

Student Accomplishments for 2010 - 2011

On-Campus Research – MUSE Program, Summer 2010

Camille Deering and Michael Wang

Mentor: Dr. Luke Butler

Feather Replacement and Feather Quality in Carolina Chickadees of the Northern Pine Barrens

Samantha Conte and Laurie Delatour

Mentor: Dr. Jeffery Erickson

Exploration of the Pet-1 Mouse as an Animal Model for Sudden Infant Death Syndrome (SIDS)

Colin Gold and Julia Kim

Mentor: Dr. Darrell Killian

The Genetic Regulation of Cell Death Specification in *Caenorhabditis elegans*: tra-5 and sm138

Daniel Mitchell

Mentor: Dr. Tracy Kress

Investigating the Coordination of Multiple Steps in Gene Expression: The Functions of Npl3's Domains

Christine Scaduto

Mentor: Dr. Tracy Kress

Investigating the Coordination of Multiple Steps in Gene Expression: The Role of Snu66

Teresa Askander, Danny Markowski, and Joe Sarhan

Mentor: Dr. Donald Lovett

1) Gene Expression Modulation in Blue Crabs in Response to Changes in Seawater Salinity.

2) Modification of the Na⁺, K⁺ -ATPase Enzyme Protein in Blue Crabs Exposed to Changes in Seawater Salinity

Rawinder Parmar

Mentor: Dr. Janet Morrison

Genetic Variation in Populations of Wild Plant Pathogens

Sharon Bushi and Sarah DeGenova

Mentor: Dr. Sudhir Nayak

Regulation of the GLD-1 Germ Line Tumor Suppressor in *Caenorhabditis elegans* (*C. elegans*)

Michael Poulouse and Maunil Sheth

Mentor: Dr. Marcia O'Connell

An Analysis of the Zebrafish Squid-like Genes in Zebrafish: Roles and Regulation

Kelly Salmon

Mentor: Dr. Leeann Thornton

Genetic and Biochemical Analysis of Cytochrome P450 Protein that Regulate Plant Growth

Kaitlyn Schiels and Greg Way

Mentor: Dr. Matthew Wund

Stickleback Fish Evolution

Off-Campus Summer Research (Bio 399) Internships, Summer 2010

(Poster Presentations: Dec 1, 2010)

Kamil M. Amer

University of Medicine and Dentistry of New Jersey, Dept. of Pathology, Piscataway, NJ

"Establishing Cell Polarity through Regulation of Actin Polymerization: Mapping of a Novel gex Gene in C.elegans"

Varun Bajaj

New Jersey Medical School, Newark, NJ

"Increased Packing Volumes of Endovascular-Treated Intracranial Aneurysms Correlates with Reduced Aneurysm Recurrence"

Kevin Chen*

University of California at Davis, Department of Physics, Davis, CA

"A Demonstration by Oblique Incidence Reflectivity Difference (OI-RD) Ellipsometry"

Rose Filoramo

Rutgers University, Department of Environmental Science, Cook Campus, New Brunswick, NJ

"Isolation of Bacteria Able to Degrade the Antimicrobial Agent Triclosan"

Alec Good

Fralin Institute of Biotechnology, Virginia Tech University, Blacksburg, VA

"The Isolation and Characterization of IscX, an Iron-Sulfur Protein Located on the Terminus of the [Isc] operon"

Heejin Kim*

University of Medicine and Dentistry of NJ, Department of Pharmacology and Physiology, Newark, NJ

"Identification of an Alternate Signaling Pathway that Triggers Pathologic Changes in Isolated Rod Cells of the Salamander Retina"

Lauren J. Klein

School for Field Studies, Center for Wildlife Management Studies, Kimana, Kenya

"Evaluation of the Impact of the Kimana Water Project on the Kimana Group Ranch"

Rupal Parikh

Robert Wood Johnson Medical School, Department of Biochemistry, Piscataway, NJ

"Expression of the Pro-apoptotic Protein, NBK/BIK, using the cSPP System for NMR Structural Studies"

