



## Department of Microbiology and Molecular Genetics

For more information, please visit us at <http://www.uvm.edu/microbiology>

Class of 2010	Research Experience
Amanda	<b>MMG198</b> – Spring 2008 – Mariana Matrajt (MMG) – Characterization of bradyzoite differentiation in the <i>Toxoplasma gondii</i> mutant P11
	<b>MMG298</b> – Spring 2009 – Mariana Matrajt (MMG) – Characterization of bradyzoite differentiation in the <i>Toxoplasma gondii</i> mutant P11
	<b>MMG297</b> – Fall 2009 – Mariana Matrajt (MMG) – Characterization of bradyzoite differentiation in the <i>Toxoplasma gondii</i> mutant P11
Robert	<b>MMG295B Internship</b> – Summer 2008 – Charles River Laboratories
	<b>MMG197</b> – Summer 2009 – University of Kent Canterbury – Mick Tuites – Studies on the Yeast Prion (PSI+)
	<b>MMG197</b> – Fall 2009 – Kalev Freeman (Surgery) – Oxidative Stress on the Heart Induced by Head Trauma
Justin	<b>MMG197</b> – Fall 2008 – Michael Toth (Medicine) - The Effect of Diabetes on MHC Content in Rat Muscle Tissue
	<b>MMG295B Internship</b> – Summer 2009 – PJM Pharmaceuticals
Nick	<b>MMG296B Internship</b> – Spring 2009 – Vermont Department of Health
Julia	<b>Research</b> - Summer 2007 – Vermont Department of Environmental Conservation – Environmental assistant running water tests
	<b>Research</b> - Summer 2008 – Vermont Department of Environmental Conservation – Environmental assistant running water tests
	<b>MMG198</b> – Spring 2009 – Lori Stevens (Biology) – Analysis of Feeding of Chagas Disease Vectors in Southwestern United States
	<b>Research</b> – Summer 2009 – Lori Stevens (Biology) – Chagas Disease Vectors through Vertebrate Cytochrome B PCR Analysis
	<b>MMG197</b> – Fall 2009 – Lori Stevens (Biology) – Chagas Disease Vectors through qPCR Analysis

Kristina	<b>MMG296B Internship</b> – Spring 2010 – Vermont Department of Health
Mulu	<b>MMG197</b> – Fall 2008 – Chris Huston (Medicine) – The Role of the Endoplasmic Reticulum in <i>Entamoeba histolytica</i> 's Phagocytosis Activities
	<b>MMG298 &amp; URECA</b> – Spring 2009 – Chris Huston (Medicine) – The Role of the Endoplasmic Reticulum in <i>Entamoeba histolytica</i> 's Phagocytosis Activities
Laura	<b>MMG297 &amp; URECA</b> – Fall 2009 – Chris Huston (Medicine) – The Role of the Endoplasmic Reticulum in <i>Entamoeba histolytica</i> 's Phagocytosis Activities
	<b>MMG197</b> – Summer 2009 - Daniel Sepkovic (The David and Alice Jurist Institute for Research at Hackensack University Medical Center, NJ) – Diindolylmethane Enhances the Efficacy of Preventive Vaccines in An HPV Transgenic Mouse Model
Anu	<b>MMG197</b> – Fall 2008 – David Krag (Surgery) – Analyzing the Histological Patterns of Breast Cancer Stem Cells, in a Xenograft Model Targeted with Phage-Displayed Antibodies
	<b>MMG198 &amp; URECA</b> – Spring 2009 – David Krag (Surgery) – Analyzing the Histological Patterns of Breast Cancer Stem Cells, in a Xenograft Model Targeted with Phage-Displayed Antibodies <b>Poster Presented</b> at American Association of Cancer Research (won 3 <sup>rd</sup> place) and at the UVM Student Research Conference
	<b>Publication:</b> Gur D, Liu S, Shukla A, Pero SC, Wicha MS, Krag DN (2009) Identification of single chain antibodies to breast cancer stem cells using phage display, <i>Biotechnol Prog</i> , in press
	<b>MMG297 &amp; CW-Link</b> – Fall 2009 – David Krag (Surgery) – Identification of Target Antigens on Breast Cancer Stem Cells Using Phage-Developed scFv Antibodies: A Proteomic Approach
Dan	<b>MMG298</b> – Spring 2010 – David Krag (Surgery) – Identification of Target Antigens on Breast Cancer Stem Cells Using Phage-Developed scFv Antibodies: A Proteomic Approach
	<b>MMG198</b> – Spring 2009 – Markus Thali (MMG) - The Role of Tetraspanins CD9, CD63, and CD81 in the Infection of HIV-1 at Viral Synapses and the Effects of Over Expression on the Interactions
Alec	<b>MMG198</b> – Spring 2008 – Greg Gilmartin (MMG) – Enhanced Stability of <i>Drosophila</i> Notch mRNA in the nd1 mutant
	<b>Research</b> – Summer 2008 – SURP Albert Einstein College of Medicine – John Chan – Binding of peptidoglycan fragments to Cell Surface Receptors in latent Tuberculosis triggers an intracellular signaling cascade reestablishing pathogenesis
	<b>MMG297 &amp; URECA</b> – Fall 2009 – Greg Gilmartin (MMG) – Translational Regulation of <i>Drosophila</i> Notch
	<b>MMG298</b> – Spring 2010 – Greg Gilmartin (MMG) – Translational Regulation of <i>Drosophila</i> Notch

