BMB Honors Theses 2020

Evaluating a Culprit: A Review of the Biochemical Mechanisms of Non-Celiac Gluten Intolerance
By: Callie Cinque
Advisor: Kristine Nolin

Identification of Ded1 Suppressors Using Genomic Sequencing
By: Jennifer Piciw
Advisor: Angie Hilliker

Design of New Ruthenium Complexes for Photoactivated Chemotherapy
By: Lindsey Paul
Advisor: Michael Norris

The effects of signaling molecules to *Agrobacterium tumefaciens* tumorigenesis at plant wound sites
By: Nicole Walker
Advisor: Daniel Pierce

Investigations into the mutagenic potential of 8-oxo-2'-deoxyguanosine with human polymerase κ
By: Samuel Zielinski
Advisor: Michelle Hamm

Application of β-chloroenals: one-pot syntheses to create highly variable, functional, and biologically interesting molecules
By: Julia P Siewert
Advisor: John Gupton

Convergence of glandular trichome morphology and chemistry in two montane monkeyflower (*Mimulus*, Phrymaceae) species
By: Sofía Bustamante Eguiguren
Advisor: Carrie Wu

BMB Honors Theses 2019

Effects of a Novel Microtubule Depolymerizer on Pro-Inflammatory Signaling in RAW264.7 Macrophages
By: Madeline Brown
Advisor: Krista Stenger

Investigating Heme and Heat Stress Tolerance in *Sodalis glossinidius*
By: Ruhan Farsin

Advisor: Laura Runyen-Janecky

Adaptable Layered First Generation Amperometric Biosensor Platforms for Clinically Relevant Measurements
By: Najwa Labban
Advsior: Michael Leopold and Julie Pollock

Creating a Viral Sponge Modification And Mutation of Virus-like Particles
By: Ritwika Bose
Advisor: Julie Pollock and Kristine Nolin

The effects of Arginine Methylation on the function of Ded1, an RNA helicase, in vitro
By: McKenzie Murvin
Advisor: Angie Hilliker

BMB Honors Theses 2016

Impact of Vector Range Expansion on Pathogen Transmission Dynamics of Lyme disease in Southeastern Virginia
By: Bishan Bhattarai
Advisor: Jory Brinkerhoff

Calcium(II) Catalyzed Nitrone Additions
By: Elizabether Congdon
Advisor: Kristine Nolin

CD46 (MCP) as a Viral Receptor for Adenovirus Type 64D
By: Emily Romanoff
Advisor: Eugene Wu

Characterization of Catecholamine Receptors and Transporters in Murine Macrophages
By: Elizabeth Gonye
Advisor: Krista Stenger

Computational Studies of Paradifluorobenzene Cations and Hydrogen Cyanide Molecules
By J.C. Rowe
Advisor: Samuel Abrash

Variation in cold tolerance among the closely related wildflower species Mimulus tilingii and Mimulus guttatus
By: Alexis Caldwell
Advisor: Carrie Wu

Importance of Ile716 toward the mutagenic potential of 8-oxo-2'-deoxyguanosine with polymerase I from Bacillus Stearothermophilus
By: Rachel Gilbert
Advisor: Michelle Hamm

Layer-By-Layer Design and Optimization of Xerogel-Based Amperometric First Generation Biosensors for Uric Acid
By: Raef Lambertson
Advisor: Micheal Leopold

Comparing the effects of farming management strategies on soil nematode communities
By: Sammi Unangst
Advisor: Amy Treonis

BMB Honors Theses 2015

The Effects of a Pyrrole-Based, Microtubule-Depolymerizing Compound on Activated Murine Macrophages
By: John A Ciemniecki
Advisor: Krista Stenger

An NMR-Guided Approach to the Isolation of Secondary Metabolites from NRPS and PKS Gene Clusters
By: Connor P Craig
Advisor: Jonathan Dattelbaum

