H. Major Research and Public Service Activities

Montclair State University serves the citizens of New Jersey and its local communities in numerous ways that are described more fully in Appendix 1, “2010-2011 Economic Impact Report: Providing Educational Innovation and Vital Service to New Jersey.” First and foremost, the University prepares New Jersey’s youth to lead socially responsible, professionally rewarding, and personally enriching lives. Beyond that, the University’s faculty and staff serve as a rich, human resource to both the State and the communities in which they reside, and the University’s facilities and programming, particularly in the arts, provide cultural enrichment to residents across New Jersey. Finally, expenditures and investments attributable to the University have a significant impact on both State and local economies and job markets.

Responding to a National Science Foundation (NSF) survey of research expenditures, Montclair State University reported FY10 expenditures amounting to nearly $2.3 million. Research expenditures from Federal sources rose over 26% from FY10, while overall research expenditures rose over 30% between FY09 and FY10.

<table>
<thead>
<tr>
<th>Source of Funds</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Federal Government</td>
<td>$1,876,000</td>
</tr>
<tr>
<td>State and Local Government</td>
<td>$27,000</td>
</tr>
<tr>
<td>Business</td>
<td>$19,000</td>
</tr>
<tr>
<td>Institutional Funds</td>
<td>$204,000</td>
</tr>
<tr>
<td>Grand Total of Academic R&amp;D Expenditures (All Disciplines and Sources)</td>
<td>$2,255,000 [2]</td>
</tr>
</tbody>
</table>

[1] Source: NSF Survey of R&D Expenditures at Universities and Colleges (Form #411).
[2] While this grand total accurately depicts research and development grant expenditures for FY10, the actual grants portfolio for MSU for FY10 was over $9 million.”

Montclair State University has enjoyed great success in recruiting and retaining outstanding faculty. The University’s 569 full-time faculty members, and all those who support them in part-time instructional roles, represent the heart and soul of the institution. Without them, none of the excellent outcomes described above could be achieved.

During the 2010-2011 academic year, faculty members were actively engaged in research, scholarship, and other forms of artistic and creative expression, while also performing service to the University and wider communities. A sampling of these activities revealed that MSU faculty
published over 20 books and several hundred articles, book chapters, and reviews; received numerous federal, state and local grants; and produced exhibitions and other performance art.

Appendix 2 of this report is a brochure titled “University Authors April 2011,” which describes books published by Montclair State University faculty during the past year. Appendix 3, titled “Peer-Reviewed Publications April 2011,” provides information on articles published by faculty in peer-reviewed journals. Both were compiled by the Office of the Provost and staff from the Harry A. Sprague Library.

The following section of this report presents additional faculty activities and accomplishments during the 2010-2011 academic year.

Selected Montclair State University Faculty Accomplishments

School of Business


Chen, Qiyang


DiGabriele, James A.


Jeffers, CPA, Agatha E.


Kay, Mark J.


Kessler, Stacey


Kim, Soo Kyung


Kleinman, Gary


Kumar, Archana


Lauricella, Leonard J.


Limbu, Yam B.


Lord, Richard


Mukherjee, Avinandan


Narasimhan, Ramesh


**College of Humanities and Social Sciences**


**College of the Arts**

Larry Weiner scripted, directed, and produced a new audio drama starring Kelli O’Hara, Shirley Jones, and Ed Asner for XM/Serius, downloadable on iTunes and available on major online bookstore sites

Dr. Jeffrey Kunkel directed the 2010 New Jersey All-State Jazz Band. Concerts were held at Trump Plaza (AC) and NJPAC (Newark).

Dr. Thomas McCauley presented a clinic titled, "This Rehearsal Is Available To You In High Definition" at the Midwest Clinic. The annual Midwest Clinic in Chicago is the largest gathering of school band and orchestra conductors in the world.

Dr. Suzanne Trauth is co-editor of "Katrina on Stage: Five Plays" (Northwestern University Press, 2011) She is also Consultant/participant on National Science Foundation grant: "Addressing Gender Barriers in STEM through Theatre of Social Engagement" (2011-2012).

This past January, Jeffrey Gall of the Cali School of Music was granted a Fulbright Award to support a teaching project in Baroque opera at the Instituto Superior de Arte del Teatro Colón in Buenos Aires from September through November 2010.