Class of 2009	Research Experience
Kate	<b>MMG296B Internship</b> – Spring 2009 – Vermont Department of Health
Tyler	<b>MMG198</b> – Spring 2009 – Stephanie Phelps (MMG) – Determining Blood Type through Non-invasive Methods
Jake	<b>MMG298</b> – Spring 2009 – Uma Wesley (MMG) – Toward Generation of neuroblastoma-derived cell line SK-N-AS overexpressing Human Delta-like Ligand 1
Katelyn	<b>MMG295B Internship</b> – Summer 2008 – PJM Pharmaceuticals
	<b>MMG298</b> – Spring 2009 – Doug Johnson (MMG) – Biofilm Formation by Clinical and Laboratory <i>Candida</i> Strains
	<b>CALS Distinguished Undergraduate Research 2009</b> – Doug Johnson (MMG) – Biofilm Formation by Clinical and Laboratory <i>Candida</i> Strains
Amanda	<b>MMG198</b> – Spring 2009 – Beth Kirkpatrick (Medicine) – Strain construction and characterization of <i>Salmonella enterica serovar Typhi</i> in order to study immunological response of those vaccinated with the oral typhoid vaccine M01ZH09
Stuart	<b>MMG197</b> – Fall 2008 – Jane Hill (Engineering) - Adhesion and Swimming Dynamics of Flagellated Bacteria Under Laminar Flow
Caroline	<b>Research</b> – Fall 06, Spring 07, Summer 07 – Matt Lord (Molecular Physiology & Biophysics) – Cloning of truncated yeast myosin 4 and 5 forms
Greg	<b>MMG197</b> – Fall 2008 – Kalev Freeman (Surgery) – Immuno-spin trapping and detection of protein centered radicals
Class of 2008	Research Experience
Meredith	<b>Research</b> – Summer 2006 – Maine Medical Research Institute (Volkhard Lindner) – Studied the role of Collagen Triple Helix Repeat Containing-1 in a knock out mouse model
	<b>Research</b> – Spring 2007 – University of Milano, Milan Italy – Pyrimidine nucleotide production: Engineering of the <i>B. subtilis</i> pyr operon
	<b>MMG295B Internship</b> – Summer 2007 - Maine Medical Research Institute (Volkhard Lindner) – Examining the molecular mechanism of Cthrc1-a novel inhibitor of TGF-Beta and collagen production
	<b>CALS Distinguished Undergraduate Research 2008</b> – Susan Wallace & Susan Robey-Bond (MMG) – Analysis of Key Amino Acid Differences between Human and <i>Escherichia coli</i> Endonuclease III Proteins that Affect Substrate Specificity
Erin	<b>Research</b> – Summer 2006 - Deborah Damon (Pharmacology) Semaphorin and its inhibitory effects on axonal growth cones of the sympathetic nervous system

