ON THE COVER

Pictured from left to right are Christine Dugan, Xiaomin Deng, Anna Kopec, Haitian Lu, Erica Sparkenbaugh, Patrick Shaw, and Wei Zou, all graduate students in the Environmental and Integrative Toxicological Sciences program.
A TRADITION OF EXCELLENCE

The Michigan State University Center for Integrative Toxicology (CIT) is a multidisciplinary academic unit that supports and coordinates research and graduate education activities for faculty interested in various aspects of toxicology. The Center is a successor to the Institute for Environmental Toxicology and the Center for Environmental Toxicology, the latter founded in 1978. While the name of the unit has changed over the years to denote changes in the leadership and academic position, the mission of the unit has been the same. For 30 years, toxicology at Michigan State has provided excellence in training graduate students, facilitating research, and providing service to the State of Michigan when needed. The successes generated in these endeavors have resulted in recognition of Michigan State as a leader in academic toxicology.

Two years after the founding of the Center for Environmental Toxicology, a dual-degree Ph.D. program in environmental toxicology was offered in conjunction with several cooperating departments. The characteristics of the program were unique at that time as students were required to complete the Ph.D. requirements of a department of their choice in addition to the didactic requirements and toxicology research specified by the Center. The quality of this multi-departmental effort was recognized by the National Institutes of Health in 1989 with the award of a Training Grant from the National Institute for Environmental Health Sciences. This grant has been competitively renewed ever since, providing nearly 20 years of continuous funding. Graduates of MSU’s toxicology program number over 150 and can be found in academia, industry, and governmental positions.
THE MICHIGAN STATE UNIVERSITY
CENTER FOR INTEGRATIVE TOXICOLOGY

2007-2008 ANNUAL REPORT

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It is my pleasure to convey that 2007-2008 has proven to be yet another very successful year for trainees and faculty affiliated with the Center for Integrative Toxicology (CIT).

As highlighted in this annual report, of greatest importance have been the many accomplishments of our trainees as evidenced by their numerous publications in peer-reviewed journals as well as the many awards and honors received acknowledging their academic and research excellence. A critical aspect to the overall success of the graduate program in Environmental and Integrative Toxicological Sciences (EITS) can be attributed to the old adage, “success breeds success.” The EITS graduate program has been, and continues to be, recognized nationally and internationally.
as one of the premier training programs in toxicology. This reputation has helped to attract bright young people with a strong desire to pursue a career in the discipline of toxicology.

Equally important to the overall success of the CIT has been the perseverance, enthusiasm and tireless efforts of the faculty. In the face of declining research funding, our faculty have maintained, and in many cases increased, their level of extramural research support. This is a strong testament to not only the quality and innovative nature of research being conducted, but also to the remarkable collaborative efforts between faculty to tackle complex scientific problems using multidisciplinary strategies. The multidisciplinary composition of our faculty has been a major research strength of our center as well as a strong recruiting tool of new trainees to the EITS program.

The enthusiasm and excitement shared by our faculty and trainees has been contagious. During the current academic year the number of CIT affiliated faculty has continued to increase, newly recruited to MSU as well as from within the MSU ranks. We welcome our new center faculty, which include Andrea Amalfitano, D.O., Ph.D. (Microbiology and Molecular Genetics), A. Daniel Jones, Ph.D. (Department of Biochemistry and Molecular Biology and Department of Chemistry); Hui Li, Ph.D. (Crop and Soil Sciences); Laura McCabe, Ph.D. (Department of Physiology and Department of Radiology); Cheryl Murphy, Ph.D. (Department of Fisheries and Wildlife) and Chengfeng Yang, Ph.D. (Department of Physiology). Likewise, recruitment of new trainees from the sixteen cooperating departments and programs has allowed us to maintain a vibrant graduate program offering these trainees an opportunity for a dual degree in their primary discipline and in Environmental and Integrative Toxicological Sciences.

We look forward to the coming year with all the challenges and opportunities it will bring.