Paul Hostetter of the Cali School of Music toured China this past January and conducted works by Rachmaninoff, Dvorak, Copland, and the Yellow River Concerto with pianist Aaron Wunsch and cellist Julia Bruskin. He worked with orchestras in seven Chinese cities to critical acclaim and presented master classes at the Shanghai Conservatory and Shanghai Normal University, among other institutions.

Director of Bands Tom McCauley appeared as a guest conductor at the New York Summer Music Festival in July 2009.
Nancy Carnevale of History was elected to the Executive Council of the Immigration and Ethnic History Society and to the Executive Council of the American Italian Historical Association. She also became co-editor of a new series at Fordham University Press, “Critical Studies in Italian America.”

Janet Koehnke of Communication Sciences and Disorders was elected New Jersey’s representative to the Audiology Advisory Council of the American Speech-Language-Hearing Association.

James Woodard of History is currently on a semester-long Fulbright Fellowship in Brazil researching his next book, which is tentatively titled A Revolution in Commerce: Business, Markets, Media, and the Making of Brazil’s “American Century”

Last fall, work by Pat Lay of Art and Design was included in group exhibitions at the Islip Art Museum, the Long Island City Art Center, and at the Montclair Art Museum.

**College of Education and Human Services**


**College of Science and Mathematics**


Montclair State University has been selected to participate in a National Genomics Research Initiative funded through the Howard Hughes Medical Institute and its Science Education Alliance. Drs. Sandra Adams and Kirsten Monsen (Biology and Molecular Biology) submitted the winning application to the Institute and will be spearheading the program. This project fosters collaborations between scientists and educators to transform science education nationally. The purpose of this project is for students to participate in a course to identify and characterize previously unknown bacteriophages.

Dr. Kirk Barrett (Passaic River Institute) was awarded $373,618 over for years grant from the National Science Foundation for “MSU’s Research Experience for Undergraduates”. This grant will provide 10 students with an eight week summer educational experience through participation in transdisciplinary, hands-on field research in environmental sciences. Much of the research will take place at MSU’s field campus at the New Jersey School of Conservation.

Dr. Kirk Barrett (Passaic River Institute) was awarded funding to construct a Woodland Garden Enclosure at the Essex County Environmental Center. The project was awarded by the Essex County Parks Department with funding from the Johnette Wallerstein Institute for $52,580. Dr. Barrett was also given funding by the Gowanus Canal Sponge Park, to construct a stormwater management facility, with PRI acting as a subcontractor for $33,020 through an award by the New England Interstate Water Pollution Control Commission to Dlandstudio, Inc. (a NYC-based landscape design firm). He was also given funding by the Green infrastructure retrofits in the
Dr. Lora Billings (Mathematical Sciences) was awarded funding of $133,425 from the US Department of the Army to explore the swarming behavior of many-particle systems in a noisy environment, examples of these systems include, but are not limited to, mobile sensing arrays or arrays of different platforms, like miniature submarines in the ocean and insect robots on land or air.

Dr. Paul Bologna (Biology and Molecular Biology) received a grant from the Barnegat Bay National Estuary for the “Assessment of Sea Nettle Polyps in Barnegat Bay, New Jersey,” for $2,669. Dr. Bologna and a graduate student will examine fixed substrates, such as docks and bulkheads, and compile data that will provide critical life history information useful in predicting future population fluctuations, during this 18-month project.

Dr. Stefanie Brachfeld (Earth and Environmental Sciences) was awarded $132,443 from the National Science Foundation for the “Acquisition of a Spinner Magnetometer and Ancillary Paleomagnetic Equipment.” This equipment will complement the existing rock-magnetic capabilities and allow faculty to conduct in-house paleomagnetic analyses in support of geosciences, environmental science, physics research, and laboratory research.

Dr. Stefanie Brachfeld (Earth and Environmental Studies) was awarded $143,022 for the first year of a three year collaborative project entitled “Static and Shock Pressure Treatment of Synthetic Mars Basalts: Implications for Understanding the Evolution of Crustal Magnetic Anomalies”. The total grant is anticipated to be $451,342. MSU collaborates with University of Hawaii, University of Minnesota and Harvard University to synthesize basalts of Martian composition and subject them to static and shock pressure experiments.