Calcium (II) Catalyzed Addition Reactions
By: Callie C Dullin
Advisor: Kristine Nolin

Broadening the functional interactions of Ded1, a *Saccharomyces cerevisiae* DEAD- box ATPase involved in translation initiation
By: Audrey Kindsfather
Advisor: Angie Hilliker
Multi-wavelength Collisional Quenching to Study Ligand-Protein Interactions in Glutamate Dehydrogenase
By: Chun Li
Advisor: Ellis Bell

Isolation of Microbial NRPS and PKS Gene Clusters for Natural Product Isolation By: Danielle N O'Hara
Advisor: Jonathan Dattelbaum

The Role of Entropy and Conformational Plasticity in Nucleotide Interactions with Glutamate Dehydrogenase
By: Angela Tata
Advisor: Ellis Bell

Development of a genetic over-expression system for the freshwater sponge *Ephydatia muelleri*
By: Joe Walsh Advisor: April Hill

BMB Honors Theses 2014

Addition Reactions of Electron-Deficient Cyclopropanes Catalyzed by Calcium(II) Complexes
By: Caroline M. Braun
Advisor: Kristin Nolin

Formyl Group Activation of Bromopyrrole Suzuki Cross-Coupling: Application to a Formal Synthesis of Lamellarin G trimethyl ether
By: Andrew Harrison
Advisor: John Gupton

Multi-technique Quantitative Analysis and Socioeconomic Considerations of Lead, Cadmium, and Arsenic in Children's Toys and Toy Jewelry
By: Margot Hillyer
Advisor: Michael Leopold

A conservative isoleucine to leucine mutation of Klentaq1 DNA Polymerase 1 induces conformational change for cold-sensitive phenotype
By: Emma Caroline Materne
Advisor: Eugen Wu

Do the Inter-Nucleotide Domain loops act as an Entropic Sink in the Catalytic Activity of 3-Phosphoglycerate Dehydrogenase (3pGDH)?
By: Christina Meehan
Advisor: Ellis Bell

One-Pot Heteroconjugate Addition-Diels–Alder Reactions and Acetate-Catalyzed Aldol Reactions of ⟨-Silyl Nitriles
By: Carly Mueller
Advisor: Wade Downey

Construction of a Functional HA-Epitope Tagged AqK2P Channel with Surface Expression
By: Arianna A. Prinzbach
Advisor: Linda Boland

The mis-regulation of the dJNK pathway in a Drosophila model of Machado-Joseph Disease influences neurodegeneration
By: Catherine Marie Romberger
Advisor: John Warrick

Regiospecific Functionalization of Pyrroles Using Formyl-Group Activated Suzuki Coupling: Application to a Formal Synthesis of Polycitones A and B and Polycitrin A. By: Michael Wormald
Advisor: John Gupton

Vesicular Monoamine Transporter-1: Association with Neuropsychiatric Disorders
By: Yingying Geng Advisor: Krista Stenger

BMB Honors Theses 2013

Monolayer-Protected Nanoparticle Doped Xerogels as Functional Components of Amperometric Glucose Biosensors
By: Michael Hartley Freeman
Advisor: Michael Leopold

Synthesis of Cyclopropane via Knoevenagel Condensation and Cyclopropanation with Sulfur Ylide
By: Lora Gao
Advisor: Kristin Nolin

Synthesis of 8-oxo-2'-deoxyguanosine Triphosphate Analogues and Investigations into the Promutagen Potential of 8-oxo-2'-deoxyguanosine
By: Michael Ghio
Advisor: Michelle Hamm

Adenovirus Type 5 Virions Asymmetrically Lose Icosahedral Structure at Low pHs of Endosomes
By: Jennifer Marie Jarboe
Advisor: Eugene Wu

The Inner Workings of the DNA Copying Nanomachine: Kinetic Studies of DNA Polymerase I
By: Emily P. Kornberg
Advisor: Eugene Wu

