conducted in year 2:

- providing CTSA services across Rutgers;
- recruiting core staff and developing organizational structure (continued);
- establishing standard operating procedures;
- integrating IRB services across network;
- developing informatics for integrated databases;
- establishing new cores in biostatistics, bioinformatics, and pharmacy as dictated by the Advisory Committee and CTSA Director;
- identifying current faculty for integration into the center;
- developing a plan for integration with RUCDR and biorepository; and
- working with the neuroscience signature program to recruit new clinical investigators.

In year 3:

- a preliminary application for a CTSA award will be developed;
- strategic recruitment of new faculty in specialized centers to enhance faculty critical mass in clinical investigations will be conducted; and
- three to five collaborative research grants (e.g. PO1, SPORE, etc.) will be submitted;

- concurrently, new clinical investigators will be recruited jointly with the infection and inflammation signature program; and
- a pilot grant program in clinical investigation will be developed.

In year 4:

- the CTSA application will be submitted;
- the recruitment of new clinical investigators will be conducted jointly with the environmental and occupational health sciences program; and
- a major industry partnership will be established.

In year 5:

- the CTSA award will be established;
- Rutgers will be identified as a national leader in clinical research in each of the signature programs; and
- development of clinical programs in other health-related disciplines Rutgers-wide will begin.

### ***Drug Development***

Rutgers is uniquely positioned in the areas of drug discovery and development to provide complementary support for RBHS signature programs – an important motivation for the Rutgers-UMDNJ integration. Rutgers is the only Big Ten university geographically located in the midst of a large biopharmaceutical cluster, and the integration establishes Rutgers as a powerhouse of biomedical health science research in the New Jersey biopharma ecosystem. The new Rutgers and the health care-focused biotechnology, diagnostic, and pharmaceutical industries have complementary strengths, especially at the intersection of discoveries that can be translated into new medicines. This is a Rutgers-wide and university-led initiative, in which RBHS will play a major role.

All drug discovery and development companies, regardless of therapeutic focus, use platform technologies to bridge the gap between clinical need and translational innovation. Rutgers' core competencies in these technologies include: structural biology; biologics, proteins, and polypeptides; drug delivery; computational biology and structure based drug discovery; molecular synthesis; and translational science. Rutgers also is establishing emerging competencies in disease-focused translational and discovery research in oncology, infectious disease, and neurological disease. Rutgers also recognizes an opportunity to build a complementary and supporting capability in pharmacoepidemiology. Further, Rutgers has considerable strengths in a vast scope of discovery biology that have not been designated as core competencies, including metabolomics, fibrosis, inflammatory disease, and neurotrauma.

Faculty members with interest and expertise in drug discovery and development are well-funded and many have developed strong relationships with members of the biopharmaceutical industry. From 2011 through 2013, Rutgers faculty funding in these areas, including federal government, state government, corporations, foundations, institutions of higher education, and associations and other sponsors totaled more than \$204 million. Nearly 100 Rutgers faculty members currently receive NIH funding for research in drug development and drug discovery. Publications in these areas from 2011 through 2013 totaled approximately 2,000.

A Rutgers-wide Drug Design Center will be formed to develop and enhance discovery of lead compounds to advance medicine. The center will spur development programs through close collaboration with translational efforts in cancer, environmental and occupational health, infection and inflammation, and neuroscience, as well as in collaboration with the clinical research complementary program. In year 1, a leader for this program will be identified and become responsible for identifying

Rutgers faculty members who have valuable expertise in the broad field of drug discovery and development.

*Six objectives* have been identified for the Drug Design Center. *The first objective* is to formally designate drug discovery and development core competencies in the following platform technologies: computational biology and structure-based drug design; structural biology; biologics, proteins, and polypeptides; drug delivery; molecular design and synthesis; and translational science. Moving forward, an annual review will be conducted to identify additional competencies and reevaluate established competencies.

*The second objective* is to promote joint recruitment of world-class faculty across academic units. All hiring needs and opportunities within RBHS will be evaluated for potential synergies with other units and departments, including non-RBHS units (e.g., SAS, the Department of Chemistry and Chemical Biology, and the new RU-New Brunswick Institute for Quantitative Biomedicine at Rutgers). Coordinated recruitment efforts will begin immediately. The details of joint hires will be addressed by unit leadership on a case-by-case basis. Coordinated hires will include the leadership of the Drug Design Center, faculty or staff to bring relevant core competencies, and faculty relevant to RBHS signature programs.

*The third objective* is to enable multi-PI, collaborative grant opportunities as well as establish training and educational initiatives that align with core competencies in platform technologies and translational research in signature programs. RBHS and the Drug Design Center will solicit, promote, and cultivate major multi-PI programs in research and training. Planning for collaborative grant opportunities will begin immediately; at least one major multi-PI grant application, training program, or educational initiative will be advanced by each core competency each year beginning no later than 2015.

*The fourth objective* is to provide essential service capabilities where collaborative teams are not available. Where collaborative strength is lacking, essential service capabilities will be developed. This capability, currently growing within the Office of Research and Economic Development, will be coordinated with RBHS strengths in drug discovery and the Drug Design Center and will be reviewed annually.

*The fifth objective* is to institute interdisciplinary seminar series and working groups focused on drug discovery and development, which will be organized by core competencies, the Drug Design Center, and RBHS signature program leadership. Creation and development will begin in 2014 and completed in 2015. Activities will be reviewed annually.

*The final objective* is to maximize the value of collaborative innovation by creating new tools and lead compounds relevant to drug discovery and development through collaborative research. Specific activities will include the fostering of collaborations with the biopharma industry and investigation of small business innovation research/small business technology transfer funding opportunities, performed collaboratively by the Drug Design Center leadership and RBHS and Rutgers leadership. It is anticipated that the newly constituted Rutgers University Neuro-Engineering Group (RU-New Brunswick), launched to create enhanced opportunities with industry, including the transfer and commercialization of pharmaceutical products, will be particularly valuable in this regard. Reviews will be conducted quarterly.

### **Informatics**

Computational- and big data-enabled research is a vital central theme cutting across the national research and education agenda in all areas of biological, health, and life sciences, and it is critically important that RBHS specifically and Rutgers more broadly build core competency in this area.

Considerable interest in this area exists across the university, which is leading this initiative. More than 60 faculty members currently receive NIH funding for research in informatics or related areas. Additional faculty members receive extramural funding from other sources to support their work in these areas.

To be internationally competitive and to ensure the success of RBHS signature programs, as well as other emerging programs, it is critical that Rutgers develop and implement a bold strategic vision for an advanced cyberinfrastructure (ACI) ecosystem. This vision must address the needs of RBHS and provide researchers with essential computing and data handling capabilities and expertise, and students with necessary exposure and training. Given the large and growing volumes and variety of data associated with each of the designated signature areas (cancer, environmental and occupational health, infection and inflammation, neuroscience, and community health and health systems), as well as the growing number of modalities that are actively gathered as part of these investigations, access to adequate computational and data analytics resources as well as related cross-disciplinary expertise is a dominating challenge for these undertakings. To continue to propel these programs forward, it is essential that Rutgers establish the requisite cyber-infrastructure, with necessary computing, storage, and networking resources and associated expertise that will allow reliable and timely processing of data and its transformation into knowledge to accelerate advances in research, educational, and clinical practices in each of the signature programs.

A strategic investment – comparable to those being made by peer institutions – is needed to drive innovation, improve research capabilities and productivity, enhance faculty competitiveness, and address limitations in existing capabilities and critical gaps. Identified gaps within RBHS and across Rutgers span four key dimensions: administrative structures for multidisciplinary research; personnel and expertise in computation and data; ACI; and student education and training in the use and assembly of big data.

Addressing ACI ecosystem needs is an important element for Rutgers' strategic plan; RBHS plans must align accordingly. Specific recommendations include:

- establishing a Rutgers-wide office for research cyberinfrastructure;
- creating a balanced ACI at Rutgers;
- recruiting faculty with systems and computational expertise and biomedical informatics expertise; and
- establishing multidisciplinary research and educational structures.

*In the short term (six months)*, a leader for the RBHS program will be selected in collaboration with Rutgers-wide ACI strategic planning. Additional efforts in the first six months will include a focus on understanding ACI (computer, data, communication, expertise, education/training) requirements and priorities from the stakeholders across Rutgers. This will be accomplished, in part, with the organization of a one-time workshop for all investigators either utilizing or planning to utilize big data in their research. The intent would be to share information, including successes and failures, establish lines of communication across Rutgers, and create opportunities for collaboration and the development of grant proposals in support of the RBHS signature programs. Finally, existing best practices should also be investigated and important features adopted for use at Rutgers. These efforts should align with the ongoing Rutgers-wide ACI strategic planning efforts.

*In the near or intermediate term (one to three years)*, activities should include establishing key structures for research and education that can support multidisciplinary computational and data-enabled science, as well as deploying the ACI core that can support immediate research/education needs. An overarching Rutgers-wide coordination and management structure in the form of the Office

of Research Cyberinfrastructure should be established. *Over the longer term (three to five years)*, mechanisms for ensuring sustained investments in ACI and its seamless integration into all aspects of research and education within RBHS and across Rutgers should be developed. Mechanisms for oversight and adaptation/correction should also be established.

The overarching metric of ACI success will be its ability to effectively support the research and education mission within RBHS and across Rutgers. Specifically the metric should address the following questions:

- Does the ACI provide the appropriate capabilities for enabling transformative research and innovation?
- How effectively does it support education and training?
- How effectively and easily can users (researchers, educators, students, practitioners, etc.) use the ACI as a research and training platform?
- How does ACI allow research to be competitive with peers?

The metric will leverage more standard analytical tools such as user and usage measures, publications and citations, and grant funding.

### ***Public Health (Including Global Health)***

As public health was an important motivation for the Rutgers-UMDNJ integration, it is a key component of RBHS's health care mission and a priority for the state. It also is an integral component of one of the Rutgers strategic plan integrating themes: improving the health and wellness of individuals and populations. RBHS faculty and staff are well positioned to support public health through initiatives led by various RBHS schools and other Rutgers schools. It also builds on the recent relationships established with the New Jersey Department of Health, reflected by the health commissioner's inclusion on the search committee for a new School of Public Health dean. This also is an opportunity to support RBHS signature programs, specifically through methodological consultation for basic, clinical, and outcomes research, including the training of methodologists to assist in consultation. Rutgers-wide, at least 175 faculty members, with appointments in schools throughout RBHS and elsewhere at Rutgers, currently receive NIH funding for research in public health, population health, health promotion, wellness, health behavior, preventive medicine, global health, or a related field.