	<b>MMG198</b> – Spring 2007 – Chris Huston (Medicine) – Determining the function and specificity of Serine-rich <i>E. histolytica</i> protein utilizing optimal RNAi gene silencing methods
	<b>MMG297</b> – Fall 2007 – Chris Huston (Medicine) – Determining the function and specificity of Serine-rich <i>E. histolytica</i> protein utilizing optimal RNAi gene silencing methods
Adam	<b>MMG198</b> – 2005 – Tom Lewis (MMG) – Resistance to synthetic transition metal chelators as a screening tool for PDTC receptor function
	<b>MMG298</b> – Spring 2007 - Marc Greenblatt (Medicine) – Cloning of a Highly Conserved Region Upstream of the CDKN2a Locus and Analysis for Enhancer Activity
	<b>MMG297</b> – Fall 2007 - Marc Greenblatt (Medicine) – Cloning of a Highly Conserved Region Upstream of the CDKN2a Locus and Analysis for Enhancer Activity
	<b>MMG295B Internship</b> – Summer 2006 – Shaw Environmental and Infrastructure, Knoxville, TN (Shirley Scarborough/Rob Mayer) – Observation of the effectiveness of dehalococoides in reducing trichloroethene to ethane and Testing the ability of Sulfur-Reducing bacteria to reduce selenate to selenium”
Paige	<b>MMG197</b> – Fall 2006 – Eugene Daly (Biology) – Observing Taste Perception Through Olfactory c-fos Signaling in C57BL/6J Mice
	<b>Research</b> – Spring 2007 – Eugene Delay (Biology) – Observing Taste Perception Through Olfactory c-fos Signaling in C57BL/6J Mice and IMP/MSG umami taste synergy
	<b>Research</b> – Summer 2007 - Shaw Environmental and Infrastructure, Knoxville, TN
	<b>CALS Distinguished Undergraduate Research 2008</b> – Eugene Delay (Biology) – Neural Signaling behind Inosine-monophosphate and Mono-sodium Glutamate Taste Synergy in C57BL/6J Mice
	<b>Research</b> – Summer 2005 – Joe Schall (Biology)
Will	<b>Research</b> – Falls 2004 & 2005 – Joe Schall (Biology)
	<b>MMG298</b> – Spring 2007 – David Pederson (MMG) – Mapping of Binding Domains of Clf1p
	<b>HELIX</b> – Summer 2007 – David Pederson (MMG) – Mapping of Binding Domains of Clf1p
JJ	<b>Research</b> – Gary Mawe (Anatomy/Neurobiology) – Determining the protein composition of certain calcium channels in inflamed tissue from the GI tract of guinea pigs