With thanks for your continued interest and support,

Norbert E. Kaminski, Ph.D., CIT Director
From welcoming one new faculty member and six newly affiliated faculty members to helping students capture prestigious awards, from facilitating distinguished toxicology scholar lectures to hosting an international dioxin-related workshop, the CIT has had a productive academic year. The year’s highlights showcase the accomplishments of not only the center, but also of the faculty and trainees involved in continuing to expand the quality and leadership of Michigan State University in academic toxicology.
The MSU Center for Integrative Toxicology was highly visible at the 2008 Society of Toxicology (SOT) Annual Meeting with over 50 abstracts presented and numerous special honors.

The SOT meeting is the largest toxicology meeting in the world, attracting approximately 6,200 scientists from industry, academia, and government. This year's event was held in Seattle, Washington.

The following students in the MSU-CIT's Environmental and Integrative Toxicological Sciences (EITS) training program received awards or honors:

- **Xiaomin Deng**, working in the lab of Robert Roth, received a travel award.
- **Christine Dugan**, working in Patricia Ganey's lab, received a travel award from the Toxicologic and Exploratory Pathology Specialty Section as well as a travel award from the MSU Council of Graduate Students.
- **Anna Kopec**, who works in Timothy Zacharewski's lab, had a publication featured on the cover of the Toxicological Sciences Journal, the official journal of the Society of Toxicology. This was Kopec's first publication.
- **Haitian Lu**, working in the lab of Norb Kaminski, received the Colgate-Palmolive Research Fellowship, designed to promote training in alternative non-animal research. He will train in the lab of Russell Thomas at the Hamner Institutes for Health Sciences. Thomas is one of the investigators working in the CIT's Superfund Basic Research Program. Lu also received the best presentation by a student award from the Immunotoxicology Specialty Section.
- **Jennifer Phillips**, working in the lab of Jay Goodman, received a poster award from the Regulatory and Safety Evaluation Specialty Section.
- **Pat Shaw**, who works in the lab of Robert Roth, received a travel award and First Place for his graduate student presentation from the Comparative and Veterinary Specialty Section. The award included a $500 prize and a plaque.
- **Erica Sparkenbaugh**, working in Robert Roth's Lab, received a travel award.
- **Wei Zou**, working in the lab of Robert Roth, received a travel award and Second Place for his graduate student presentation from the Comparative and Veterinary Specialty Section.

Eighteen students received travel support to attend and present at the meeting through the MSU Graduate Office Fellowship Funding or EITS Program Support.

Several MSU Summer Undergraduate Research Fellows also received travel awards.

In addition, two MSU scientists were honored with first place awards at the Fall 2007 Regional Meeting of the Michigan Society of Toxicology.

- **Patrick Shaw**, working in the lab of Robert Roth, was the first place graduate student for his poster presentation.
- **Pavel Babica**, working in Brad Upham's lab, received the post-doctoral/research assistant first place award.

At the multi-society, scientific Experimental Biology 2008 Annual Meeting, two trainees working in the lab of Robert Roth, **Patrick Shaw and Xiaomin Deng**, received best paper awards.

MSU-CIT Trainee, Haitian Lu, received the prestigious Colgate-Palmolive Research Fellowship at the 2008 Society of Toxicology Meeting.
Jay Goodman received the 2007 George H. Scott memorial award.

**GOODMAN HONORED BY TOXICOLOGY FORUM**

Jay I. Goodman, MSU-CIT faculty affiliate and professor of pharmacology and toxicology was the 2007 recipient of the George H. Scott Memorial Award from The Toxicology Forum, a leading international toxicology organization.

The award honors an individual in the field of toxicology who has demonstrated an outstanding role in developing and applying the science of toxicology. Goodman was cited for being an exceptional leader in toxicology for the past three decades. He was lauded for major contributions to the areas of mechanistic toxicology and carcinogenesis, especially his research in methylation and epigenetic/nongenotoxic carcinogenesis which have been highly cited and make him a frequently invited speaker at national and international conferences.

Goodman was also recognized for his service to the toxicology profession, including his role as a past president of the Society of Toxicology. In addition, his dedication as a mentor and teacher was cited, noting that many of his graduate students have gone on to prominent roles in academic and corporate toxicology.