Those who will be primary contributors to this complementary program include, among others, faculty from the School of Public Health (SPH) on the Piscataway campus, the Department of Preventive Medicine at New Jersey Medical School (NJMS), the Department of Quantitative Methods: Epidemiology & Biostatistics at SPH on the Newark campus, the François Xavier Bagnoud Center in the School of Nursing (SON), and Environmental and Occupational Health Sciences Institute. Many of these faculty members have ongoing collaborative relationships with faculty who will contribute to each of the RBHS signature programs. The new SPH dean will direct this complementary program.

While public health research, service, and training involve a diverse range of topics, all rely on methodological expertise, including biostatistics, epidemiology, survey research, and health economics. With these tools public health professionals can efficiently develop competitive applications for grant funding from foundations, state government, NIH, and other federal granting agencies. Data from well-designed and well-analyzed large scale studies will allow multi-disciplinary faculty to respond swiftly to emerging needs within the surrounding community, as well as across the state and the nation and around the globe. The complementary public health program at Rutgers will bring this expertise to signature areas across RBHS and will continue to extend work beyond RBHS and elsewhere at Rutgers by training new public health professionals.

The work of each of the RBHS signature programs will be enhanced with support from the public health complementary program. For example, ongoing tobacco control research, an important component of the cancer program and performed by many public health faculty, has generated nearly \$8 million in direct funding and yielded nearly 60 publications in the last five years. The informal injury prevention and control group on the Newark campus, whose work includes traumatic brain injury, brings together researchers, educators, and service providers across Rutgers, all of whom will support the neuroscience program. Further, experienced infectious diseases epidemiologists will enhance the infection and inflammation program. Finally, environmental health is a core area of public health research and education.

A Biostatistics and Epidemiology Consultation Center (BCC), housed within SPH, will be created to support RBHS signature programs, the emerging signature program, and other RBHS research programs, as well as biomedically-oriented research programs throughout Rutgers. An aggressive plan for this center will be needed, however, as significant gaps exist in RBHS public health programs.

In year 1:

- an SPH dean with a broad public health background will be recruited and will promote interprofessional practice and advocate for resources to support RBHS signature areas in addition to areas identified in the RBHS and SPH strategic plans;
- a senior methodologist with administrative experience and a significant grant history will be recruited as director of the BCC;
- baseline metrics will be verified/established;
- infrastructure and staffing needs for BCC will be identified, and a BCC director/manager will be appointed;
- support staff for the BCC will be recruited, especially data analysts; and
- a series of conferences will be held for key stakeholders under each of the signature areas to strengthen the BCC's ability to mobilize a multi-school response to requests for proposals.

In year 2, during which the SPH will be reorganized under the leadership of the new dean:

- pilot funding mechanisms for public health research in the signature areas will be developed;
- pilot funding will be awarded to public health researchers in the signature areas;
- masters, pre- and postdoctoral public health fieldwork and research fellowships in the signature areas will be developed;
- methodologists will be recruited in collaboration with the signature programs to support research and policy in each of the signature areas; and
- public health researchers will be recruited, particularly across the signature areas, potentially including tobacco control (with expertise in chemistry or toxicology), injury prevention, and infectious disease epidemiology.

In years 3-5:

- public health faculty will collaborate with others at Rutgers and submit grant applications in each of the signature areas;
- public health faculty will submit a grant application to CDC to create a Rutgers Injury Control Research Center; and
- a faculty mentorship program will be developed to recognize and support rising junior faculty in the signature areas and the emerging signature area and promote their development.

During this five-year period:

- the overall number of public health-oriented extramural grant submissions from schools throughout RBHS in the signature areas will increase by 50%;

- NIH extramural funding will increase by 33% by year 2 and double by year 5;
- the number of research publications in public health topics across RBHS will increase by 10% annually;
- the number of faculty supported by public health-oriented extramural funding in signature areas will triple by year 5;
- collaborative projects of SPH methodologists with researchers in signature areas will double in number, from five currently to 10 by the end of year 5;
- SPH faculty will participate or lead in submitting and obtaining peer reviewed extramural federal funding for center, program project, and core grants in collaboration with faculty associated with each RBHS signature area, which will double by year 5;
- RBHS will establish a national reputation in public health in the signature areas and, potentially in injury prevention by year 5;
- RBHS will become “best in class” in tobacco control research by year 5; and
- SPH will rank in the top 20 by the *U.S. News and World Report* by year 5.

Global health will also be a key component of this complementary program, as it is an equally important priority for RBHS’s healthcare mission and three of Rutgers’ strategic planning integrating themes: cultures, diversity, and inequality—local and global; improving the health and wellness of individuals and populations; and educating involved citizens and effective leaders for a dynamic world. Primary contributors will include faculty in the RWJMS Office of Global Health, the NJMS Institute for Infectious and Inflammatory Disease, Rutgers School of Dental Medicine, the SPH Center for Global Public Health, the SON François Bagnoud Center, the Environmental and Occupational Health Sciences Institute, and Rutgers Centers for Global Advancement and International Affairs. It is anticipated that faculty from other schools within RBHS and across the university will also contribute. An example of how the signature programs will be enhanced by global health programs is provided by the existing linkages between global public health and environmental and occupational health faculty in studies related to air pollution, climate change, and pesticide health. In addition, an expansion of research into global environmental and occupational health issues, such as worker health and safety, is anticipated, further enhancing work in this area.

The global health component of this complementary program will be managed by the chancellor’s office. An important objective will be to include all RBHS schools. *In year 1* a Henry Rutgers Term Chair for Global Health will be recruited and assume responsibilities leading global health activities for this complementary program. S/he will receive a faculty appointment in the appropriate RBHS school. *In year 2*, plans for a global public health master’s degree program will be developed (potentially a joint degree program will emerge across schools); public health researcher recruiting will pursue individuals with interests in global infectious diseases and global environmental and occupational health; a web-based resource center will be created to centralize global work as a virtual clearinghouse, publicize and capitalize on the humanitarian global health work at Rutgers, and encourage student participation in global work; and a database of global health-related grants and publications Rutgers-wide will be developed. *In years 3-5*, plans for a global health master’s degree program will be finalized, and RBHS’ capacity in the global health arena will be expanded in the signature areas through meetings, communication, and the web-based resource center. *During this five-year period*, the number of student global internships or volunteer placements will increase by 30% and RBHS will establish a national reputation in global health.

## **EDUCATIONAL INITIATIVES**

Seven educational initiatives have been selected for development during the five-year strategic plan: novel approaches to teaching and interprofessional education, led centrally by RBHS; undergraduate health-related education, underrepresented minority group pipeline programs, and leadership training,

pursued by RBHS, with Rutgers taking the lead; and joint degree and professional educational program efforts, led primarily by specific RBHS schools.

### ***Novel Approaches to Teaching***

The Novel Approaches to Teaching initiative at RBHS will create learning environments that promote quality and patient safety while at the same time continuing to advance educational excellence for future health care providers of the State of New Jersey and the nation as a whole. RBHS schools have current strengths in this area (e.g., the long distance learning program in the School of Health Related Professions, community-based service-learning in the Rutgers School of Dental Medicine, and the simulation laboratories in the School of Nursing). In order to achieve this goal, specific objectives will be met as noted below and a Novel Approaches to Teaching Steering Committee will be created and led by the RBHS vice chancellor for interprofessional programs. The steering committee will oversee the development and implementation of novel approaches to teaching. Specific focus will be placed on six potential educational programs/areas of interest: excellence in distance learning, massive open online courses (MOOCs), mapping and sharing of foundational curricular resources, simulation education, strategies for shortening the training path, and utilization of learning management systems. Strategies to enhance and expand existing programs RBHS-wide will be developed. Activities will include cataloging existing programs and reviewing methods utilized by existing programs within RBHS, across Rutgers, and successful and innovative programs offered by peer and aspirant institutions. These programs/approaches will be linked, as appropriate, to ongoing Rutgers programs with similar foci. Subcommittees focused on these approaches will be formed, many in concert with the Interprofessional Education Faculty Advisory Council.

The foundational element of all innovative educational programs will be the RBHS commitment to train highly competent health care professionals who provide high quality, safe patient care and other services, or who engage in high quality research. All RBHS educational programming will be patient-focused at the individual, family, community, societal, or global level. The modalities noted above will be utilized to improve the quality, efficiency, and visibility of RBHS educational initiatives.

Technology is a key component of the efforts to improve educational offerings. In addition to simulation labs and MOOCs, RBHS students will be highly proficient in incorporating “bedside” technologies available on smartphones, tablets, and laptop computers. These technologies can enhance patient safety by reducing errors and making evidence-based or consensus, panel-developed prevention or disease management protocols easily accessible to all clinicians.

*Six specific objectives* are planned. *The first objective* is to expand the usage of existing simulation facilities by extending access to all learners on the same campuses where appropriate. In order to accomplish this objective: all schools will become familiar with RBHS simulation facilities, technological resources, and programs on all three campuses during academic year 2015; all schools will identify current and anticipated simulation needs and timing of these needs by June 30, 2015; schools will begin to share simulation resources on an ad hoc basis during academic year 2015; a master schedule for the use of all simulation centers and programs will be developed by the end of academic year 2016; each school will develop one mandatory interprofessional simulation experience for all students by the end of academic year 2016; and RBHS faculty will submit at least five papers on interprofessional simulation by academic year 2017.

*The second objective* is to develop an administrative structure to oversee the utilization, planning, designing, and maintenance of current and future simulation resources. In order to do so, a feasibility study will be conducted in collaboration with the RBHS deans and chancellor to determine the needs for and resources available to create a centralized simulation center on each campus, to be completed

by the end of academic year 2017. The Novel Approaches to Teaching Steering Committee will collaborate with the educational administrative leadership at all RBHS schools to develop a recommendation for the most appropriate administrative oversight structure for RBHS-wide simulation experiences by the end of academic year 2017. If deemed appropriate, comprehensive, interprofessional simulation centers will be developed on the New Brunswick/Piscataway and Newark campuses of RBHS, with financial support to be identified and architectural designs to be completed by the end of academic year 2019, with the centers to be completed by the end of academic year 2020.