Dr. Stefanie Brachfeld (Earth and Environmental Studies) was awarded by the National Science Foundation in the amount of $119,406 for her research project on Enhancing Holocene Ice Sheet and Ice Shelf Geochronology Using Geomagnetic Paleointensity Variations. The project examines the sedimentary records of climate change and magnetic field variability from Maxwell Bay, South Shetland Islands.

Dr. Stefanie Brachfeld (Earth and Environmental Studies) was given $29,078 by the National Science Foundation in the amount of $29,078 a continuation of Dr. Brachfeld's project four years ago entitled Geomagnetic Paleointensity Dating and Environmental Magnetism of the McMurdo ice Shelf and Southern McMurdo Sound Paleorecords. The research team is focusing on the magnetic mineralogy in the science documentation phase of work with the goal of assessing the fidelity of the magnetic recording assemblage downcore.

Dr. Stefanie Brachfeld (Earth and Environmental Studies) was awarded by the National Science Foundation for $400,301 on the project entitled Tracing Antarctic Sediment Transport Pathways and Antarctic Ice Sheet Stability Using Iron-Titanium oxide Magnetic and Chemical Fingerprints.

Dr. Mark Chopping (Earth and Environmental Studies) received an award from NASA in the amount of $137,674 for the first year of a three year project entitled “A Decade of Changes in
Above-ground Live Standing Dry Biomass, Canopy Cover, Height, and Understory Density in the Southwestern U.S. from EOS MISR and MODIS*. NASA expects to award $182,386 for the entire grant. The goal of this project is to leverage previous successful research supported by the NASA Earth Observing System program to develop novel and innovative methods for mapping woody plant canopies (forests and shrubs) in the southwestern U.S.

Dr. Mark Chopping (Earth and Environmental Studies) received $20,000 of an anticipated total $39,975 supplemental request for the project entitled “Forest and Shrub Mapping with MISR”. This project involves work on mapping of forest and shrub canopy structure (height, crown shape and fractional cover) and above-ground woody biomass for diverse environments, over limited sites and larger areas and for multiple orbits and years, using data from MISR.

Dr. Saliya DeSilva (Chemistry and Biochemistry) was awarded $58,000 on his project entitled The Design and Study of Molecular-Scale Photonic Devices and Green Chemistry Approaches Toward Their Synthesis. Dr. DeSilva is studying several new molecules that show fluorescence modulation as a result of cation binding.

Dr. Eric Forgoston (Mathematical Sciences) received a two year grant for $49,990 from the Naval Research Laboratory to continue his research in modeling and analyzing the dynamics of a swarm of mobile sensors operating in stochastic environments, such as the ocean, with and without communication between the swarm agents.

Dr. Evan Fuller (Mathematical Sciences) received $15,700 for the first year of a three year National Science Foundation grant held by Rutgers. The project, entitled “Proving Styles in University Mathematics,” will investigate the prevalence and correlation with success of different proving strategies used by undergraduate math majors.

Dr. Joshua Galster (Earth and Environmental Sciences) was awarded a Rutgers University’s grant funded by the US Geological Survey in the amount of $30,000 for the project entitled Identifying the Source of Excess Fine-Grained Sediments in New Jersey Rivers Using Radionuclides.

Dr. Matthew Gorring (Earth and Environmental Sciences) received an equipment grant from the National Science Foundation for the “Upgrade of the Optical Inductively Coupled Plasma (ICP),” a computer system that supports geochemistry research and education in Department of Earth and Environmental Studies. The grant is for $28,050.

Dr. Reginald Halaby (Biology & Molecular Biology) was awarded by the National Institutes of Health in the amount of $1,483,766 for his project entitled Minority Access to Research Careers (MARC) project at MSU. The goal of the project is to increase the number of underrepresented students involved in the biomedical sciences by creating an environment conducive to research and learning.

Drs. Kirsten Monsen and Lisa Hazard (Biology & Molecular Biology) was given a New Jersey Conserve Wildlife Matching funds Grant for $3,500 on their proposal Prevalence of the Batrachochytrium and Ranavirus pathogens among New Jersey amphibian populations by the New Jersey Department of Environmental Protection, Division of Fish and Wildlife.
Dr. Sandra Passchier (Earth and Environmental Studies) was awarded a three year grant for her research titled, “Expedition Objective Research: Early Pliocene Record of Antarctic Ice Rafting and Paleoenvironmental Conditions, Wilkes Land Margin, Antarctica,” for $183,565. Dr. Passchier along with a Graduate Assistant will analyze core samples from Antarctica to reconstruct Antarctica’s climate and icesheet history in a time of global warming in the past.