**FACULTY AND TRAINEE NOTABLES**

- Leslie Bourquin was a Fulbright Research Scholar-Nord-Pas de Calais Scholar conducting research on food safety risk governance at Ecole Polytechnique Universitaire de Lille in France.
- Susan Ewart was named associate dean for research and graduate studies in the College of Veterinary Medicine.
- Patricia Ganey was recently elected to serve as councilor to the Society of Toxicology.
- Colleen Hegg received the American Physiology Society Shih-Chun Wang Young Investigator Award at the April Experimental Biology meeting.
- Norbert Kaminski received the Distinguished Service Award from the Society on NeuroImmune Pharmacology at their April 2008 Annual Meeting.
- David Long became a Geological Society of America fellow.
- Nigel Paneth was an invited speaker at the Surgeon General’s Conference on the Prevention of Preterm Birth.
- Robert Roth was named chair of the Awards Committee for the Society of Toxicology.
- James Wagner was recognized for his service as outgoing councilor for the Inhalation and Respiratory Specialty Section of the Society of Toxicology.
Superfund Workshop on Dioxins, NAS and WHO

The MSU-CIT Superfund Program held a one-day conference in the fall of 2007 to review and exchange ideas concerning dioxin and dioxin-like compounds. National and international experts gave keynote presentations to over 100 scientists from academia, government and industry.

The workshop focused on reviewing the findings and conclusions reached by the National Academy of Science Study on the Environmental Protection Agency’s reassessment of dioxin as well as the World Health Organization Committee on Toxic Equivalency Factors for dioxin-like compounds.

Accordingly, the speakers included key representatives from the NAS, WHO and EPA.

The presenters included:
• David Eaton, Ph.D., University of Washington
• Martin Van den Berg, Ph.D., Utrecht University
• Chiharu Tohyama, Ph.D., The University of Tokyo
• Michael DeVito, Ph.D., US Environmental Protection Agency
• David Garabrant, M.D., M.P.H., University of Michigan

Hosted by the Research Translation Core of the MSU Superfund Program, the event was supported by the CIT-administered Superfund Basic Research Program.

The proceedings were recorded and are available on the CIT website at http://www.cit.msu.edu.

Distinguished Scholars in Toxicology Lectures

The MSU-CIT sponsored the second annual Distinguished Scholars in Toxicology Lecture Series, bringing individuals to the MSU campus who have made substantial contributions to the discipline of toxicology.

Each year, the Department of Biochemistry and Molecular Biology participates.

This year, the Department of Biochemistry and Molecular Biology participated.

Timothy Ryan, Ph.D., Lilly Research Laboratories, lectured on “Leveraging Gene Expression Data in Pharmacology and Toxicology: Functional Genomics in Drug Discovery.”

Joel Pounds, Ph.D., Pacific Northwest National Laboratory, lectured on “Systems Toxicology of Engineered Nanomaterials.”

Both scholars had informal meetings with CIT trainees to answer career and research questions.

The lecture series is supported with funding from the MSU Graduate School.
In the fall of 2007, the MSU-CIT welcomed Chengfeng Yang to the MSU faculty. Yang accepted a joint appointment in the CIT and the Department of Physiology.

Yang has a diverse training background that spans environmental health, molecular toxicology, pharmacology, and cancer biology. He holds a M.D. and M.P.H. from Tongji Medical University in Wuhan, Hubei, China. He completed his Ph.D. in Molecular Toxicology at the National University of Singapore.

Before being recruited to MSU, Yang completed postdoctoral training in the Department of Environmental Medicine at New York University and the Department of Pharmacology at the University of Pennsylvania. He served as a research associate and then research assistant professor at the University of Pennsylvania before accepting the MSU position.

His research interests include chemical carcinogenesis, breast cancer biology, and cancer chemoprevention. He is currently focusing on tyrosine kinase signal transduction leading to the development and progression of human cancer. He also works to identify natural compounds for cancer prevention and therapeutic sensitization.

Newly-affiliated

Over the past year, the MSU-CIT added the following six faculty members to its list of affiliates. CIT Director Norb Kaminski noted “These faculty join the CIT as research collaborators as well as contributors to the Environmental and Integrative Toxicological Sciences Training Program.”