Viraj Patel

New Jersey Medical School, Department of Neurosurgery, Newark, NJ

"Volume Expansion in Intracranial Arterio-venous Malformations (AVMs) Treated with the Embolic Agent Onyx"

Ann Mary Philip

Beth Israel Deaconess Medical Center, Department of Allergies and Immunology, Boston, MA

"Effects of Complement on Red Blood Cell Functions"

Anita Rao

Nat'l Institutes of Health, Div. of Alcohol Abuse and Alcoholism, Laboratory of Neurogenetics, Rockville, MD

"Measuring Differential Gene Expression Changes in Response to Ethanol in the Rat Brain and Human Peripheral Blood"

Mazhgan Rowneki

University of Medicine and Dentistry of New Jersey, Department of Oral Biology, Newark, NJ

"A Bioassay for Detecting the Minimum Concentration of Aggregatibacter Leukotoxin in Plasma"

Christina Sarris*

New Jersey Medical School, Dept of Neurosciences and Neurology & Department of Pediatrics, Newark, NJ

"Prevalence of Sleep Disorders in Children with Neurological Disorders, including Autism, ADHD, Epilepsy, and Cerebral Palsy"

Maulik Shah

New Jersey Medical School, Computational Cerebrovascular Lab, Department of Neurological Science and
Department of Radiology, Newark, NJ

"Derived Biomorphometric Criteria can Predict Aneurysm Rupture Status: A CT Angiographic Analysis"

Meghna Shah

Princeton University, Department of Mechanical and Aerospace Engineering, Princeton, NJ

"The Effects of Blood Bank Storage on Human Red Blood Cell Viability"

Niva Shah

Veterans Affairs Medical Center, Neurobehavioral Animal Lab, East Orange, NJ

"Demonstration of the Importance of the Medial Septum and Diagonal Band (MSDB) Region for Spatial Learning and Memory in Rats"

Ravi Shah

New Jersey Medical School, Department of Microbiology & Molecular Genetics, Newark, NJ

"Generation of Plasmodium berghei Strains Causing Malaria-like Symptoms in Rodents for the Study of High-Frequency Conditional Mutagenesis"

Victoria Shim

Veterans Affairs Health Care System, East Orange, NJ

"Modeling Symptoms of Anxiety Disorders Using Avoidance Learning in Rats with a Compromised Medial Prefrontal Cortex (mPFC)"

Jillian R. Stark

Center for Rainforest Studies, The School for Field Studies, Yungaburra, Queensland, Australia
"Shifts in the Distribution of the Scrub Python (*Morelia kinghorni*) and its Prey in a Changing Climate"

Thayer Nasereddin

New Jersey Medical School, Department of Microbiology and Molecular Genetics, Newark, NJ
"Assessment of Bioluminescent of Lyme Disease Spirochetes of *Borrelia burgdorferi* as Biosensors for Antimicrobials and the Establishment of Endogenous Plasmid Profiles"

Edward Yu

Academia Sinica National Genotyping Center, Taipei, Taiwan
"Expression of the *Zdhhc131* Gene Mutation in Patients with Osteoporosis"

* Denotes Research to be presented in April, 2011 at the TCNJ Celebration of Student Achievement.

On-campus research: Academic year, 2010-2011

Chika Akparanta

Mentor: J. Morrison

"Competition and simulated herbivory in two co-invasive, non-native plants of the mid-Atlantic forest: garlic mustard and Japanese stilt-grass"

Maryse Arteficio

Mentor: L. Butler

Blood sampling technique and underestimation of corticosterone levels: A study in free-living Carolina chickadees

Anuschka Bhatia, Christine Akparanta, Han Le

Mentor: J. Bricker

"Diatom DNA extraction as a method of pollution detection"

Kirsten Calica, Leanne Haroun, Arslan Kahn, Amtul Mansoor

Mentor: J. Bricker

"Study of population genetics of *Elaphe guttata* with DNA analysis"