Dr. Jing Peng (Computer Science) received a grant through Syracuse University funded by the US Department of Air Force in the amount of $29,040 for a research project titled “Closed-Loop Learning Integrated Robust Information Fusion”. The goal of this project is to prove a strong result for the proposed algorithm by casting it within the adversarial multi-armed bandit framework and further validating the analysis using wide area image data for persistent target tracking.

Dr. Elena Petroff (Biology and Molecular Biology) was awarded $320,657 for a three year grant from the National Institutes of Health for the project “Interaction of ASIC and BK Channels and Its Role in Glial Proliferation”. This study will determine the role of acid sensing ion channels (ASICs) as endogenous inhibitors of cell growth through inhibition of voltage activated K+ channels (BK).

As co-PIs, Drs. Yang Deng, Dibyendu Sarkar and Sudipta Rakshit (Earth and Environmental Studies) received NJWRRI grant funded for $14,966 titled Scrap Tire and Water Treatment Residuals as Novel - Green Sorbents for Removal of Common Metals from Polluted Urban Storm Water Runoff.

Dr. Stefan Robila (Computer Science), and Dr. Michael P. Weinstein, (PSEG Institute for Sustainability Studies) were awarded a two year demonstration grant of $218,000 to develop a Decision Support System (DSS) for data center applications. The goal of the project is the creation of a DSS that supports business and organizational decision-making intended to streamline operations and save energy and operational costs for Montclair State’s data center. The team also includes Michael Oudshoorn, chair of CSAM’s Computer Science Department, and Aparna Varde, Computer Science, an expert in data mining, database management and artificial Intelligence, who will supervise the graduate students on the project led by doctoral student Michael Pawlish. The grant is funded by PSEG.

Dr. Robert W. Taylor (Earth & Environmental Studies) together with PI’s Jose Carandang, Jose Calleja were given Phil Pesos 100,000 on their project entitled Urban Rooftop Hydroponics for Diversified Agriculture by Angelo King Institute, Manila Philippines.

Dr. William Thomas (NJ School of Conservation) won a contract from the NJ Board of Public Utilities for $2.65 million to install a solar power system at the School in Stokes State Forest. The system is expected to generate sufficient power for the entire facility and to produce solar renewable energy credits for sale.

Dr. David Trubatch (Mathematical Sciences) received $142,168 for the first year of a National Science Foundation grant for the “Dynamics of Soliton Interactions and their Applications,” a grant to study the nonlinear Schrödinger equation (NLS). This grant will generate additional opportunities for students to participate in leading-edge research.
Dr. Jacalyn Willis (PRISM) received $592,000 for a three year grant for the project “CUSP: Creative University-School Partnerships – Mathematics & Science Partnership,” funded by the New Jersey Department of Education. CUSP will increase the academic achievement of students in math and science by enhancing the content knowledge and teaching skills of classroom teachers.

Dr. MeiYin Wu (Biology and Molecular Biology) received an award for $673,530 from the U.S. Department of the Interior with funds from the U.S. Environmental Protection Agency, Great Lake Restoration Initiative program. She will be testing environmentally-sound ultrasound technology for ship ballast water treatment. The University of Vermont and the Great Ships Initiative are partners on this three year project. Dr. Wu also received $14,138 for the first year of a three year grant from the National Science Foundation for a project entitled “Collaborative Research: Greenhouse Gas Balance of Urban Temperate Wetlands”.

Dr. Sandra D. Adams (Biology & Molecular Biology) gave a presentation on Inhibition of HSV-1 by black tea polyphenols in cultured Vero and A549 cell at the American Society for Virology Annual Conference, Minneapolis, MN. She also presented SinV in Vero Cells; Modified green tea polyphenols as a novel approach to inhibit Herpes simplex viral infections; at Metropolitan Association of College and University Biologists at Molloy College.

Dr. Mahmood Barbooti (Earth and Environmental Studies) delivered lectures on Environmental Chemistry at the Institute of International Education as part of the Scholar Rescue Fund lecture program.