A. Daniel Jones
Professor, Chemistry, and Biochemistry and Molecular Biology

Jones’s research interests lie in improving mass spectrometry and separation strategies and applying them to perform global profiling of metabolites. This

Andrea Amalfitano
Professor, Pediatrics, and Microbiology and Molecular Genetics; Osteopathic Heritage Foundation Endowed Chair

Amalfitano’s recent work has begun to identify key components of the multi-faceted innate immune system, guiding future efforts to subvert these systems to allow for safer gene transfer. Many of these same systems are also involved in toxic responses to other pathogens as well as to other medicinal or environmental agents. He is working to develop vector technologies and address the toxicities associated with gene transfer, for use in a variety of clinically important situations.

Chengfeng Yang has joined the CIT, working in the research areas of chemical carcinogenesis and breast cancer biology.
approach, known as metabolomics, probes the influence of genetics and the environment on rates of biosynthesis and degradation of metabolites. The information in the metabolome can be used as biomarkers of stress, toxicity, and disease.

Hui Li
**Assistant Professor, Crop and Soil Sciences**
An environmental soil chemist, Li's research has an emphasis on investigating the environmental physicochemical processes and ecological impacts of organic contaminants containing complex structures. He studies the environmental fate, transport and effects of emerging contaminants to develop agricultural practices that reduce negative effects on land and water.

Laura R. McCabe
**Professor, Physiology, and Radiology**
McCabe's research interests are focused on identifying mechanisms regulating bone formation by osteoblasts. Her laboratory employs a wide variety of approaches including the examination of transcription factor activity and intracellular signaling pathway activation. She also utilizes stem cell lineage selection, apoptosis, metabolism, as well as immune system contributions utilizing cell culture systems, animal models, and human imaging, to study mechanisms regulating bone formation.

Cheryl A. Murphy
**Assistant Professor, Fisheries and Wildlife**
Using fish as a model organism, Murphy is working to synthesize information collected on individuals and use this information to answer questions at a higher level of organization such as how anthropogenic influences affect populations or communities of fish. Her goal is to bridge laboratory work with field sampling and modeling to address issues in environmental toxicology.

Michael R. Woolhiser
also joined the CIT as an adjunct professor. Woolhiser is a specialist with the Dow Chemical Company.

“These faculty join the CIT as research collaborators as well as contributors to the Environmental and Integrative Toxicological Sciences Training Program.”
- Norbert Kaminski, CIT Director
One measure of achievement is the number of articles CIT-affiliated faculty published in peer-reviewed journals. During the 2007-2008 academic year, the CIT faculty affiliates published nearly 150 peer-reviewed articles. As a result, MSU research has been highly visible in prominent journals such as Toxicological Sciences, the official journal of the Society of Toxicology; NeuroToxicology, an internationally-renowned scientific journal; the Journal of Pharmacology and Experimental Therapeutics, published by the American Society of Pharmacology and Experimental Therapeutics; and the Journal of the American Veterinary Medicine Association; as well as in many other significant journals. The following list highlights the 2007-2008 faculty publications.
Andrea Amalfitano


William Atchison


Mancini JD, Atchison WD. The NR2B subunit in NMDA receptors is functionally important during cerebellar granule cell migration. Neurosci Lett. 2007 Dec 18;429(2-3):87-90.

Alison Bauer


Leslie Bourquin


Stephen Boyd


The Goudreau Lab’s research is focused on genetic and environmental factors involved in the pathogenesis of neurodegenerative disorders such as Parkinson’s Disease.


Daniel Bronstein


Steven Bursian


Patricia Ganey


John Goudreau


The Harkema Lab works to understand the cellular and molecular mechanisms involved in the pathogenesis of airway injury caused by the inhalation of airborne pollutants.


Robert Hollingworth

A. Daniel Jones


Norbert Kaminski

John Kaneene
Fitzgerald SD, Reed WM, Kaneene JB. North American veterinary pathology residency training programs: an overview of where they are today and where they were five years ago, with an analysis of trends. J Vet Med Educ. 2007 Fall;34(4):458-63.


David Long

Jane Maddox

Veronica Maher

Using fish as a model organism, the Murphy lab strives to synthesize information to answer questions such as how contaminants impact populations of fish.
The Pestka Research Group studies the immunological effects of environmental chemicals and dietary constituents. They focus on the harmful autoimmune and immunosuppressive effects of microbial toxins produced by molds such as vomitoxin, and by bacteria such as endotoxin, as well as the satratoxins.