*The third objective* is to adopt a single, unified learning management platform. Tasks include: a survey of all learning management systems (LMS) currently in use within RBHS, to be completed by the end of academic year 2015; a survey of learning management systems in use at RBHS peers and aspirational peers, to be completed by the end of academic year 2015; a survey of faculty who are high utilizers of LMS to determine their interest in change and their preference for a single LMS, to be completed by the end of academic year 2016; a single LMS for RBHS will be fully implemented and fully functional by the end of academic year 2019; achieving IT capacity needed to implement a fully functional LMS will be determined during academic year 2016; achieving IT upgrades to accommodate a fully functional LMS will be implemented by academic year 2019; and identifying and acquiring analytic tools needed to enhance the functionality of the LMS, implemented during academic year 2017.

*The fourth objective* is to map, develop, and share RBHS foundational curricular resources. To accomplish this: a library of content-rich, standards-based curricular materials for common concepts that are foundational to health sciences education will be completed by the end of academic year 2018; and a library of instructional materials that promote the development of critical thinking skills for all learners will be housed in the LMS by academic year 2019.

*The fifth objective* is to enhance and expand the utilization of distance learning for undergraduate, graduate, and continuing education. To accomplish this objective: all RBHS faculty involved in classroom or online teaching will be offered faculty development to improve their online teaching skills, similar to what is now being provided to SHRP faculty, with the first course to be developed and offered RBHS-wide in academic year 2016; the executive director of the RBHS Center for Continuing & Outreach Education will collaborate with the Rutgers Center for Online and Hybrid Instruction to enhance online continuing education offerings from RBHS, with collaboration to begin in academic year 2015; and the utilization of RBHS online continuing education courses will increase by 50 percent by the end of academic year 2019.

*The final objective* is to determine the feasibility of shortening the training path for some RBHS programs. This will be accomplished by: exploring existing program shortening currently underway at RBHS, to be completed by the end of academic year 2016; exploring the feasibility of shortening other educational programs by the end of academic year 2019; attaining institutional membership to the National Center for Faculty Development and Diversity (NCFDD), to be achieved by RBHS by academic year 2016; examining the “research to writing gap” for faculty in RBHS schools, by the end of academic year 2016, and shortening significantly the average “gap” by the end of academic year 2019; and RBHS, the Rutgers Office of Instructional & Research Technology, and the greater Rutgers community collaborating to combine NVivo expertise and share server space by academic year 2016.

### ***Interprofessional Education***

The definition and goal of Interprofessional Education (IPE) – an important educational program for all RBHS students – are those identified by the World Health Organization, adopted by the Interprofessional Education Collaborative, and commonly used by the health professions: “[IPE] occurs when students from two or more professions learn about, from and with each other to enable effective

collaboration and improve health outcomes. Once students understand how to work interprofessionally, they are ready to enter the workplace as a member of the collaborative practice team.”<sup>2</sup>

IPE programs will include RBHS students as well as other Rutgers students pursuing health or health-related professions, as appropriate, such as students enrolled in the School of Social Work, Rutgers Law School, and the doctoral school psychology program at the Graduate School of Applied and Professional Psychology. Together, students in different disciplines would receive joint training in health care settings to learn concepts of coordinated care.

Highly functioning interprofessional teams have demonstrated improved health outcomes, increased quality, and improved access to care. IPE is therefore critically important as RBHS strives to train future generations of health care professionals and researchers for the State of New Jersey and beyond. Successful implementation of IPE at RBHS requires the development of an administrative structure and the allocation of resources centrally as well as from each school.

The RBHS Interprofessional Faculty Advisory Council (IPEFAC) was created during academic year 2014 to oversee the development and implementation of IPE within RBHS. The council is chaired by the RBHS vice chancellor for interprofessional programs, with each RBHS school represented. The council also includes a faculty member of the Rutgers School of Social Work in light of the significant contributions of social workers to the health care team. In addition to IPEFAC, a number of IPE-focused subcommittees have been or are being formed. These include the research and scholarly activity subcommittee, the IPE faculty development subcommittee, the large and small group teaching subcommittee, and the IPE simulation subcommittee. It is anticipated that subcommittees will include representatives of the Novel Approaches to Teaching Steering Committee as well.

The vice chancellor, in collaboration with the IPEFAC, has already begun to map a plan to enable RBHS to become regarded as among the nation’s leaders in interprofessional education and collaborative practice. One measure of RBHS’ success as a national leader will be its designation by the National Center for Interprofessional Practice and Education as a Nexus Innovation Incubator member. To that end, faculty members from several RBHS schools have attended the national Interprofessional Education Consortium conferences as well as other IPE-focused conferences, allowing them to learn from others about IPE innovations occurring in the U.S., Canada, and European countries.

Rutgers already conducts a nationally recognized care program in the FOCUS Wellness Center, housed within SON, bringing interprofessional hands-on clinical experience to patients in Newark. FOCUS stands as a learning lab for students from a variety of professions in providing innovative model of care. Other programs are in their infancy, such as an IPE program led by the School of Health Related Professions’ (SHRP) physician assistant program, which includes 350 students and 50 faculty representing SHRP, the Ernest Mario School of Pharmacy (EMSOP), the Rutgers School of Nursing, and the Rutgers School of Social Work. An interprofessional simulation laboratory is currently being planned by EMSOP.

*Four specific objectives* are planned. *The first objective* is to create an RBHS-wide administrative infrastructure to oversee and support the development of IPE initiatives. Some of this infrastructure exists, in the roles of the vice chancellor for interprofessional programs, who oversees development and implementation of IPE, and the Interprofessional Faculty Advisory Council (IPEFAC). Plans to be implemented include: hiring a program coordinator in academic year 2015 to help support the implementation of required IPE activities and assist in the preparation of grant proposals; forming a Rutgers Interprofessional Student Council (RISC) in academic year 2015, to convene quarterly and

include representatives from the eight RBHS schools as well as the Rutgers School of Social Work; forming an RBHS IPE Academic Administrators Group by the end of academic year 2015; and striving to adopt IPE specific goals and objectives in the strategic and facilities plans of each RBHS school.

*The second objective* is to facilitate the development of a wide range of student IPE learning opportunities. Activities include: developing an IPE research and scholarly activity subcommittee of the IPEFAC to facilitate educational research and publication by RBHS faculty (the co-chairs for this subcommittee were identified in the fourth quarter of academic year 2014 and the full complement of subcommittee members will be established during academic year 2015); creating an IPE faculty development subcommittee to propose and spearhead educational opportunities to enhance skills for IPE teachers, small and large group facilitators and clinical preceptors, and chaired by and consisting of RBHS Master Educator's Guild members (the chairs of the subcommittee were identified in the fourth quarter of academic year 2014, with remaining members to be identified by the end of the first quarter of academic year 2015); developing an IPE simulation subcommittee in collaboration with the Novel Approaches to Teaching Steering Committee, which will be formed by the end of the second quarter of academic year 2015; developing an IPE small and large group teaching subcommittee by the end of the first quarter of academic year 2015; presenting IPE-focused grand rounds/conferences quarterly, to begin in academic year 2014; developing, in collaboration with members of the Novel Approaches to Teaching Steering Committee, an online foundational IPE course available to all RBHS students, beginning the first quarter of academic year 2016; developing, in collaboration with the Novel Approaches to Teaching Steering Committee, a catalog of all small and large group IPE courses, and making it available to all RBHS faculty (the first phase will be completed in academic year 2015; the catalog will be ongoing); identifying opportunities for IPE collaborations with RU-New Brunswick and RU-Newark, beginning in academic year 2015; applying for private and public external funding to support IPE activities, which will be executed annually (several RBHS schools already receive some grant funding for IPE activities); assessing the current status of interprofessional collaborative practice, to be completed by the end of the second quarter of academic year 2015; working with RBHS faculty practices to enhance their functioning as highly effective interprofessional collaborative practices as appropriate, in order to maximize learning during student exposure to interprofessional collaborative teams during their clinical rotations, beginning in the third quarter of academic year 2015; developing and implementing team, objective-structured clinical examinations (TOSCE), beginning in academic year 2016 (the first TOSCE will be administered in the first quarter of academic year 2017); and formally evaluating all IPE activities in order to make improvements as needed (this process began in academic year 2014 and will continue moving forward).

*The third objective* is to enhance the physical infrastructure available to students for IPE experiences. Planning activities include the possible development of an IPE building on the Newark campus. Preliminary planning began in academic year 2014, including the completion of preliminary architectural plans. Planning will be completed by the first quarter of academic year 2016. Whether ample resources exist to proceed with the building, if it is considered desirable, remains to be determined.

A feasibility study will be conducted on each campus to determine the need and resources available for creating a centralized simulation center. This study will be completed by the end of academic year 2017 in collaboration with the deans and chancellor. The Novel Approaches to Teaching Steering Committee, working with the IPEFAC, will collaborate with the educational administrative leadership at all RBHS schools to develop recommendations for the most appropriate administrative oversight structure for RBHS-wide simulation experiences by the end of academic year 2017. Finally, if determined to be appropriate, new comprehensive, interprofessional simulation centers may be developed on RBHS' New Brunswick/Piscataway and Newark campuses. Funding for these centers will

be identified and architectural designs will be completed by the end of academic year 2019. The centers will be completed by the end of academic year 2020.

*The fourth objective* is to enhance the national reputation of RBHS as a leader in interprofessional education. This will be accomplished by: faculty submission of at least five papers on interprofessional simulation by academic year 2017 and subsequently five papers annually; faculty presentation, at a minimum, of one national conference on IPE annually beginning in academic year 2015; and RBHS sponsorship of a regional conference on IPE beginning in academic year 2016.