Kevin Chen

Mentor: S. Klug

"Advancing label-free microarray immunoassays with protein capture of antibodies"

Melissa Coluccio, Rose Filoramo, Navya Konuru

Mentor: C. Elderkin

"Comparative analysis of population structure in *Elliptio complanata* from the Delaware and Susquehanna rivers"

Camille Deering

Mentor: K. Pecor

"Diversity, microhabitat features, and capture methodology of rainforest skinks"

Sarah DeGenova

Mentor: S. Nayak

"Analysis of GLD-1:SEL-10 interactions within the germ line of *Caenorhabditis elegans*"

Laurie Delatour

Mentor: J. Erickson

"The effects of prenatal nicotine exposure on postnatal breathing behavior in 5-HT-deficient Pet-1 knockout mice: Exploring a potential link to SIDS"

Recipient of a Phi Kappa Phi Student-Faculty Research Award

Isha Desai Mentor: M. O'Connell
"Analysis of dorsal and ventral patterning in *Danio rerio* (zebrafish) via in situ hybridization"

Christina Fang Mentor: S. Klug
"Enhancing T cell culture systems through modification of stimulatory substrate rigidity"

Christina Fang Mentor: S. Nayak
"Phenotypic variation in natural isolates of *C. elegans*"

Megan Fertitta Mentor: J. Morrison
"Measuring white-tailed deer pressure and density in suburban/exurban forests"

Brian Flynn Mentor: S. Klug
"Determining the genes involved in mutating nucleotides under antibiotic stress: changing nucleotides in drug target genes to emerge resistant strains"

Kinisha Gala, Ian London, Jenna Lobby Mentor: T. Kress
"Domain analysis of Npl3: Determining how this protein coordinates transcription and pre-mRNA splicing"

Ashley Geiselman, Omi Singh Mentor: M. Wund
"Investigation into rapid evolution of threespine stickleback fish (*Gasterosteus aculeatus*) in Cheney Lake"

Colin Gold, Julia Kim Mentor: D. Killian
"tra-5 regulates sex determination in *C. elegans*"

Eric Goldwaser Mentor: S. Nayak
"Optimizing screen for proto-apoptotic activity of small molecule proteasome inhibitors utilizing the germ line of *C. elegans*"

Margaret Hade Mentor: H. Reinert
"Timber rattlesnakes in colonial New Jersey and Pennsylvania"

Shelly Hsieh Mentor: M. Wund
"Sex-specific differences in anti-predator behavior in threespine stickleback fish"

Grace Huang Mentor: H. Reinert
"The impact of translocation on the spatial biology of Aruba Island rattlesnakes, *Crotalus unicolor*"

Natascha Israel Mentor: S. Klug
"How can we attract spiders to tropical restoration sites?"

Andrew Kierstead, Teresa Askander, Daniel Markowski, Ryan Meyer Mentor: D. Lovett
"Glycosylation of the α -subunit of Na⁺/K⁺-ATPase in the blue crab in response to salinity change"

Heejin Kim Mentor: S. Klug
"Effects of adenosine on pathologic changes in isolated rod cells of the salamander retina"

Amy Lam Mentor: H. Reinert
"Habitat selection of Boa constrictor and comparison to native Aruba Island rattlesnake"

Katelyn MacGillivray Mentor: H. Reinert
"The impact of the digestive state on the performance of *Nerodia rhombifer*"

Saujanya Manikonda Mentor: H. Reinert
"The spatial biology of *Boa constrictor* on the island of Aruba:
A study of movement patterns of an invasive species"

Sarah Middleton Mentor: S. Nayak
"Uncovering global constraints on proteome evolution through the generation of realistic artificial proteomes"

Daniel Mitchell, Sharma Divya, Jenna Lobby Mentor: T. Kress
"Identification of novel in vivo interactions between steps of gene expression"

