

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.

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.