### ***Undergraduate Health Related Education***

It is believed that Rutgers can receive national recognition through its high priority, undergraduate health-related educational programs. RBHS encourages innovative, new program development and expanding existing programs, particularly those with articulation ladder opportunities for undergraduate students with interests in health professions education. Leadership for these will be provided by the respective undergraduate school and program, with support and assistance provided by RBHS as appropriate. Further, RBHS proposes to work with the undergraduate Rutgers programs to integrate interprofessional educational programs and applicable novel approaches to teaching programs, such as simulation education. RBHS will maintain Internet-based lists of undergraduate health related educational programs and provide links to more information about these programs, and RBHS schools will assist program leaders in promotional activities as appropriate. The timeline and metrics will be developed in collaboration with the university.

### ***Underrepresented Minority Group Pipeline Programs***

Underrepresented minority group pipeline programs are a high priority for RBHS and elsewhere at Rutgers, as these programs highlight two of Rutgers' greatest strengths: its diverse student body and the range of its educational offerings in the health sciences and related fields. RBHS is in an advantageous position to recruit and train promising students who are members of populations underrepresented in the health sciences and is poised to do so. Multiple ongoing and successful pipeline programs are managed by schools and institutes within RBHS, including the Educational Opportunity Fund (EOF) program, which provides opportunities for students from economically disadvantaged backgrounds in New Jersey to participate in higher education programs. The program provides financial, academic, and counseling support services to qualified students who demonstrate potential and need. SON's EOF program is the only such New Jersey program tailored for nursing students and SHRP's EOF program is the only such New Jersey program designed for allied health professions students. Graduates of these programs have assumed leadership roles as health professionals. Additional programs include the Rutgers Summer Medical and Dental Education Program, born 52 years ago, which teaches college sophomores and juniors leaning toward those professions about the medical and dental school experiences, and Project L/EARN, which is a social science health research internship program that trains and advises undergraduates with interests in careers in health services and research. Founded in 1991, Project L/EARN, housed in the Institute for Health, Health Care Policy and Aging Research, received an "Innovative Program Model" award from the National Association of Minority Medical Educators.

Underrepresented minority group pipeline programs are also a high priority Rutgers-wide, so efforts will be undertaken to coordinate/bridge RBHS programs with other Rutgers programs, Rutgers-wide and geographic campus-specific, as well as with the emerging community health and health systems signature program. These efforts will be managed through the chancellor's office to ensure Rutgers-wide coordination and collaboration. RBHS activities, in particular, will include an emphasis on scholarly activity and identifying funding opportunities.

Critical gaps in underrepresented minority group opportunities within RBHS include:

- a lack of information regarding the structure, function, and impact of existing pipeline programs;
- a lack of a tracking system for all pipeline program participants/graduates;
- a robust mentoring and alumni pool and standard measures of success; and
- the identities of additional funding sources to grow and replicate programs and entice qualified participants from under-represented groups to RBHS pipeline programs.

Highly accessible opportunities include:

- existing rich educational offerings for humanistic, linguistic, and cultural competency training that can support further interprofessional collaborations among RBHS units; and
- multiple campuses, which can produce local replications of programs developed by other Rutgers units.

In collaboration with RU-Camden, RU-New Brunswick, and RU-Newark, RBHS aims to:

- increase the visibility of productive high caliber underrepresented minority group programs available throughout Rutgers;
- focus on holistic admissions processes (i.e., a balanced, individualistic review and assessment of qualities presented by an applicant taking into account cognitive and non-cognitive factors);
- retention of minority students and faculty; increase diversity and inclusion in the allied health, research, and policy professions;
- provide educational experiences that are humanistic and culturally and linguistically sensitive through RBHS pipeline programs;
- continue to develop and enhance mentoring, role modeling, and leadership opportunities; and
- promote collaboration across all campuses in education and research training.

The timeline and metrics will be developed in collaboration with the university.

### ***Leadership Training***

Leadership training is a vital priority for RBHS and Rutgers as a whole. RBHS will work with the Rutgers executive vice president for Academic Affairs, who oversees leadership training programs for all university faculty and works with Rutgers Human Resources for staff leadership training. An RBHS task force will develop a compendium of existing leadership training programs, including descriptions, for comparison with leadership training programs offered elsewhere at Rutgers and through The Big Ten and the CIC. The task force will work with central administration, the planned RU-New Brunswick-based Rutgers Leadership Academy, and campus leaders to take advantage of the many existing Rutgers programs and develop leadership training programs for faculty and/or staff, as needed, to fill gaps within Rutgers. It is anticipated that some newly developed leadership training programs will be discipline-specific while others will address concepts and issues that cut across academic disciplines. All will be coordinated with the broader Rutgers community and linked into CIC institutions as appropriate. The timeline and metrics will be developed in collaboration with the university.

### ***Joint Degree Programs***

Joint degree programs are important, as they enhance training opportunities for health professional students and recruitment of the best students, particularly now as health care moves toward new models of team care and delivery systems. RBHS must prepare its biomedical and health sciences graduates to operate seamlessly across disciplines. Management of these programs at all levels, including decisions regarding their status and the creation of programs moving forward, will continue to be led by those respective schools, as they are best equipped to do so. RBHS will assist schools by developing a compendium of joint health-related degree programs nationally, analyzing those programs by focusing on utility and success, and working with RBHS marketing/communications to develop a

marketing plan for existing joint degree programs and those to be developed by the schools in the future, including Internet-based materials. The timeline and metrics will be developed in collaboration with the university.

### ***Professional Continuing Education Programs***

Professional and continuing education programs may include a variety of high-quality live, home, and online activities that achieve, retain, and strengthen professional competencies among professionals at Rutgers, throughout New Jersey and beyond. In many instances, these efforts are mandated by professional licensing bodies and require the issuance of continuing education credits or units. Many of these programs within RBHS schools have been managed well and are extremely successful, while others have not achieved the same level of success. Further, professional education programs have received varying levels of central-, school-, and department-management support, occasionally with overlapping or duplicating efforts. On occasion, managing entities, usually central administration, have struggled with idiosyncrasies of specific programs because of the unique certification requirements of the professional licensing bodies that oversee these programs. To avoid duplication and address the idiosyncratic nature of programmatic requirements and other issues, individual schools will be directed to manage these programs in the future. A hybrid management model will be developed by RBHS, in consultation with leadership at each school, until schools that require time to do so are able to transition into this school-based model. Ultimately, implementation will be at the school level, with oversight and coordination provided at the RBHS level. The timeline and metrics will be developed in collaboration with the university.

## **CLINICAL INITIATIVES**

Multiple initiatives have been proposed to address: clinical services; the quality of patient care; faculty practice plans, including consideration of joint and/or multi-professional practice plans across schools; and joint department chair appointments to integrate complementary schools and their clinical practices more efficiently. A few of these are described below. Other initiatives will be developed to address these goals during the five-year time period of the strategic plan, responding to the rapidly changing health care environment.

### ***Branding***

Many academic health centers have capitalized on recognition of their parent organization's brand name and translated this good will to the academic health center and patient-facing components of the organization. In conjunction with conducting a systemic review of the overall structure of the clinical practices at RBHS and an in-depth analysis of key functional components of the patient care delivery, Rutgers, led by RBHS, will also assess its health care marketing, communications, and branding strategy. This review will ultimately encompass the creation and implementation of a consistent and appropriate overarching sub-brand to be associated with the university's delivery of clinical services statewide, nationally, and globally.

Rutgers University enjoys a globally recognized brand associated with a rich, nearly 250-year history. The statutorily designated legal entity and organizational / administrative sub-brand for Rutgers' health care division is "Rutgers Biomedical and Health Sciences," or "RBHS." Presently, multiple RBHS sub-units contribute to the health care mission of delivering care: clinical care, research, community health, and teaching. Rutgers' strategy will be to develop a brand to be associated with the health care delivery umbrella that is easily recognized and understood by the university community, patients, consumers, potential donors, industry partners such as pharmaceutical and biotechnology companies, and the public-at-large. This branding will help drive consumer recognition of Rutgers broadly and RBHS

specifically as high quality, academically cutting edge providers of health care services to patients across New Jersey.

### ***Clinical Partnerships***

RBHS partners with over 300 affiliates across New Jersey to deliver patient care and provide students clinical training experiences. Building and expanding relationships with principal teaching hospitals of RBHS is a constant priority. RBHS is currently in negotiations with several hospitals and hospital systems to ensure ongoing clinical and educational opportunities for providers, faculty, staff, and students.

#### University Hospital

Pursuant to the statute that created RBHS, University Hospital (UH) in Newark is the principal teaching affiliate of the Newark-based RBHS schools. At this time, the Rutgers president, RBHS chancellor, New Jersey Medical School dean, and Rutgers School of Dental Medicine dean serve as voting members of the UH Board of Directors, who strive to ensure opportunities exist for productive collaborations between Rutgers and UH and the provision of quality healthcare for the community.

The RBHS chancellor has been selected to serve on the hospital's strategic planning committee, among other committees. Developing a strategic plan for UH jointly with RBHS will result in complementary approaches for fulfilling the clinical, research, and educational missions of both institutions.

#### Robert Wood Johnson University Hospital

Historically, Robert Wood Johnson University Hospital (RWJUH) has been the principal teaching affiliate of Robert Wood Johnson Medical School. Importantly, RWJUH is now the flagship institution of a growing health system – Robert Wood Johnson Health System (RWJHS) – which offers opportunities for RBHS. The Rutgers president, RBHS chancellor, CINJ director, and RWJMS dean currently are members of the RWJUH Board of Directors. Current agreements between RBHS and RWJUH include a service co-management agreement with CINJ and an academic affiliation with RWJMS. At the time of this writing, negotiations are underway to redefine the affiliation between RBHS and RWJUH in a fashion that should benefit both partners and ensure the provision of quality healthcare for the community.

#### Others

Additional agreements for services are ongoing with multiple hospitals/systems throughout New Jersey, including services negotiated with NJMS, RWJMS, and CINJ. The restructuring that created RBHS has provided various opportunities with other hospitals and health systems, all under consideration, in the context of the negotiations under way above. RBHS also desires to strengthen and enhance existing clinical relationships with Veterans Health Administration clinical sites, both in East Orange and Lyons.