Cheryl Murphy

Nigel Paneth

James Pestka

N. Edward Robinson


Kenneth Rosenman


Rosenman KD. Are work-related conditions less common or were their definitions changed? Occup Environ Med. 2007 Jul;64(7):429-30.

Robert Roth


James Sikarskie

Lavoie ET, Wiley F, Grasman KA, Tillitt DE, Sikarskie JG, Bowerman WW. Effect of In Ovo exposure to an organochlorine mixture extracted from double crested cormorant eggs (Phalacrocorax auritus) and PCB 126 on immune function of juvenile chickens. Arch Environ Contam Toxicol. 2007 Nov;53(4):655-61.

Greg Swain

Current research projects in the Upham Lab involve determining the cellular mechanisms by which nutrition, oxidative stress, and environmental and food borne contaminants affect cell proliferative, differentiation, and apoptotic processes that ultimately cumulates into states of human diseases such as cancer.

Park J, Galligan JJ, Fink GD, Swain GM. Differences in sympathetic neuroeffector transmission to rat mesenteric arteries and veins as probed by in vitro continuous amperometry and video imaging. J Physiol. 2007 Nov 1;584(Pt 3):819-34.

James Tiedje

James Tiedje

James Tiedje

James Tiedje

James Tiedje


Brace Uhal


The CIT and its affiliated faculty maintained a longstanding tradition of obtaining substantial external funding for research with nearly $19 million accepted by the MSU Board of Trustees during the past fiscal year. The National Institutes of Health and the Public Health Service were a major funding source along with numerous other federal and state government agencies, corporations, and universities. The majority of the amounts listed here represent just one year in a multi-year award cycle, ensuring that a high-level of funding for toxicology will continue for the foreseeable future.
Andrea Amalfitano:
- $64,230, Rapid Translation of a Novel and Potent Vaccine in Her2 Plus Metastatic Breast Cancer Patients, Duke University
- $177,709, Immunotherapy with High Frequency, CEA Specific T Cells, Duke University

William Atchison:
- $183,276, Potential Contribution of Environmental Metals to ALS, National Institutes of Health/Public Health Service
- $65,979, Murine Models of Presynaptic Neuromuscular Disease, National Institutes of Health/Public Health Service

Alison Bauer:
- $106,129, The Role of Toll-Like Receptor 4 in 03-induced Lung Inflammation and Injury, National Institutes of Health/Public Health Service

Steven Bursian:
- $183,300, Assessment of Furan Toxicity in Developing Avian Specie, Entrix Inc.
- $20,000, Research on Nutrition, Toxicology, Behavior and Management of Mink, Mink Farmers Research Foundation
- Bursian and Matthew Zwierink: $60,400, Relative Potency of Select Dibenzofurans in a Mammalian Model, Entrix Inc.

Susan Ewart:
- $355,632, Genetic and Epigenetic Cohort Study of Asthma and Allergy, National Institutes of Health/Public Health Service
- $14,652, Epidemiology of Asthma: Risk and Prognosis in a Cohort from Birth to Adolescence, David Hide Asthma & Allergy Research Center

Patricia Ganey:
- Ganey and Timothy Zacharewski: $357,938, Gene Expression in Drug-Inflammation Models as Predictive of Idiosyncratic ADRS, National Institutes of Health/Public Health Service