Investigation into the Mutagenic Potential of 8-Oxo-2'-deooxyguanosine (OdG) using KF^- and pol ®

By: Emily McFadden
Advisor: Michelle Hamm

Vesicular Monoamine Transporter-1 Polymorphisms: Association with Neuropsychiatric Disorders
By: Margaret Nelson
Advisor: Krista Stenger

Characterization of neurosteroid binding to the amino terminal domain of GluN2B, a specific *N*-methyl-D-aspartate receptor subunit
By: Ryan Scott Roard
Advisor: Lisa Gentile

α-Adrenergic Receptor Expression and Regulation on the Surface of Macrophages By: Lindsey L. Templeton
Advisor: Krista Stenger

BMB Honors Theses 2012

Determining the Role of Methionines in the Activity and Subunit Interactions of Glyoxysomal Malate Dehydrogenase
By: Farren Billue
Advisor: Ellis Bell

The Relationship Between Live Coral and Macroalgae in South Caicos as Influenced by Herbivorous Fishes
By: Sarah Byce
Advisor: Paula Lessem, Anemarie Kramer

Probing Subunit Interactions in 3-Phosphoglycerate Dehydrogenase By: Bradley Falk
Advisor: Ellis Bell
A Study of the Catlytic Reaction Mechanism of Malate Dehydrogenase using Quantum

Mechanics and Molecular Dynamics Tools
By: Hugo Guterres
Advisor: Ellis Bell

Homology Model and Targeted Mutagenesis Identify Critical Residues for Arachidonic Acid Inhibition of K*v*4 Channels
By: Robert Heler
Advisor: Linda Boland

Characterizing the Role of the SIT and Hemolysin Proteins in High Affinity Iron Acquisition in the Tsetse Symbiont *Sodalis glossindius*

By: Kaitlin Markoja
Advisor: Laura Runyen-Janecky

Determination of the Atomic Resolution Structure of a DNA Polymerase I Isolated from *Rhodothermus marinus*
By: Natalie S. Omattage
Advisor: Eugen Wu

The Role of Histidines in Neurosteroid Binding of NMDA GluN2B and D Subunits
By: Sarah Rhoads
Advisor: Lisa Gentile

Elucidation of the Pax/Six Gene Regulatory Network in *Ephydatia muelleri*
By: Anna Rued
Advisor: April Hill

Trimethylsilyl Trifluoromethanesulfonate-mediated Additions to Acetals, Nitrones, and Aminals
By: Chelsea Safran
Advisor: Wade Downey

Characterization of Achromobactin Iron Acquistion in *Sodalis glossinidius*
By: Caitlin Lee Smith
Advisor: Laura Runyen-Janecky

The Optimization of a One-Pot Heteroconjugate Additon-Oxidation-Diels–Alder Reaction
By: Christina Vivelo
Advisor: Wade Downey

The Linkage Between Citrate and pH Regulation of Malate Dehydrogenase and Protein Folding
By: Helen Yanta
Advisor: Ellis Bell

BMB Honor Thesis 2011

Studies into the Mutagenic Potential of the DNA Lesion 8-Oxo-2'deoxyguanasine with various DNA polymerase
By: Kelly Crowley
Advisor: Michelle Hamm

Investigation of Subunit Interaction in Glyoxysomal Malate Dehydrogenase using Engineered Cysteine Residues
By: Mary Jane Drake
Advisor: Ellis Bell

The Effect of Polysubstituted Pyrrole Compounds on the Inflammatory Response By:
Lauren Folgosa
Advisor: Krista Stenger

Utilizing Molecular Dynamics to Study Ionotropic Glutamate Receptors
By: Jenna Landers
Advisor: Carol Parish

Determination of CREB Binding Protein Levels and an Examination of Proteomic Profiles in the Drosophila Model of the Human Neurodegenerative Disease Spinocerebellar Ataxia Type III/ Machado-Joseph Disease
By: Andrew Lawrence Simmelink
Advisor: John Warrick