### ***Accountable Care Organization***

The Patient Protection and Affordable Care Act (ACA), which became law in 2010, provides incentives for health care organizations to become accountable care organizations (ACOs) in the belief that ACOs will decrease health care spending and improve quality of care. ACOs, as defined by the Centers for Medicare and Medicaid Services, are “groups of doctors, hospitals, and other healthcare providers, who come together voluntarily to give coordinated high quality care to their Medicare patients.” The goal is to “ensure that patients, especially the chronically ill, receive appropriate care at the right time, while avoiding unnecessary duplication of services and preventing medical errors.” When an ACO succeeds in delivering high quality care, as well as spending health care dollars more wisely, it shares in the savings it achieves for the Medicare program.

Robert Wood Johnson Partners (RWJP), a new ACO, became operational in January 2014, as a joint effort of Rutgers, Robert Wood Johnson University Hospital (RWJUH), and the Robert Wood Johnson Health System (RWJHS). Its collaborative background, bridging high quality clinical care with robust academic and research resources, helps differentiate RWJP from other ACOs.

Through RWJP, 6,000 Medicare beneficiaries now have access to 70 primary care doctors, advanced practice nurses, and approximately 600 specialists, including members of the faculty practice, the Robert Wood Johnson Medical Group, as well as physicians in private practice. All patients have a yearly care plan, making them part of the multidisciplinary team at the point of service, with the practice serving as a patient-centered medical home. Central to the new ACO's efforts is the coordination of treatment among doctors, other health professionals, and hospitals through more efficient use of electronic health records, as well as restructuring initiatives aimed at improving communication with patients and involving them directly in their care.

Building on the Medicare ACO infrastructure, additional opportunities are being pursued, including the development of New Brunswick Health Partners, which will operate as an ACO under New Jersey's Medicaid program, serving the area's low income population. Similarly, *RBHS clinicians in Newark are working with the Greater Newark Health Care Coalition to develop a Medicaid ACO for that community.*

RWJP is designed to create a seamless patient experience, from an individual's visit with a primary care physician, to care from specialists throughout the group or participating network, as well as inpatient or outpatient care provided by RWJUH or one of the more than 70 hospitals and health facilities/providers that comprise RWJHS. While its initial patient base consists of Medicare beneficiaries, RWJP hopes to extend its services to employees of the health system and Rutgers in the near future. Consideration also will be given to extending services to other state employees. An application to participate in the state Medicaid ACO program is also under development, bringing the benefits of RWJP to more vulnerable populations.

Benefits of RWJP to RBHS extend well beyond promoting advanced clinical care for populations. RWJP will create the potential for extensive data bases for research, extending from the genetic/molecular level to health systems/population levels. Major research universities are discovering the benefits of integrated delivery systems to enable translational scientific research, and RWJP will help to foster this at Rutgers, likely playing an important role in a CTSA application.

RWJP will also create training laboratories for interdisciplinary collaborative care among health and health-related professions. Patient-centered medical homes, a foundational part of RWJP, require advanced team-based care, and through RWJP Rutgers will have the ability to train tomorrow's collaborative workforce that new health care systems require.

### ***Patient Access Initiatives***

To improve ambulatory access, enhance productivity, increase revenue, and respond to increasing financial pressures, the current structure, operation, and performance of the faculty practices are being thoroughly assessed. The objective is to design operational changes, including referrals, scheduling, clinic workflows, care team roles and responsibilities, clinic organization, and leadership and management processes needed to improve access, productivity, and revenue. The design of the associated policies, processes, roles and responsibilities, skill assessments, organization design, and information technology enablers of practices will be examined. The goals are to increase the patient base, address reimbursement pressures creating the need to render care more efficiently, minimize patient dissatisfaction, reduce cancellations associated with scheduling policies, stem referral leakage from the practice, and improve access to physician care. These efforts to increase access and reduce

cost and resource intensity for providing ambulatory services must also occur while maintaining high quality and continuity of care.

An assessment of the Robert Wood Johnson Medical Group (RWJMG) is underway. RWJMS has retained a consulting firm to perform an assessment and assist with implementing changes in business practices. After completion of the initial assessment phase, a preliminary plan will be developed including findings, benchmark status, and recommendations. The improvement plan will include a program management plan, with a design and implementation strategy addressing recommended operational changes. The plan will also include a critically important methodology for tracking progress and impact from associated changes.

The assessment phase of the RWJMG project is nearing completion. Moving forward, the project will enter an implementation phase when recommended changes will be operationalized in close consultation with clinical faculty and school administration. This will include reorganization of the practice structure, empowerment and accountability of chairs for practice performance, development of a new call management and patient scheduling system to decrease new patient appointment lag time, and greater ambulatory practice room utilization.

Assessment of the faculty practices associated with the New Jersey Medical School is planned for the future.

In addition, to further oral health throughout the state, a review of existing clinical programs will be made and assessed relative to the need in strategic New Jersey markets. Initiatives will be developed to address opportunities that present themselves. Emphasis will be placed on enhancing the school's faculty practice, Rutgers University Dental Association, and augmenting the school's extramural service-based service-learning clinics. Particular attention will be paid to developing service areas that allow the leveraging of other RBHS clinical activities with the ultimate goal of providing comprehensive care to RBHS patients.

## **COMMUNITY SERVICE ACTIVITIES**

RBHS faculty are very committed to community service activities; many of the clinical and community service activities in which they will participate are included among the signature programs, emerging signature program, educational initiatives, and clinical initiatives identified above. Other clinical and community services have been and are being provided on an ongoing basis by RBHS schools, centers, institutes, and the behavioral health care unit, especially services focused on behavioral health, dental medicine, environmental and occupational health, health related professions, medicine, nursing, and pharmacy. All activities address community and state-wide needs and fulfill aspects of Rutgers' mission.

In the next five years, many clinical and community service activities are likely to be developed as part of the community health and health systems emerging signature program as that program evolves. Generally, these activities will be developed in coordination with Rutgers scholars with interests in community health and community leaders and state and federal legislators. Implementation will require capacity building within RBHS, including new platforms and sites for the delivery of health care services. In meetings with RBHS leaders, Camden, New Brunswick, and Newark community leaders and health care providers identified multiple programs that will provide needed services to their communities.

The following will be considered for implementation in the next five years:

- work with the Camden, New Brunswick, and Newark school systems to develop pipeline, training, and immersion programs in health care fields for high school students;
- train Camden, New Brunswick, and Newark community members as community health workers;
- enhance access to primary care and mental health services for Camden, New Brunswick, and Camden residents through development and expansion of ACOs, federally qualified health centers, and other community health centers;
- train Spanish-speaking Camden, New Brunswick, and Newark community members to serve as interpreters in RBHS primary and affiliated hospitals; and
- work with state legislators to develop incentive programs to encourage RBHS students to remain in New Jersey after graduation.

Other community services may emerge from the creation of new programs, such as those provided by interprofessional education programs. For example, RBHS and other Rutgers students may receive training in coordinated care settings, including an ACO, a federally qualified health center, and/or other community health settings, in which enhanced health-related services are provided to community members during the course of their training.

Finally, the Robert Wood Johnson Foundation (RWJF) has held conversations with the RBHS chancellor regarding its tentative identification of New Brunswick as a city of interest for its healthy cities program. This program has been developed by RWJF to support academic and community partnerships that will address social determinants of health, access to health care, and health disparities. If New Brunswick and Rutgers are selected for this program, funding would be available to support the development of many of the proposed initiatives identified above.

## **INTEGRATION AMONG SCHOOLS AND ACROSS RUTGERS**

### ***Nursing Merger***

On July 1, 2014, the Rutgers College of Nursing (Newark and New Brunswick) and the Rutgers School of Nursing (legacy UMDNJ) merged to form one Rutgers School of Nursing (SON). The consolidation enables SON to: serve the citizens of the State of New Jersey with high quality care more efficiently; contribute more effectively to improving health outcomes through preparation of nurses, research on health matters, and service to communities; become one of the nation's leading nursing schools by enhancing its depth and breadth and offering a comprehensive array of academic programs; develop greater capacity to participate in interprofessional training and practice and provide high quality of care for the citizens of New Jersey; and develop the resources required to contribute significantly to nursing science.

### ***Joint Clinical Chairs***

RBHS is home to two allopathic medical schools located approximately 30 miles apart: New Jersey Medical School (NJMS) in Newark and Robert Wood Johnson Medical School (RWJMS) in New Brunswick. Originally affiliated with different parent universities, the two medical schools were combined by statute in 1970 under the College of Medicine and Dentistry of New Jersey. As geographically distinct entities, the two medical schools developed separate and, at times, complementary clinical practices, patient-bases, and research strengths.

With the encouragement of the RBHS chancellor, the two schools have begun to leverage their individual strengths and collaborate. Concurrent vacancies of the same department chairs in both medical schools have opened opportunities for joint recruitment of highly regarded leaders. It also may be beneficial, in some circumstances, to fill a chair in one school by appointing the chair in the other school as chair of both departments. For example, when one school's department is relatively small, joint recruiting can bring together critical masses of clinicians and practice patients. Also, when one

school lacks a clinical department, the other can fill the need to build a department and a practice. This model has the potential to significantly grow departmental patient care revenue, training opportunities, and research strength.

An integration committee, led by the chancellor and including the two deans and appropriate chairs, will be formed to consider joint chair appointments and related initiatives.

### ***Designing the Multi-Professional Faculty Practice of the Future***

With the implementation of the ACA, health care delivery is facing revolutionary changes. Faculty practice plans of many leading academic health centers are structured to deliver care under the existing provider reimbursement model. As the focus of care moves from individual fee-for-service encounters with ill patients to the health maintenance of entire populations, a primary strategic goal for RBHS is to structure its clinical enterprise to optimize population health in an economically sustainable manner. RBHS is becoming prepared to shift from a volume-based to a value-based system.

RBHS is uniquely positioned to develop the faculty practice optimally suited for the 21<sup>st</sup> century. Few academic health centers combine a statewide geographic reach, a patient population as diverse as any in the U.S., and the breadth of high-quality multi-professional educational programs across the provider spectrum as RBHS does. RBHS is well-positioned to facilitate the dissemination and implementation of research findings to applications in clinical practice and population health.