Class of 2007	Research Experience
Joy-EI	<p><b>MMG197</b> – Fall 2005 – Doug Johnson (MMG) – Potential anchoring proteins Skg6p and Tos2p affect localization of GFP-Cdc24p in <i>Saccharomyces cerevisiae</i></p> <hr/> <p><b>HELIX 2005</b> – Doug Johnson (MMG) – Cellular Pathways Used in the Inhibition of Budded-to-Hyphal Form Transition in the Pathogenic Yeast <i>Candida albicans</i></p> <hr/> <p><b>MMG197</b> – Fall 2006 – David Pederson (MMG) – Mechanism of action of a protein that functions in both DNA replication and mRNA metabolism</p> <hr/> <p><b>MMG298</b> – Spring 2007 – David Pederson (MMG) – Mechanism of action of a protein that functions in both DNA replication and mRNA metabolism</p> <hr/> <p><b>CALS Distinguished Undergraduate Research 2007</b> – David Pederson (MMG) – Mechanism of action of a protein that functions in both DNA replication and mRNA metabolism</p>
Ty	<p><b>Internship</b> – Summer 2005 – Ben &amp; Jerry's – Quality Assurance Lab Assistant</p> <hr/> <p><b>Research</b> – Spring 2006 – Catherine Donnelly (NFS) – Evaluation of 3M Environmental Listeria Plates for recovery of low level and injured <i>Listeria</i> from environmental surfaces</p>
James	<p><b>MMG197</b> – Fall 2006 – John Burke (MMG) – Fluorescent characterization of a protonated wobble-like GC<sup>+</sup> base pair in RNA using pyrrolo-cytosine</p> <hr/> <p><b>MMG298</b> – Spring 2007 – John Burke (MMG) - Fluorescent characterization of a protonated wobble-like GC<sup>+</sup> base pair in RNA using pyrrolo-cytosine</p> <hr/> <p><b>CALS Distinguished Undergraduate Research 2007</b> – John Burke (MMG) - Fluorescent characterization of a protonated wobble-like GC<sup>+</sup> base pair in RNA using pyrrolo-cytosine</p>
JP	<p><b>MMG295 Internship</b> – Fall 2005 – Mark Pendergrast – Research Assistant for a future CDC historical chronicle called "BioWarriors"</p>
Erica	<p><b>Internship</b> – Summer 2006 – Miriam DiMaio – Yale Clinical Genetics</p>
Nicole	<p><b>MMG295 Internship</b> – VT Dept of Health – Joyce Oetjen – Validation of Real-time PCR Detection for <i>Bordetella pertussis</i></p> <hr/> <p><b>MMG198</b> – Spring 2006 – Joyce Oetjen (VDH) – Validation of Real-time PCR Detection for <i>Bordetella pertussis</i></p> <hr/> <p><b>MMG197</b> – Fall 2006 – Joyce Oetjen (VDH) – Validation of Real-time PCR Detection for <i>Bordetella pertussis</i></p> <hr/> <p><b>MMG298</b> – Spring 2007 – Joyce Oetjen (VDH) – Validation of Real-time PCR Detection for <i>Bordetella pertussis</i></p> <hr/> <p><b>CALS Distinguished Undergraduate Research 2007</b> – Joyce Oetjen (VDH) – Validation of Real-time PCR Detection for <i>Bordetella pertussis</i></p>
Parvez	<p><b>Research</b> – Tom Lewis (MMG)</p>

Class of 2006	Research Experience
Natasha	<b>Research</b> – Summer 2005 - Omya Inc. - Working on the effects of calcium carbonate waste rock on plant growth
	<b>MMG197</b> – Fall 2005 – Daniel Weiss (Medicine) – Mechanisms of Adult Marrow-Derived Cell Recruitment to Lung Epithelium
	<b>URECA Recipient</b> – 2005/2006 – Rosanna Giordano (Biology) – A Phylogeographic and Bioindicator Study Using Springtails (Collembola; Insecta) from the Sandy Shores of Lake Champlain
Denali	<b>MMG198</b> – Spring 2006 – Daniel Weiss (Medicine) – Mechanisms of Adult Marrow-Derived Cell Recruitment to Lung Epithelium
	<b>MMG197</b> – Fall 2004 – Pat O’Neill (Pediatrics) – HPRT gene mutations for Lesch-Nyhan Syndrome Diagnosis
Alison	<b>MMG197</b> – Fall 2005 – Pat O’Neill (Pediatrics) – HPRT Mutation Analysis for the Diagnosis of Lesch-Nyhan Syndrome Diagnosis
	<b>Neuroscience Fellowship</b> – Summer 2004 – Matthew Rand (Anatomy & Neurobiology) – Elucidating the Notch/Delta interaction in <i>Drosophila</i> : Cloning of the Delta Receptor
	<b>MMG197</b> – Fall 2004 – Matthew Rand (Anatomy & Neurobiology) - Phenotypic analysis of TIMP (Tissue Inhibitor of Metalloproteinases) In <i>Drosophila</i>
	<b>MMG197</b> – Fall 2005 – Chris Huston (Medicine) – Expression of Calreticulin in <i>Entamoeba histolytica</i> Inhibits Activation of Complement and Confers Resistance to the Human Immune System
	<b>MMG198</b> – Spring 2006 – Chris Huston (Medicine) – Expression of Calreticulin in <i>Entamoeba histolytica</i> Inhibits Activation of Complement and Confers Resistance to the Human Immune System
Greg	<b>CALS Distinguished Undergraduate Research 2006</b> – Chris Huston (Medicine) – Expression of Calreticulin in <i>Entamoeba histolytica</i> Inhibits Activation of Complement and Confers Resistance to the Human Immune System
	<b>MMG197</b> – Fall 2004 – Susan Wallace (MMG) – Synthesis, purification and characterization of EcNth variants
	<b>MMG198</b> – Spring 2005 – Susan Wallace (MMG) – Synthesis, Purification and Characterization of EcNth variants
	<b>Research</b> – Summer 2005 – Rockefeller University – SURF – Maria Karayiorgu – Characterization of the ProdH and Dgcr6 Transgenic Mouse Lines
	<b>MMG198</b> – Spring 2006 – Susan Wallace (MMG) – Synthesis, Purification and Characterization of <i>E. coli</i> Endonuclease III variants
Joe	<b>CALS Distinguished Undergraduate Research 2006</b> – Susan Wallace (MMG) – Synthesis, Purification and Characterization of EcNth variants
	<b>MMG198</b> – Spring 2004 – Tom Fowler (MMG) - Directed point mutagenesis in <i>Schizophyllum commune</i> pheromones for determination of amino acid functionality in GPCR

