

Facilities and Other Resources
Montclair State University
PI: Diana M Thomas, PhD

Laboratory

Montclair State University: N/A

Clinical

Montclair State University: N/A

Animal:

Montclair State University: N/A

Computer:

Montclair State University: The College of Science and Mathematics also provides Dr. Thomas the use of a Dell PC Tablet and a number of software programs for the purpose of research. We are requesting an additional Dell PC laptop to run and store simulations of subject baseline data from the various studies. We have requested that students who are running simulations related to the project use a laptop requested for in this proposal.

Office:

Dr. Thomas has an individual office. In addition, the Mathematics Department has a designated room in Richardson 224A for students who are conducting mathematical research.

Other:

Profile of Students and Articulation programs in the health related sciences

Montclair State University (MSU) serves a diverse student population of just over 18,000 students that is 10% African-American and 18% Hispanic. The University offers more than 250 majors, minors, and concentrations across a wide range of disciplines. MSU is centrally located near a vast number of pharmaceutical industries; Merck & Co., Pfizer, and Johnson & Johnson are all within driving distance of the institution. MSU is also in close proximity to Manhattan and its large well established medical campuses. MSU offers both train and bus service directly from campus into New York City making contact with the leading local researchers in obesity accessible. In addition, MSU offers several professional health programs through articulation agreements which we briefly describe.

The Health Careers Program

The Health Careers Program (HCP), funded jointly by MSU and the NJ Educational Opportunity Fund, is an undergraduate program that prepares highly motivated and academically capable students from financially and educationally disadvantaged backgrounds an opportunity for admission to health professions schools and careers in the sciences. The Health Careers program has entered an eight year program agreement with New Jersey Medical School of the University of Medicine and Dentistry of New Jersey (UMDNJ) for a combined BS/MD. Students entering and successfully completing the program would receive a baccalaureate degree from Montclair State University and a Doctor of Medicine from UMDNJ-NJMS.

Six-year BS/MS Physician Assistant Program

A BA/MS degree program, jointly sponsored by MSU and UMDNJ is an active program in the College of Science and Mathematics. This 6-year program includes three years of undergraduate liberal arts and basic science education.

Unique characteristics of the school/academic component

Montclair State University has increased its enrollment by one-third during the past decade to about 18,000 and is New Jersey's second largest public institution of higher learning. The Forbes' annual list of the best colleges and universities in the nation (America's Best Colleges list) ranked MSU as the number one public institution in New Jersey, and the state's third best college or university overall (http://www.forbes.com/lists/2009/94/colleges-09_Americas-Best-Colleges_State.html). The expanding mission of the University positions the institution to advance its commitment to quality scientific research.

(1) Meritorious research

Montclair State University is dedicated to faculty scholarship offering course release through the Faculty Scholarship Program, internal seed money for pilot studies, and supporting travel for conferences. The faculty body of the University is rapidly growing and entering with strong research credentials with over one half of the faculty on campus hired over the past 8 years. The Department of Mathematical Sciences has an active research program with over 30 full time faculty and is currently developing a doctoral program in applied mathematics. A successful NIH AREA proposal will support the meritorious research within the Department of Mathematical Science at MSU.

(2) Research environment

The research environment of the University is transitioning to accommodate the changing research intensive goals of the faculty. A successful NIH AREA proposal stands to transform the facilities in the Department of Mathematical Sciences to enhance more trans-disciplinary work with mathematicians and researchers in health related fields. Montclair State University is positioned as a leader in minority higher education. MSU has recently been named a "Top Gainer" and a "Top Gap Closer," and listed among the top 25 public four-year colleges and universities in the nation for its improvements in minority graduation rates by The Education Trust, a Washington DC based, non-profit advocacy group study.

(3) Undergraduate Research

The PI is deeply committed to undergraduate research and has organized MSU's Annual Student Symposium (<http://chss.montclair.edu/asrs>) for the last four years. The symposium, jointly sponsored by the College of Science and Mathematics and the College for the Humanities and Social Sciences, has steadily expanded each year, in both the number of student participants and the breadth of research topics. Almost all departments in the two sponsoring colleges were represented by student presentations and posters at the 2009 conference. In 2009, seven of 33 conference speakers were from the Department of Mathematical Sciences. The PI is also the Director of Undergraduate Research for the College of Science and Mathematics and has developed a database of faculty research profiles for student research opportunities (http://webhost.csam.montclair.edu/undergrad_research/). The database was designed to foster interdisciplinary research among students in the sciences. Successful funding of the NIH AREA proposal would provide opportunities for students to work on projects related to obesity under the guidance of the PI.

Access to data collected at weight change research sites

Mathematical modeling of weight related problems requires access to longitudinal weight change data. In the absence of medical health facilities at MSU, the PI must rely on collaborations with state of the art institutions conducting weight change experiments. The weight change study sites at Pennington Biomedical Research Center in Baton Rouge, LA,

Mayo Clinic, Merck & Co., University of Wisconsin, Madison, and University of Maastricht, are equipped with dual energy X-ray absorptiometry equipment, metabolic chambers, kitchens, in feeding areas, clinical treatment facilities, and trained medical and health professionals. The PI's collaborators have shared the data collected at these sites to advance the proposed mathematical model.

Additional Facilities through Pennington Biomedical Research Center and the Obesity Research Center at Columbia University

In addition to her full-time position at Montclair State University, Dr. Thomas is an adjunct professor at Pennington Biomedical Research Center. Dr. Thomas is also heading a clinical trial conducted partially at the Obesity Research Center (ORC) at Columbia University. Both institutions have provided support as needed in the form of collaborations, equipment, and consultation. The proximity of ORC to MSU (20 minutes by train) has offered collaborative ties that continue to strengthen the research environment of MSU.

The Sokol Institute

To investigate the effects of changed physical activity on body mass, Dr. Thomas has recently been awarded a Sokol Fellowship to the Margaret and Herman Sokol Institute for Pharmaceutical Life Sciences. The Institute was established by Montclair State University's College of Science and Mathematics in 2007 to rapidly advance the new skills, approaches and research that are critical to the development of tomorrow's solutions to global health issues. The Sokol Institute is currently housed in Chemistry department at MSU, however, anticipates moving to a state of the art facility constructed for the purpose of enhancing trans-disciplinary research.