To capitalize on these advantages, in the next year RBHS will examine new models for a multi-specialty, multi-professional faculty practice plan. As envisioned, such a plan may encompass all clinical service units within RBHS. The practice plan may incorporate under one umbrella all the clinical departments of multiple schools, clinical care units, geographic campuses, and a wide range of licensed providers, including, but not limited to, physicians, dentists, advanced practice nurses, including nurse practitioners, midwives, nurse anesthetologists, physician assistants, physical therapists, and other allied health professionals. As such, the practice plan could include faculty from CINJ, NJMS, RSDM, RWJMS, SHRP, SON, and UBHC and will utilize the branding strategy identified above. The design and structure of this plan ideally would be configured to position RBHS optimally for the imminent changes in the health care delivery and payment systems.

Key objectives in designing a new plan include:

- maintaining provider incentives for productivity;
- empowering providers and the schools to be able to speak with one voice to have the strongest hand in negotiating with insurers and hospital systems;
- creating a setting which allows RBHS schools to be financially viable while supporting the academic mission;
- developing a network that can become a preferred provider of care for health system, Rutgers, and state employees and their dependents; and
- creating a structure that will position RBHS optimally to compete in the new world of health care, where providers – not only insurers – will be assuming the risk for population groups.

A plan will be implemented based on advice and expertise formally provided by a consultant. A two-phase approach is envisioned. The first phase – assessment – will include:

- initial review of current practice plans' corporate structure, governance, and strengths and weaknesses;
- a review of current trends to understand where the U.S. health care system is likely headed, which will serve to influence the design of the new faculty practice plan;
- a review of representative plans from other institutions and determining their potential relevancy; and

- interviews with RBHS staff/personnel to assess relative strengths and weaknesses that could impact the new practice plan model.

The second phase – design and development – will be addressed following completion of the first phase. Activities will include:

- meetings with key stakeholders, including leaders of the current practice plans and involved schools, and representatives from the chancellor's office;
- developing key principles to direct final plan design, including maintaining provider incentives for productivity, empowering providers and schools to speak with one voice, creating a setting that allows RBHS schools to be financially viable, and creating a structure that will position RBHS for the new world of health care where providers assume the risk for whole populations, rather than insurers;
- providing expertise, identifying current practice plan models or developing alternative models, and providing recommendations for the development of a new multi-specialty, multi-professional faculty practice plan that may encompass all clinical components of RBHS or a subset under one umbrella organization;
- designing a faculty practice plan tailored to the history and structure of RBHS, given the key principles and the direction in which health care is evolving; and
- submitting a report to the RBHS chancellor.

Formation of the practice plan would follow in future years.

### ***Reorganizing and Strengthening PhD Programs in Biomedical Sciences***

The integration of RBHS and Rutgers provides an opportunity to create an integrated infrastructure that will support the education and training of biomedical/health sciences research teams of the future, break down traditional silos, and enhance opportunities for inter-disciplinary and translational research training. To accomplish this goal, RBHS and Rutgers-New Brunswick biomedical science graduate educational leaders are developing a plan to consolidate RBHS and Graduate School-New Brunswick doctoral programs in the biomedical sciences. These programs would be housed in an expanded RBHS Graduate School of Biomedical Sciences (GSBS). GSBS would, in turn, be one component of a proposed new and encompassing organization, tentatively identified as the division of graduate studies, which would oversee all graduate education programs on the Rutgers-New Brunswick campus.

The coordination of biomedical science programs across RBHS and Rutgers-New Brunswick will enable GSBS to play a leading national role in the development of new curriculum and broader opportunities for the biomedical scientists of the future, preparing students for careers in academics, industry, government, and the private sector. The consolidation of programs will also encourage and facilitate research collaborations among biomedical scientists within RBHS and across Rutgers-New Brunswick. Further, the consolidation will raise the visibility of biomedical science graduate education at Rutgers and attract top students from premier colleges across the country and the world.

Discussions also are underway to develop initiatives to strengthen the PhD programs in biomedical sciences. Emphasis will be placed on the recruitment of fewer and stronger students. Efforts also will be undertaken to attract the best international students. The GSBS assistant dean of global initiatives (newly created position) will work with GSBS leadership and faculty to identify and secure partnering opportunities with leading universities, particularly in Asia and South America. Memoranda of understanding are being developed with leading institutions in India, Indonesia, and Korea to explore the development of exchange programs for biomedical science students and faculty, identify opportunities for dual degree and cotutelle programs (two mentors from two different universities mentoring a single student), and recruit top students from leading universities.

In addition, it is expected that the development of strong collaborative research teams, which will result from the strengthening and integration of biomedical science training programs, as above, will put Rutgers in a stronger position to compete for pre- and postdoctoral training grants. In anticipation of this development, GSBS is mounting a new initiative that will both incentivize and support new training grants within the biomedical sciences. GSBS plans include the development and maintenance of centralized databases of faculty mentors and their training activities, provision of salary support for training grant principal investigators, and provision of over-the-cap supplements to cover trainees' tuition and fees. New training grants will increase institutional stature, provide funding for graduate students and postdoctoral fellows at a critical time, support the research needs of our current faculty, and provide additional incentives for faculty, student, and postdoctoral recruitment. In the future, all full-time PhD students will receive 100% support for stipend and tuition.

### ***Reorganizing the Basic Sciences across Rutgers***

The integration of Rutgers and UMDNJ in 2013 occurred in the midst of an unprecedented period of growth in access to patient genome sequences and complementary data coming from high-throughput measurements of biological systems. This "perfect storm" of institutional change and the big data revolution demands that Rutgers, as an institution, develop a considered strategy that defines the optimal means by which the Rutgers schools of Arts and Sciences, Engineering, and Environmental and Biological Sciences should seek to collaborate with the basic science and clinical departments of RBHS. One of the specific issues to be addressed is the number of existing basic science departments within RBHS alone, as well as across the broader institution.

The potential reorganization of academic units across Rutgers is a strategic priority for Rutgers and was recommended as part of the Rutgers strategic plan. Accordingly, a Rutgers-wide Committee on Academic Unit Organization has been formed to consider the reorganization of academic units across Rutgers, then provide recommendations. It is anticipated that basic science units, particularly those within RU-New Brunswick, RU-Newark, and RBHS, will be a focus. RBHS is well represented on this committee and will participate actively.

In addition, an RBHS task force will be created shortly after the strategic plan is finalized to work in collaboration and coordination with the Rutgers-wide committee to consider reorganization options in the basic sciences within RBHS. The task force, formulated by RBHS leadership in consultation with the RBHS Faculty Council, will consist of representatives of each of the RBHS schools with basic science departments. The RBHS task force will:

- establish and promulgate overarching principles and affirm community standards/values governing the RBHS reorganization process, with particular emphasis on transparency;
- determine what issues need to be addressed, if/where reorganization is to occur;
- develop specific objectives to address these issues;
- define the scope of a potential basic science reorganization;
- determine the motivations for a basic science reorganization;
- determine the relationship between the RBHS basic science reorganization effort and the Rutgers reorganization effort, and identify mechanisms of interaction to ensure congruity;
- conduct external data gathering regarding the ways in which peer and aspirant institutions have sought to reorganize related academic disciplines in similar situations, the objectives and expected benefits of these reorganizations, and successes and failures and other lessons learned of these reorganizations;
- conduct internal (RBHS) data gathering regarding what is meant by "basic sciences" – identifying all basic science faculty by this definition, basic science research programs and financial/support information regarding each, teaching activities of each basic science program, basic science outreach programs, and the location and utilization of all shared facilities/equipment and resources;

- examine through interviews the lessons learned from prior reorganizations of the biological sciences at Rutgers (1978-1980, circa 2000, and the RWJMS basic science reorganization of circa 2010), and identify the strengths and weaknesses of the status quo within all basic science units;
- establish the role of the Rutgers University Senate in the process of any basic science reorganization;
- identify and solicit participation from stakeholders (alumni, undergraduate and graduate students, postdoctoral fellows, staff researchers and technicians, tenure-track and non-tenure track faculty, emeritus faculty, department chairs, deans, chancellors, center, bureau, and institute leadership, and external advisors);
- empower key stakeholders to formulate broad objectives and enumerate expected risks and benefits, both internal and with respect to external perceptions/rankings, for undertaking a basic science reorganization;
- establish a precise date by which these objectives and expected benefits will be subject to public comment across the Rutgers basic science community;
- establish action plans with interim objectives and assess resource needs to achieve specified objectives;
- identify and involve individuals affected by action plans/objectives;
- link action plans to objectives and access to necessary resources enabling achievement of overall goals, and include periodic interim review, with accountability for transparent reporting;
- organize working groups to implement specific objectives via defined action plans;
- prior to implementation, establish an accepted system of metrics for assessing the quality of the implementation (i.e., how could this have been done better?) and achievement of goals and objectives (i.e., did this achieve what was expected and was the effort worthwhile?);
- establish a date by which assessed outcomes will be reviewed and questionable elements of the reorganization will be re-examined and either further refined or abandoned;
- establish a date by which a scholarly report detailing the Rutgers experience will be made public.

Finally, the RBHS task force, working with the Rutgers-wide task force, will identify a timeline and metrics for these specific initiatives.

### ***Roles of Centers and Institutes***

RBHS centers and institutes, as well as other Rutgers centers and institutes, represent an important mechanism for promoting interdisciplinary research and training, and overcoming some of the more significant challenges posed by geographic and structural impediments to synergy that are typical of large institutions. Centers and institutes have provided a critical avenue for entrepreneurial members of the faculty to pursue career objectives not well served by traditional departmental and other structures. At present, more than 200 centers and institutes exist throughout Rutgers, although only a handful are “autonomous responsibility” centers. Membership rosters range from one or a few individuals to hundreds of faculty members. Some are virtual in nature, while others are housed in a single building. Organizational *raison d’être* for centers and institutes within RBHS and the basic and applied sciences include utilization of shared technology/instrumentation, a commitment to treating related diseases, a commitment to understanding the origins of disease pathogenesis, and engagement in interdisciplinary and interprofessional collaboration, with much broader rationales for other areas of the university. These apply to the new Brain Health Institute and the four major RBHS centers/institutes: Cancer Institute of New Jersey; Center for Advanced Biotechnology and Medicine; Environmental and Occupational Health Sciences Institute; and Institute for Health, Health Care Policy and Aging Research (IFH). For example, IFH has facilitated collaboration among twelve disciplines within the School of Arts and Sciences and six professional schools in Camden, New Brunswick, and Newark, and serves as an important bridge in conducting health and health policy research across Rutgers.