	<p><b>Research</b> – Summer 2004 – NSF Funding - Tom Fowler (MMG) - Directed point mutagenesis in <i>Schizophyllum commune</i> pheromones for determination of amino acid functionality in GPCR</p> <p><b>MMG197</b> – Fall 2004 – Tom Fowler (MMG) – Directed point mutagenesis in <i>Schizophyllum commune</i> pheromones for determination of amino acid functionality in GPCR</p> <p><b>URECA Recipient</b> – 2004/2005 – Tom Fowler (MMG) – Stimulation of Thousands of Sexes in Fungi; The Determination of Flexibility of Pheromone Recognition</p> <p><b>CALS Distinguished Undergraduate Research 2006</b> – Tom Fowler (MMG) – Directed point mutagenesis in <i>Schizophyllum commune</i> pheromones for determination of amino acid functionality in GPCR Activation</p>
Dov	<p><b>Research</b> – Summer 2004 - Jeff Frolik (Electrical Engineering) - “Wrote code for a Matlab program designed to analyze regions of tissue stress in CT (computer tomography) images of mouse lungs”</p> <p><b>Research</b> – Summer 2005 – Joe Schall (Biology) – 1) Analyzed data collected over 25 years to determine if malaria infection in lizards was cyclic 2) Designed and developed testing methods in MatLab to determine how many different species of birds a given strain of malaria can infect</p> <p><b>URECA Recipient</b> – 2005/2006 - Robert Hondal (Biochemistry) – Biosynthesis of Selenocysteine using O-Acetylserine Sulfhydrylase (OASS)</p> <p><b>MMG198</b> – Spring 2006 – Robert Hondal (Biochemistry) – Biosynthesis of Selenocysteine using OASS</p> <p><b>CALS Distinguished Ungergraduate Research 2006</b> – Robert Hondal (Biochemistry) – Biosynthesis of Selenocysteine using O-Acetylserine Sulfhydrylase (OASS)</p>
Josh	<p><b>Short Internship</b> – Summer 2005 – NH Crime Lab – Exposure to all aspects of forensics</p> <p><b>MMG197</b> – Fall 2005 – Scott Morrical (Biochemistry) – Dynamics of the Bacteriophage T4 UvsX Nucleoprotein Filament</p> <p><b>MMG198</b> – Spring 2006 – Scott Morrical (Biochemistry) – Dynamics of the Bacteriophage T4 UvsX Nucleoprotein Filament</p>
Janne	<p><b>MMG198</b> – Spring 2006 – Susan Wallace (MMG) – <math>\beta</math>-Hairpin Activity in DNA Polymerase Exonucleotide Active Site Switching</p>
Matt	<p><b>MMG198</b> – Spring 2006 – Brenda Tessmann (MMG) – Identification of Pathogenic Bacterial Species on Wrestling and other Athletic Training Mats</p>
Peter	<p><b>MMG197</b> – Fall 2005 – Greg Gilmartin (MMG) – Possible Role for the Mammalian mRNA 3' processing factor CF1<sub>m</sub> in mRNA export</p> <p><b>MMG198</b> – Spring 2006 – Greg Gilmartin (MMG) – Protein interactions of CF1<sub>m</sub></p>
Meaghan	<p><b>MMG197</b> – Fall 2005 – Jon Boyson (Surgery) – Generation of recombinant mCD1 using a baculovirus expression system</p> <p><b>MMG197</b> – Fall 2005 – Beth Kirkpatrick (Medicine) – Mannose-binding lectin polymorphisms in human <i>Cryptosporidium</i></p>