John Goudreau:
- $30,609, Parkin and Differential Susceptibility of Dopamine Neurons in Parkinson's Disease, National Institutes of Health/Public Health Service
- $17,602, Randomized, Double-Blind, Active (Pramipexole 0.5 Mg TID) and Placebo Controlled, Efficacy Study of Pramipexole Given, University of Rochester; $4,994, Solvay Pharmaceuticals, Inc.; $3,884 Teva Neuroscience
- $2,593, An Open Label SLV308 Safety Extension to Study Experiencing Motor, Solvay Pharmaceuticals Inc.
- $26,926, Randomized, Double-Blind, Active (Pramipexole 0.5 Mg TID) and Placebo Controlled, Efficacy Study of Pramipexole Given, University of Rochester
- $17,777, A Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel Group Study of SLv308 as Adjunct Therapy to, Solvay Pharmaceuticals Inc.
- $39,818, A Multicenter, Double-Blind, Randomized Start, Placebo-Controlled, Parallel-Group Study to Assess Rasagiline, Teva Neuroscience Inc.
- Goudreau, Glen Ackerman, and Alla Sikorski: $72,124; MSU Parkinson Disease Clinical Center, National Institutes of Health
- Goudreau, Keith Lookingland and Howard Tien Haw Chang: $24,794, Development and Perfection of an Animal Model to Study Restless Legs Syndrome (RLS), GlaxoSmithKline
Jack Harkema:
- $7,425, Microscopic Examination of Neoplastic and Nonneoplastic Lesions in Nasal Airways of Rodents Exposed to Vinyl Acetate, Vinyl Acetate Council
- $42,621, Microscopic Examination of Neoplastic and Nonneoplastic Lesions in Nasal Airways of Rodents Exposed to Vinyl Acetate, Vinyl Acetate Council
- $144,297, The Role of Oxidative Stress in the Susceptibility to PM-Induced Adverse Health Effects, University of California

Colleen Hegg:
- $442,164, Injury - Evoked Regeneration Mechanism in Olfactory System, National Institutes of Health/Public Health Service

Robert Hollingworth:
- Hollingworth, Satoru Miyazaki, Wayne Jiang, and Zhongxiao Chen: $1,450,000, Interregional Research Project No 4 Minor Crop Pest Management Program for the North Central Region, US Department of Agriculture
- Hollingworth and Satoru Miyazaki: $82,571, IR-4 Field Research, Rutgers, the State University
- Hollingworth and Zhongxiao Chen: $9,300, Interregional Research Project No 44 (Quality Assurance and Research Activities), Rutgers, the State University
- $10,000, Herbicides for Minor Use Food Crops, US Department of Agriculture

Norbert Kaminski:
- $305,896, Impairment of B Cell Differentiation by TCDD, National Institutes of Health/Public Health Service
- $3,500, Gene Microarray Analysis of TCDD Effects on Ex Vivo Activated Human Peripheral Blood B Lymphocytes, Society of Toxicology
- $166,440, A Characterization of Species-Dependent Sensitivity of B Cell Function to Modulation by 2,3,7,8- Tetrachlorodibenzo, Dow Chemical Company
- $3,033,899, Environmental, Microbial, and Mammalian Biomolecular Responses to AHR Ligands, National Institutes of Health/Public Health Service

John Kaneene:

John LaPres:
- $320,875, Hypoxia and an Epigenetic Mechanism for Toxicity, National Institutes of Health/Public Health Service
Outreach

Hui Li:
- Li, Brian Teppen, and James Tiedje: $367,000, Geochemical Controls on the Expression of Bacterial Antibiotic Resistance in Soil Minerals, US Department of Agriculture

Laura McCabe:
- McCabe and Vincent Young: $429,000, Mechanisms of IBD Suppression of Skeletal Growth and Mineral Density, Crohns & Colitis Foundation
- McCabe and Jill Slade: $100,000, Mechanisms of Type 1 Diabetes Induced Osteoporosis--the Role of Marrow Adiposity and WNTS, American Diabetes Association

Thomas Mullaney:
- $18,363, Classical Swine Fever Surveillance, US Department of Agriculture

L. Karl Olson:
- $49,997, Lipid Metabolism and B Cell Dysfunction, American Diabetes Foundation

Nigel Paneth:
- $99,224, Developing a Communication Classification System of CP, National Institutes of Health/Public Health Service
- Paneth, Mohammad Rahbar, and Said Omar: $75,500, Oxygen and Phototherapy in the Perinatal Period Risk of Acute Lymphoctic Leukemia, National Institutes of Health/Public Health Service
- Paneth and Ali Artaman: $20,000, Acute Lymphoblastic Leukemia and Perinatal Exposure to Oxygen and Phototherapy, Children’s Leukemia Research Association
- Paneth, Naomi Breslau, Claudia Holzman, and Stephen Lovejoy: $1,700,479, Michigan Alliance for National Children’s Study (MANCS), National Institutes of Health/Public Health Service
- Paneth and Mohammad Rahbar: $43,593, Phase 1 Study of Thyroid Hormone in Prematures, New York Medical College
- Paneth and Herbert Davies: $340,916, Training Program in Perinatal Epidemiology, National Institutes of Health/Public Health Service