There is a need to develop and coordinate centers and institute policies Rutgers-wide, then create a catalog to be publicized and distributed campus-wide. RBHS will work closely with the university

administration in this effort. Several management-related issues must be addressed, possibly by implementing responsibility center management (RCM). Issues include:

- collecting, compiling, and analyzing essential information characterizing the centers and institutes (and related initiatives), beginning with a comprehensive inventory of each one;
- developing a precise definition of what constitutes a Rutgers center or institute;
- ensuring that Rutgers center and institute operations, governance, reviews, and succession planning follow best practices, perhaps those established by the Association of American Medical Colleges, with transparency to both membership and institution leadership;
- establishing sustainable business models for center and institute operations that incent pursuit of federal and private funding by appropriate sharing of indirect cost returns and other revenues with faculty, centers and institutes, schools and departments, and central administration, while minimizing perverse incentives and barriers to collaboration;
- engaging Rutgers centers and institutes in systematic, ongoing efforts to promote and participate in cross-disciplinary, cross-campus, and multi-institutional collaborations; and
- developing administrative and regulatory processes that are fully integrated and honored across the entire system.

### ***Additional Integrative Activities***

The integration of the former UMDNJ and Rutgers has created considerable opportunities for collaboration and synergy. In addition to collaborations previously identified, RBHS will explore opportunities or is developing plans to collaborate with the following non-RBHS entities or programs: the One Nutrition Initiative, which is to be a university-wide consortium administered through the Institute for Food, Nutrition, and Health, designed to address major nutrition-related issues and challenges; and the Rutgers Institute for Emergency Preparedness and Homeland Security, a university-wide multidisciplinary center of excellence, which will be a collaborative partner with NJMS and RWJMS departments of emergency medicine, among others. In addition, RBHS will participate in the following programs led by RU-New Brunswick: the New Brunswick Academic Portal, designed to link and organize programs and activities with common themes; the Health, Wellness, and Science in the Community Campus Summit, which will be a two-day conference with the aim of promoting networking and exploration of cross-disciplinary collaborations for faculty engaged in basic, clinical, and translational health and wellness research and practice; and the Alumni Shadowing Program, led by the Health Professions Office, which will link RU-New Brunswick undergraduate students interested in the professional health fields with practicing clinicians. Finally, RBHS will participate in university-wide activities and practices that will promote Rutgers' public mission by: continuing to participate in Rutgers Day; maintaining inclusive recruitment and retention guidelines for faculty and staff; and supporting undergraduate pipeline programs for high school and undergraduate students, particularly for those with interests in the health professions, science, and technology.

## **OTHER ENABLING STRUCTURES**

Three additional enabling structures have been selected for support and investment during the five-year strategic plan. By advancing institutional stature, supporting faculty development, and addressing facilities challenges, RBHS will confidently support signature programs, complementary programs, and educational initiatives, as well as research, educational, clinical, and community service programs more broadly throughout RBHS.

### ***Advancing Institutional Stature***

Stature and reputation are extremely important to RBHS schools, units, and programs. The strategic plan provides a significant opportunity to address current national rankings, most commonly provided by the lay press. While rankings for medical schools are based in part on quantitative data provided by

the schools themselves, including faculty research activity, student selectivity, and faculty resources (e.g., ratio of full-time science and clinical faculty to full-time students), all or nearly all rankings for other professional schools, including biomedical sciences, health related professions, nursing, pharmacy, and public health, are based purely on subjective measures such as peer evaluation. Even for medical schools, 40% of the weighted average of *U.S. News and World Report* rankings, the most commonly referenced ranking, is based on peer assessment. No ranking systems exist for dental medicine education.

Regardless of the lack of quantitative merit attributed to the lay rankings, they provide an important window into how the world views RBHS programs. Consequently, rebranding or augmenting the brand of RBHS schools is extremely important and must be addressed in the five-year RBHS strategic plan. Specific plans include:

- educating faculty, senior administrators, and Rutgers alumni regarding the criteria by which RBHS schools and programs are evaluated by national ranking publications, including focusing on achieving metric-based improvements during the implementation of the RBHS strategic plan;
- educating faculty on the importance of the media and coverage of notable research, clinical, educational, and service activities;
- assisting faculty in joining national honor societies and in participating as leaders in national societies;
- developing a marketing and communications strategy;
- developing “Rutgers Health” as a unifying brand for RBHS health care delivery (see above);
- promoting excellence in high quality scholarship, services, and discoveries;
- developing signature programs described above;
- developing new standards and criteria for appointments and promotion;
- limiting solicitation of external faculty promotion evaluations to those more likely to achieve promotion;
- increasing faculty size through creation of additional faculty tracks (see “Faculty Development” below);
- increasing school selectivity by soliciting applications from out-of-state students in those schools not now doing so; and
- selecting one or more peer and one or more aspirant schools, conducting an in-depth study of the methods and metrics utilized and achieved by each to improve or maintain their rankings, then applying the results to developing a plan that will enable RBHS schools to improve their national rankings to levels approaching peer aspirant rankings.

A task force overseen by the chancellor’s office will be created to focus on advancing school stature.

### ***Faculty Development***

In order to achieve excellence and to enable RBHS to become a leading institution in all biomedical and health science disciplines, RBHS must ensure that structures and policies are in place to support faculty careers and their development from initial appointment through retirement. While some turnover is to be expected and even desirable (e.g., those leaving due to growth opportunities elsewhere or, conversely, lack of productivity), the faculty is an institution’s most valuable asset and disproportionate and undesired departures are a substantial risk to the institution.

Two approaches were utilized to address this important issue. A working group overseen by the RBHS Strategic Planning Steering Committee focused on faculty retention as an infrastructure need. In addition, two senior RBHS faculty were appointed as interim provosts to review faculty appointment and promotion criteria and recommend standardized policies across RBHS consistent with Rutgers-wide policies.

The faculty retention working group, composed of members of eight RBHS units, reviewed recent faculty retention in the health sciences literature, examined existing data on faculty separations from

the former UMDNJ and the School of Pharmacy, reviewed results from two recent surveys completed by New Jersey Medical School faculty, and distributed a survey to current RBHS faculty modeled after a survey assessing organizational culture and faculty intentions to leave, published in *Academic Medicine* in 2012. Survey results indicate that levels of faculty dissatisfaction and morale and a number of faculty considering departure warrant immediate and direct intervention.

Some faculty issues may be addressed quickly, once faculty become aware of comprehensive plans being developed as part of the RBHS and Rutgers-wide strategic plans. Recommendations for faculty tracks, promotion criteria, and promotion review procedures are in development (see below). It is anticipated that publication and implementation of these recommendations will address some faculty concerns. Other issues being addressed currently or in the near future include efforts by Rutgers to simplify administrative processes, and RBHS efforts to elevate institutional stature, develop new compensation plans, provide compensation increases for productive faculty, and develop concrete productivity metrics for all components of the RBHS mission.

However, additional steps need to be taken. The faculty retention working group submitted a report to the steering committee that focused on recommendations to address faculty morale; resources needed to support faculty research, educational, and clinical activities; mentoring and faculty development; and retention of high performing faculty. The following recommendations have been incorporated into the strategic plan:

- improving faculty morale and investing in resources that support research, clinical, and teaching activities of current faculty;
- addressing factors influencing intention to leave, specifically by addressing compensation, benefits, and other collective bargaining issues expeditiously;
- strengthening and expanding the roles of Faculty Affairs offices, including the tracking of and reasons for departures;
- establishing formal mentoring and faculty development programs;
- retaining high performing faculty members through the budgeting of retention packages as strategic initiatives, analogous to recruitment packages;
- systematically collecting and compiling faculty retention and separation data in each school to track trends and the success/failure of retention efforts to enhance regular review and modification of faculty retention strategies on an ongoing basis;
- recruiting and supporting diverse faculty and leadership to reflect the demographic composition of local communities and New Jersey more broadly, in terms of race/ethnicity, gender, and nativity status; and
- analyzing RBHS-wide faculty and staff salaries to ensure salary and gender equity.

Recruitment and retention guidelines will reflect the university goals of inclusiveness and equity.

Special efforts will be made to recruit and retain faculty with interests in health disparities and cultural competencies.

Indicators of success of measures undertaken to address faculty retention will include lowering annual voluntary departures due to dissatisfaction with the institution and successes in retaining high performing faculty. Other desirable outcomes include improved faculty satisfaction relating to institutional commitment, increased level of enthusiasm for performance, improved confidence in one's ability to advance, improved trust/inclusion/connection, decreased ethical/moral distress, increased leadership aspirations, and a more positive environment that impacts the institution's reputation, facilitates recruitment, and advances the academic experience.

As the second component of the broader faculty development endeavor, senior faculty from Robert Wood Johnson Medical School and New Jersey Medical School were appointed as interim provosts

from January through June 2014. Together, they led an initiative to draft revised and standardized appointment and promotion criteria for faculty appointed primarily in RBHS schools, while working to ensure consistency with Rutgers-wide policies. Their objective was to produce guidelines to assist faculty in choosing a career pathway that would enable them to achieve their professional aspirations, maintain high standards of excellence for RBHS, and facilitate the recruitment, appointment, promotion, and retention of an outstanding faculty. The interim provosts reviewed guidelines from various universities highly regarded in biomedical and health sciences and spoke with academic leaders from some of these outstanding institutions to learn which elements of their guidelines were most effective. In addition, the interim provosts also familiarized themselves with guidelines from several of the existing RBHS schools.

The interim provosts catalogued guidelines and conversations and identified criteria and pathways that were successful at other institutions, then drafted and revised a proposal for RBHS based on their understanding of the structure and function of RBHS schools. Drafts were shared with, and input requested from, RBHS deans, senior associate deans for faculty affairs or their equivalent for RBHS schools, chairs of the appointments and promotions committees of RBHS schools, members of the RBHS Faculty Council, and current and future presidents of the Master Educators' Guild. Multiple open meetings were held with the faculty, geographically and within schools, and feedback was solicited and obtained as well via email. In response, the recommendations have been substantially revised. These recommendations remain preliminary, subject to ongoing review and consideration provided by various RBHS faculty organizations, including the RBHS Faculty Council. A faculty handbook will be created, which will include detailed and specific information about faculty tracks, the appointment and promotion process, and criteria. Even after review, approval, and implementation, it is anticipated that criteria and procedures will be reassessed and revised regularly to address specific or general issues or inconsistencies, based on ongoing faculty input. Once criteria and procedures have been approved, the provosts will conduct training and information sessions for department chairs and each school's appointments and promotions committee, then hold open Q&A sessions to which all faculty will be invited. Training and Q&A sessions will be conducted annually in subsequent years.