Class of 2005	Research Experience
Alicia	<b>MMG197</b> – Fall 2003
	<b>MMG197</b> – Fall 2004
	<b>MMG198</b> – Spring 2004
	<b>MMG198</b> – Spring 2005 – Susan Wallace (MMG) – <i>Escherichia coli</i> Pol IV: Solitary Hypermutator or Co-Conspirator of Change?
	<b>HELiX 2004</b> – Susan Wallace (MMG) – <i>Escherichia coli</i> Pol IV: Solitary Hypermutator or Co-Conspirator of Change?
	<b>CALS Honors 2005</b> - Susan Wallace (MMG) – <i>Escherichia coli</i> Pol IV: Solitary Hypermutator or Co-Conspirator of Change?
Amy	<b>HELiX 2004</b> – Marc Greenblatt (Medicine) – Generation and Functional Testing of p16/CDKN2A
Jessica	<b>MMG197</b> – Fall 2004 – Sally Huber (Pathology) – CD4 <sup>+</sup> C25 <sup>+</sup> T regulator cells in myocarditis
	<b>MMG198</b> – Spring 2005 – Sally Huber (Pathology) – CD4+CD25+ T Cell Induction and TNF $\alpha$ Effects
	<b>HELiX 2003</b> – Sally Huber (Pathology) – Natural Hormonal Fluctuations within Female Mice Influence Myocardial Infection
	<b>CALS Honors 2005</b> – Sally Huber (Pathology) – Exploration of CD4+CD25+ T Regulatory Cells in Cocksackievirus B-3 (CVB3) induced Myocarditis and Effects of TNF $\alpha$
Class of 2004	Research Experience
Danielle	<b>MMG197</b> – Fall 2003
Valarie	<b>MMG198</b> – Springs 2002 & 2004
	<b>HELiX 2002</b> – Cedric Wesley (MMG) – Effect of Scabrous on Notch Signaling in <i>Drosophila</i>
	<b>CALS Honors 2004</b> – Cedric Wesley (MMG) - Identification of Genes responsible to Delta Signaling
Anya	<b>MMG197</b> – Falls 2001 & 2002
	<b>MMG198</b> – Spring 2002
	<b>HELiX 2002</b> – Greg Gilmartin (MMG) – The Cloning and Expression of the Human Homolog of the <i>Saccharomyces cerevisiae</i> Mpel Gene

Elizabeth	<b>Internship</b> – Vermont Dept. of Health
Matt	<b>HELIX 2002</b> – Cedric Wesley (MMG) – Role of Scabrous in Neural Stem Cell Differentiation
	<b>MMG198</b> – Spring 2004 – Cedric Wesley (MMG)
Carolyn	<b>MMG197</b> – Fall 2003
	<b>MMG198</b> – Springs 2003 & 2004
	<b>HELIX 2003</b> – Uma Wesley (MMG) – Study of Gene Silencing Mechanisms in Human Cancer: Methylation, Expression, and Mutational Analysis of Dipeptidyl Peptidase IV (DPPIV), a Potential Tumor Suppressor Gene
	<b>CALS Honors 2004</b> – Uma Wesley (MMG) - Promoter Methylation is the Underlying Mechanism for Silencing of Dipeptidyl Peptidase IV (DPPIV), a Tumor Suppressor Gene in Melanomas
Kali	<b>Research</b> with Doug Johnson (MMG)

Current as of Fall 2009