Dr. Jonathan Cutler (Mathematical Sciences) gave an invited, hour-long lecture entitled "Extremal problems related to graph homomorphisms" at the 28th Brazilian Colloquium in Mathematics at the Instituto Nacional de Matematica Pura e Aplicada (IMPA) in Rio de Janeiro, Brazil in July 2011.

Dr. Yang Deng (Earth and Environmental Studies) presented a poster entitled - A new pathway to applying Zero-Valent Iron (ZVI) for environmental remediation: Bare or bimetallic Zero-Valent Iron nanoparticle/ dioxygen system (ZVI/O2) at the 2010 SERDP & ESTCP’s Partners in Environmental Technology Technical Symposium and Workshop, and a poster entitled Simultaneous Oxidation of Refractory Organics and Ammonia in Landfill Leachate by Thermally Activated persulfate at the 2010 International Chemical Congress of Pacific Basin Societies.

Dr. Reginald Halaby (Biology & Molecular Biology) received an ABRCMS Judges’ Travel Subsidy for the 2010 Annual biomedical Research Conference for Minority Students held in Charlotte, NC.

Dr. Lisa L. Hazard (Biology & Molecular Biology) gave a presentation on Amphibian diseases in New Jersey at the New Jersey Chapter of The Wildlife Society meeting in Waretown, NJ. Also presented Interspecific variation in behavioral aversion of sympatric temperate zone amphibians to road deicers at the Society for Integrative and Comparative Biology Annual Meeting in Salt Lake City, UT. She has also been appointed to its Student Support Committee as Vice President, MSU chapter of Phi Kappa Phi Judge for Best Student Paper competition. Dr. Hazard is a reviewer for Herpetologia.
Dr. Michael A. Krugé (Earth and Environmental Studies) presented a keynote talk entitled "Oil pollution in Coastal Waters" at the 28th Annual Meeting of The Society for Organic Petrology, Halifax (NS) Canada. Dr. Krugé co-chaired a session entitled "CO2 sequestration and Environmental Research on Coal and Petroleum Use" at the 28th Annual Meeting of The Society for Organic Petrology, Halifax (NS) Canada.

Dr. Aihua Li (Mathematical Sciences) participated in the Joint AMS/MAA National Mathematics Meeting and gave a presentation on Cryptography, a great topic for undergraduate mathematics course in the MAA Session on Cryptology for Undergraduates. In December, she was invited to give two colloquium talks at Miami University, Ohio: Contributions of ancient Chinese mathematics, in the Department of Mathematics, and Chinese abacus and its role in mathematics education, in the Department of Educational Psychology. Dr. Li participated in the MAA-NJ/PA joint meeting and was elected as vice chair for student affairs of MAA-NJ section. She also refereed a paper for Communications in Algebra and reviewed two articles for Mathematics Review.

Dr. Michael J. Oudshoorn (Computer Science) gave a presentation on "Face-to-face to On-Line: Addressing the Concerns of the Faculty", Emerging Learning Design Conference at Montclair State University, on 23 June 2011. He also gave a presentation on "Autonomic Computing", Department of Computer Science at Fairleigh Dickinson University on 23 March, 2011. Dr. Oudshoorn is a member of the Commissioner on the Computing Accreditation Commission of ABET Member of the Editorial Board for the journal Software Engineering, and Associate Editor of the International Journal of Computers and Their Application.

Dr. Robert S. Prezant (Biology & Molecular Biology) participated in the Medical Innovation Roundtable with Congressmen Frank Pallone, Chairman of the Subcommittee on Health, Committee on Energy and Commerce, Monmouth University. He also gave a presentation on Molluscan diversity and temporal changes in an urban pond in Northern New Jersey at the American Malacological conference at Duquesne University, Pittsburgh and was a member of the panel discussing variable academic work loads at the Council of Colleges of Arts and Science Conferences in New Orleans. He also is a co-investigator for a project on "The mucous drogue line in the Asian Clam Corbicula fluminea: Fundamental information to understand dispersal and invasion pattern" presented at the 2nd World Conference on Biological Invasions and Ecosystem Functioning (BIOLIEF) in Mar del Plata, Argentina.