James Pestka:
- $317,782, Mechanisms of Trichothecene Toxicity, National Institutes of Health/Public Health Service
- $93,991, Human Susceptibility to Trichothecene Mycotoxins, US Department of Agriculture
- $237,783, Dietary Lipids and Experimental IGA Nephropathy, National Institutes of Health/Public Health Service

N. Edward Robinson:
- $18,055, Dose Range Finding Study of R-Albuterol (R-Salbutamol) in Horses with Heaves (RAO), Stirling Products Ltd.
- $42,935, Proof of Concept Study: Efficacy of Fluticasone Propionate for the Treatment of Horses with Heaves, Stirling Products Ltd.

Kenneth Rosenman:
- $866,831, Enhanced Program in Occupational Injury and Illness Surveillance, Centers for Disease Control/Public Health Service
- $60,945, Sudden Cardiac Death Review, Michigan Department Community Health
- $50,000, Statewide Asthma Mortality Review, Michigan Department Community Health
- $10,800, Fatality Assessment and Control Evaluation (FACE), Michigan Farm Bureau

Thomas Pinnavaia:
- Pinnavaia, Jetze Tepe and John LaPres: $226,805, New Methods in Phosphoproteomic, National Institutes of Health/Public Health Service
- Pinnavaia, Jetze Tepe and John LaPres: $226,805, New Methods in Phosphoproteomic, National Institutes of Health/Public Health Service
- Paneth, Mohammad Rahbar, and Said Omar: $75,500, Oxygen and Phototherapy in the Perinatal Period Risk of Acute Lymphoctic Leukemia, National Institutes of Health/Public Health Service
- Paneth and Ali Artaman: $20,000, Acute Lymphoblastic Leukemia and Perinatal Exposure to Oxygen and Phototherapy, Children’s Leukemia Research Association
Training

- $21,150, Clinic Data Base and Exposure Code System Updates, Association of Occupational & Environment Clinics
- $21,686, ABLES, Centers for Disease Control/Public Health Service

Robert Roth:
- Roth, Patricia Ganey, and John LaPres: $317,058, Neutrophils and Hepatotoxicity, National Institutes of Health/Public Health Service

James Sikarskie:
- $110,070, Bald Eagle Biosentinel Monitoring of Inland Watersheds and Great Lakes Shorelines, Michigan Department of Environmental Quality

Greg Swain:
- $135,094, Sympathetic Neural Control Mechanisms in Hypertension, National Institutes of Health/Public Health Service

- $312,833, Fuel Cell Electrodes, UTC Power Coporation

James Tiedje:
- Tiedje and Terence Marsh: $502,641, Metagenomics-Enabled Understanding of the Functions and Activities of Microbial Communities at ERSP Field Research, US Department of Energy
- $108,000, Genes Associated with Epidemic Burkholderia Cenoceopacia, University of Michigan
- Tiedje and Terence Marsh: $395,536, Metagenomics-Enabled Understanding of the Functions and Activities of Microbial Communities at ERSP Field Research, US Department of Energy
- Tiedje and Konstantinos Konstantinidis: $227,629, Genomic Approaches to Advance the Species Definition of Prokaryotes, National Science Foundation
- Tiedje, James Cole, and George Garrity: $350,283, The Ribosomal Database Project, Automation, Integration and Education, US Department of Energy; $150,000, National Science Foundation

Bruce Uhal:
- $212,629, Control of Type II Pneumocyte Proliferation, Public Health Service

Brad Upham:
- Upham and James Trosko: $5,442, Epigenetic Toxicity of Polycyclicaromatic Hydrocarbons, National Institutes of Health/Public Health Service
- $348,226, Epigenetic Toxicity of Polycyclicaromatic Hydrocarbons, National Institutes of Health/Public Health Service

Thomas Voice:
- Voice and David Long: $23,750, Training and Research in Environmental Health in the Balkans, Fogarty International Center, National Institutes of Health/Public Health Service

James Wagner:
- Wagner and Jack Harkema: $280,362, Preclinical Evaluation of Cam Therapies for Asthma (Project 2), University of North Carolina

