Signature Programs

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 EOSHI 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.