RBHS's focus on targeting academic excellence by recruiting, retaining, and supporting faculty, as well as creating a culture that recognizes and rewards exceptional and productive faculty is a key point of emphasis in the Rutgers strategic plan. RBHS faculty development and related programs will be integrated with the Rutgers-wide plan and the plans of the geographic-specific universities, as appropriate, and RBHS will be represented on the Rutgers Promotion Review Committee.

### ***Facilities***

Substantial RBHS physical plant/building/maintenance challenges must be addressed, as determined during the chancellor's listening and facilities tours in the fall 2014, and illustrated in a survey of RBHS faculty, staff, and students. Maintenance has been deferred for too long, some space is badly in need of repair, some key space is in need of replacement as soon as is feasible, and well-maintained space is underutilized.

RCM will lead to more rational and appropriate allocation of the best space and selective investments will be made to renovate existing space as needs arise and funds become available. (For example, the RWJMS Research Tower in Piscataway can be renovated floor by floor, mobilizing resources as needed.) Suitable space will be better utilized by assigning funded investigators into the best available space.

During the first year of the strategic plan, the overall space utilization across RBHS will be evaluated and intensified. Where possible, funded investigators will be moved out of poorly maintained space into

well-maintained space; well-maintained space also will be assigned to newly recruited investigators. Over time, as additional funding becomes available, resources will be mobilized for space renovation.

## **FINANCIAL AND DEVELOPMENT STRATEGIES**

### **RBHS ADMINISTRATIVE CHALLENGES AND FINANCIAL IMPROVEMENT STRATEGIES**

Although the integration of UMDNJ and Rutgers occurred on July 1, 2013, many outstanding operational, programmatic, and financial challenges and opportunities remain. While many programs have been well managed, uniform and standardized administrative and financial policies are needed to address fundamental administrative challenges, ineffective research administrative infrastructure, a lack of policies RBHS-wide, and poor financial performance. More specifically, these include:

- developing a new approach to leadership accountability across RBHS;
- evaluating tenure and non-tenure faculty tracks and redesigning them with appropriate criteria for appointment and promotion;
- revising the appointment and promotion process;
- renegotiating many expired and expiring union contracts;
- creating collaboration among researchers across disciplines and sites;
- increasing below average or low faculty productivity, a result, in part, of a lack of financial or other incentives and inadequate administrative, research, and clinical support structure to enable and promote productivity;
- resolving lack of faculty pay increases for many years, resulting in, among other issues, low faculty morale;
- improving efficiency of workspace;
- improving the logistics of programs within RBHS that are geographically scattered and the technology to foster more efficient meetings;
- improving financial reporting and the ability to obtain data, evaluate new systems, and expedite implementation;
- addressing the different financial systems used by legacy UMDNJ and legacy Rutgers entities;
- removing the inadequacy of patient access and enabling systems;
- improving the substantial structural deficit at RWJMS and the less than break-even performance of NJMS;
- clearing the significant deficits in some fund balances which cannot compliantly be supported with surpluses in other fund balances, though the RBHS fund balance (restricted and unrestricted) is positive at a high level, and addressing the funds shortages for facility renewal and repairs to many buildings and infrastructure;
- renegotiating the relationship between the medical schools and affiliate hospitals, especially in the context of the substantial investments to be made;
- strengthening investment in the academic enterprise and in recruitment of world renowned faculty leaders; and
- continuing to transition certain functional administrative units (human resources, financial reporting, information technology, facility, and real estate services) from the former UMDNJ central administration to the central Rutgers administration.

A series of strategies, some of which have been noted earlier, have been and will be implemented RBHS-wide to address these financial and administrative challenges and improve financial performance within schools/units and across RBHS. They include:

- measuring faculty productivity transparently across RBHS and across missions;
- issuing non-renewal appointments where appropriate, and designing a new faculty compensation plan to reward productivity;

- developing and implementing new promotion rules;
- evaluating non-faculty staffing levels and required key competencies;
- improving research administrative infrastructure;
- exploring new hospital partnerships/affiliations and negotiating new contracts with affiliate hospitals to ensure adequate payment for services;
- investigating new multi-professional and interschool faculty clinical practice models;
- leveraging existing state funding for fringe benefits more effectively;
- studying via task force whether to restructure basic science departments across medical schools and non-RBHS schools;
- developing financial statements for each department within schools, with department chairs and division directors being held accountable for improving financial performance;
- recruiting to fill interim dean, chair, chief, and other leadership positions where appropriate;
- developing and maintaining a position control approval policy within the RBHS chancellor's office;
- continuing to improve patient access;
- analyzing revenue-cycle and collection rates for cost savings;
- rolling out the RCM system in fiscal year 2016;
- increasing the number of sponsored program proposals and awards, especially in the areas of the signature programs and complementary areas, described above;
- conducting a more thorough analysis of the administrative infrastructure; and
- allocating controllable expenses to departments based on utilization (e.g., use of nurse practitioners and physician assistants); recruiting new chairs for key departments; leveraging synergies between NJMS and RWJMS; and working with department chairs on innovative revenue enhancement strategies.

## **FUNDING THE STRATEGIC PLAN**

Plans for signature programs described above will require substantial investment. RBHS strategic initiatives will be funded in their first year, in part, by contributions received from each RBHS entity representing 2% of their revenue. These funds will be deployed by the chancellor's office, generally matching funds provided by the entities, based on three criteria: the quality of any recruit, whether it has interschool impact, and the priorities of this strategic plan. In future years, this funding will be replaced by a strategic fund to be made available through RCM. In addition, 5% of existing funding used by RBHS entities for traditional, ongoing operating expenses has been reallocated within the entity's budget in fiscal year 2015 for strategic investments to help drive programmatic development within the schools, centers, and institutes. The use of these funds will be tracked, confirming their use as planned. Some funding also will be provided through financial improvement strategies, as noted above, and as the RBHS schools under financial stress improve their standing, funding will be available for more rapid investment. The speed at which the strategic planning initiatives are implemented will depend, in part, on how quickly these schools are able to address their financial challenges.

RBHS also will take advantage of the alignment of RBHS and Rutgers strategic initiatives to fund some of its priorities. Opportunities include Henry Rutgers University Professors (recruitment of senior scholars), Henry Rutgers Term Chairs (for mid- to early senior-level faculty), and targeted funding for administrative leadership positions (emergency and disaster preparedness, big data, global health, and bioethics). An example of a potential aligned initiative is the Rutgers research evaluation and commercialization hub (REACH) NIH grant proposal, which, if funded, would provide infrastructure support for researchers to engage in technology commercialization activities.

Also, the New Jersey Health Foundation has generously agreed to provide pilot grants to support RBHS signature programs (three grants of up to \$100,000 each for multidisciplinary teams), intended to lead to larger, federally funded multi-investigator grants (center grants or program project grants). Applications will be given higher priority if they also assist in developing one or more complementary

programs and demonstrate an intention to leverage strengths across disciplines leading to collaborations. Additional funding will be made available in future years as well.

Finally, as part of the reorganization of development across Rutgers and the new Rutgers Foundation, a major effort will be made for fundraising for RBHS, focusing on the strategic plan priorities and leveraging the increasingly favorable public and donor recognition of the RBHS brand. Toward that end, a new vice president for development has been hired and will begin in September 2014, charged with reorganizing the RBHS development efforts and leading major efforts to generate new funding for RBHS initiatives.

## **MOVING FORWARD**

Strategic plans are not intended to be static, but rather living documents that will serve as guides. The RBHS strategic plan is subject to change and reassessment following implementation. The RBHS Strategic Planning Steering Committee, consisting of RBHS school and unit faculty representatives, including members of the RBHS Faculty Council, as well as staff, student, community, principal hospital, and non-RBHS Rutgers faculty representatives, will annually review the strategic plan and progress on meeting each of its objectives. Metrics established for each initiative will be used to measure success.

Implementation of the RBHS strategic plan has already begun, but the planning continues. The RBHS plan is being shared with the other chancellors, just as their plans are being shared with RBHS. It is anticipated that common interests and initiatives will be linked and additional initiatives will emerge to further strengthen Rutgers, including RU-Camden, RU-New Brunswick, RU-Newark, and RBHS.

## **CONCLUSION**

The RBHS chancellor and the RBHS leadership thank the RBHS Strategic Planning Steering Committee, the more than 500 faculty members who participated as members of the RBHS strategic planning working groups and committees, particularly the co-chairs, and the more than 5,000 Rutgers faculty and RBHS staff, students, and alumni who responded to surveys (Appendix E). The efforts of the working groups were particularly important, as their reports submitted identified existing strengths upon which stronger and nationally prominent programs can be built, other programs with potential for future growth, and synergies that will enable new programs to be developed.

Through assistance provided by the RBHS and broader Rutgers community, RBHS is poised to achieve its aspiration to be recognized as one of the best academic health centers in the U.S., known for its education, research, clinical care, and commitment to improving access to health care and reducing healthcare disparities.

## FOOTNOTES

1. For purposes of the RBHS strategic plan, population health is defined as: “the health outcomes of a group of individuals, including the distribution of such outcomes within the group” (Kindig DA. (2007) Understanding Population Health Terminology. *Milbank Quarterly*, 85(1), 139-61). The key concept in terms of application is that providers would accept responsibility for maintaining the health of a defined population, as opposed to responding only to individuals who seek care when sick. As such, providers – not just insurers – assume risk for whole populations.
2. World Health Organization (WHO). (2010). Framework for action on interprofessional education & collaborative practice. Geneva: World Health Organization.  
[http://whqlibdoc.who.int/hq/2010/WHO\\_HRH\\_HPN\\_10.3\\_eng.pdf](http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf). (accessed September 1, 2014)