Rupal Parikh Mentor: S. Klug
"The toxic effect of bacterial toxins, antitoxins, and toxin-antitoxin complexes on the mammalian cancer cell"

Michael Poulouse Mentor: M. O'Connell
"The analysis of the expression of two squid-related genes during zebrafish embryogenesis"

Joseph Raevis Mentor: S. Nayak
"A forward genetic screen: *Caenorhabditis elegans*"

Brianna Reilly, Mazhgan Rowneki Mentor: D. Killian
"Characterization and mapping of sm129, a mutation that affects sex specific neurons in *C. elegans* males"

Xavier Roque, Carol Badin, Samantha Bartling, Julie Pierre Mentor: K. Pecor
"The effects of exotic crayfish on arthropod community structure in a New Jersey stream"

Shilpa Samudrala Mentor: S. Klug
"The relative importance of each factor within the Spetzler-Martin grading system"

Alexandra Sarabia, Sneha Tolia Mentor: J. Morrison
"Genetic structure of the plant pathogen *Sporisorium elissii* in its host plant pathogen *Andropogon virginicus*"

Christina Sarris Mentor: S. Klug
"Molecular pathogenesis of Parkinson's Disease"

Kaitlyn Schiels Mentor: M. Wund
"Sex-specific differences in morphology in threespine stickleback"

Maunil Sheth Mentor: M. O'Connell
"The expressional analysis of the maternally inherited zorba transcripts during zebrafish embryogenesis"

Ashley Silakoski Mentor: A. Norvell
"Sqd acts as a translational repressor: Evidence from Sqdspn-F double mutants"

Paul Soon Mentor: L. Thornton
"Optimization of expression for biochemical analysis of CYP72A15 from *Arabidopsis thaliana*"

Ethan Sooy, Aron Moazamian Mentor: D. Killian
"Genetic analysis of rrb-1, a candidate RB/E2F target gene in *C. elegans*"

Melissa Toledo Mentor: J. Erickson
"Serotonergic innervation of the Pre-Bötzinger Complex in the Pet-1 mutant mouse: a 5-HT/NKR1 double immune-histochemical study"

Sneha Tolia, Alexandra Sarabia Mentor: D. Shevlin
"Detecting genetic variation in *Andropogon virginicus*"

Gregory Way Mentor: M. Wund
"Exploring shy-bold behavioral syndromes in lab-reared threespine stickleback fish (*Gasterosteus aculeatus*)"

Sandi Wilkenfeld Mentor: L. Butler
"Comparing mass- and length-based estimates of feather growth rate in a small-bodied bird"

Zachary Zappala Mentor: L. Thornton
"Structure and function analysis of the CYP72A13 enzyme from *Arabidopsis thaliana*"

Catherine Zymaris Mentor: J. Morrison
"Herbivory and disease symptoms in non-native, invasive plants co-occurring in the deciduous forest herb layer"

RECIPIENTS of the BIOLOGY SENIOR AWARDS for 2011:

The Becton-Dickinson Award for Excellence in Biology
Sarah DeGenova Nicholas Tarangelo, Honorable Mention

The Biology Excellence Award in Secondary Education
Shari Degenshein

The 22nd Annual Bristol-Myers Squibb Award for Excellence in Biology
Daniel DeMizio Simona Lekht, Honorable Mention

The 22nd Annual Bristol-Myers Squibb Award for Excellence in Biological Research
Kelly Salmon Vilma Muca

The Faculty Award for Excellence in Biology
Sarah Middleton Nicole Diaz-Segarra, Honorable Mention

The Joseph Vena Award for Excellence in Biology
Jamie Raevis Ethan Sooy, Honorable Mention

The Susan Lapetz Uyhazi Senior Service Award
Christine Scaduto Maunil Sheth, Honorable Mention

Awards are presented to selected students to honor Biology majors who have demonstrated excellence in scholarship, commitment in leadership, and active involvement in seeking to improve the quality of life in the Biology Department.

CONGRATULATIONS TO YOU ALL!