Timothy Zacharewski:
- Zacharewski, Chia-Cheng Chang, Christina Chan, and Jack Harkema: $357,938, Human Stem Cells for Toxicity Screening, National Institutes of Health/Public Health Service
- Zacharewski and Jack Harkema: $543,226, Metabolomic Assessment of Estrogenic Endocrine Disruptors, National Institutes of Health/Public Health Service
- $35,000, General Research, Dow Chemical Company
Andrea Amalfitano
- Editorial Board, Gene Therapy
- Editorial Advisory Board, Current Gene Therapy
- External Advisory Board, National Gene Vector Biorepository
- Member, American Society of Gene Therapy, Committee on Gene Therapy for Genetic/Metabolic Diseases
- Governor Appointed Member, State of Michigan Newborn Screening Advisory Panel
- Study Section Ad Hoc Panel Member, Gene Therapy and Inborn Errors of Metabolism (GTIE), NIH
- Reviewer, National Institutes of Health/NIDDK ZDK1 GRB-S (01): Special Emphasis Panel, invited expert reviewer of Molecular Therapy Core Center grant applicants
- Ad Hoc Scientific Reviewer, Glycogen Storage Disease Assoc.
- Ad Hoc Scientific Reviewer, Muscular Dystrophy Association
- Grants Advisory Panel, Blue Cross and Blue Shield of Michigan Foundation
- Invited Consultant and Council Member, Gerson Lehrman Group
- Scientific Consultant, Etubics Corporation, Seattle, WA
- Scientific Advisory Board Chairman, Etubics Corporation, Seattle, WA
- Data Safety Monitoring Board Member, Ark Therapeutics, Ltd, Trinam™
- Pompe and Lysosomal Disease Scientific Advisor, Genzyme Corporation

Patricia E. Ganey
- Editorial Board, Journal of Pharmacology and Experimental Therapeutics
- Editorial Board, Journal of Toxicology and Environmental Health
- Editor, for a volume on “Hepatic Toxicology” for the upcoming, multivolume text “Comprehensive Toxicology”
- Member, Report on Carcinogen (RoC) Aristolochic Acid Related Compounds/Riddelline Expert Panel
- Grant Application Reviewer, NIH Rapid Access to Interventional Development
- Grant Reviewer, Michigan Agricultural Experimental Station
- Councilor, Society of Toxicology

Jay I. Goodman
- Editorial Board, Toxicology
- Member, Board of Scientific Councilors, National Institute of Environmental Health Sciences
- Board of Trustees Member, ILSI Health and Environmental Sciences Institute (HESI)

Colleen Cosgrove Hegg
- Member, Women in Physiology Committee, American Physiological Society
- Member, CNS Section Steering Committee, American Physiological Society
- Member, Finance Committee, Association for Chemoreception Sciences
- Review Panelist, Caroline tum Suden/Francis Hellebrandt Professional Opportunity Awards
- Review Panelist, Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Award
- Symposium Co-Chair, “Gainfully Employed: From Launching a Job Search to Navigating Negotiations,” sponsored by the American Physiological Society at Experimental Biology
- Mentor, MentorNet, E-mentoring Network for Diversity in Engineering and Science

Daniel A. Bronstein
- Liaison, International Association for Impact Assessment to Section K of The American Association for the Advancement of Science (AAAS)
- Ex Officio Member, Council of Section K of AAAS

Steven J. Bursian
- Editorial Board, Chemosphere
- Editorial Board, Bulletin of Environmental Contamination and Toxicology
- Member, Health Advisory Board of NSF International

Susan L. Ewart
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ACADEMIC DEPARTMENTS/
DISCIPLINARY PH.D. PROGRAMS:
(Participate in the CIT’s Environmental and Integrative Toxicological Sciences graduate program.)

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• Biochemistry and Molecular Biology
• Cell and Molecular Biology
• Chemistry
• Civil and Environmental Engineering
• Comparative Medicine & Integrative Biology
• Crop and Soil Science
• Fisheries and Wildlife
• Food Science and Human Nutrition
• Forestry
• Genetics
• Geological Sciences
• Microbiology and Molecular Genetics
• Pathobiology and Diagnostic Investigation
• Pharmacology and Toxicology
• Zoology

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