Dr. Dibyendu Sarkar was elected a Fellow of the Geological Society of America, first time ever for a Montclair State faculty. He has been invited to give a talk in the symposium "Recent Advances in Studies of Dissolved Arsenic and Other Metals in Global Hydrologic Systems" in the 123rd Annual Meeting of the Geological Society of America to be held in Minneapolis, MN Oct 9 - 12. He was elected Vice-President of the Hudson-Delaware Chapter of the Society of Environmental Toxicology and Chemistry for 2011-12. He was made the Technical Editor of the International Journal of Environmental Science and Technology. With an Impact Factor of 3.16, IJEST is one of the leading environmental science journals in the world. He was made an Associate Editor of Soil Chemistry the Soil Science Society of America Journal, a top 10 journal in soils. He was made an Adjunct Professor in the Environmental, Earth, and Ocean Sciences Department at the University of Massachusetts at Boston and an Adjunct Professor in the Biological Sciences Department at
Michigan Technological University.

Dr. Michael P. Weinstein (PSEG Institute for Sustainability Studies) gave a keynote speech at the Annual Meeting of the Alliance for Global Sustainability in January in Gothenburg, Sweden. He was also appointed member of the Working Group; Innovative Technology Steering Committee, Implementation of New Jersey’s Energy Master Plan. He was a Session Chair and Discussion Moderator on *Socio-technical Systems Innovation*, Sustainable Consumption Research and Action Initiative (SCORAI), Mountain Lakes House, Princeton, NJ. He was a Keynote Speaker on *Sustaining Earth’s life Support Systems While Improving Human Well-Being* at the MSU Center of Pedagogy, Annual Advance, Global Learning 2.0: Educating Students for Democracy in a Rapidly Changing World, MSU Conference Center. He was invited Speaker, Binzhou International Sustainable and Economic Development Conference Binzhou, Shandong Province, China. He was appointed Member, Science Advisory Board (SAB), NJ Department of Environmental Protection. He was the chairman and organizer of the recent PSEG ISS: International Symposium on Sustainability Studies held last fall.

The British Broadcasting Corporation has awarded a commendation for wildlife photography to Dr. Jacalyn Willis (PRISM), Gregory Willis, and Ben Dodge in the Animal Behavior category of the worldwide competition of more than 700 researchers who use camera-traps. The photo shows a mother puma escorting her two young kittens on a foray in the rainforest preserve of Gallon Jug, Belize. The photo and background on the project, part of the Rainforest Connection of the College of Science and Mathematics of Montclair State University, will be highlighted in the BBC print *Wildlife* magazine and on the BBC website. The photo is part of a conservation project that involves both long-term monitoring of mammal populations in both Belize and Panama, and a conservation education program provided by videoconference technology live and interactively from the Willis' research sites in both countries.

Dr. Meiyin Wu (Biology and Molecular Biology) (U.S. Patent 7799233) Invented Apparatus and Method for Ultrasound Treatment of Aquatic Organisms with co-Inventor: Junru Wu. Dr. Wu gave a presentation on Invasive Plant Management using Hydroraking at the New Jersey School of Conservation. Prepared for the joint Annual Meeting of Ecological Society of America Mid-Atlantic Chapter and the New Jersey Academy of Science, Montclair, NJ. She also presented Habitat Selection by Wood Turtle, Glyptemys insculpta, in New Jersey. Prepared for the joint Annual Meeting of Ecological Society of America Mid-Atlantic Chapter and the New Jersey Academy of Science. She also presented Develop a rapid detection method for bloom-forming cyanobacteria and algae. Prepared for the joint Annual Meeting of Ecological Society of America Mid-Atlantic Chapter and the New Jersey Academy of Science.

The Governor appointed Dr. Robert S. Prezant to a seven-member NJ Department of Environmental Protection Passaic River Flood Commission directed to recommend solutions to chronic flooding in the Passaic River basin. Other appointments to NJ DEP committees include Drs. Michael Weinstein and Paul Bologna to the Ecological Process Committee, Drs. Mark Chopping and Greg Pope to the Climate and Atmospheric Sciences Committee, Dr. Kirk Barrett on the Water Quality and Quality Committee and Dr. Dibs Sarkar to the Emerging Contaminants Committee. Dr. Prezant was recently elected to the Board of Directors of the R&D Council of New Jersey.