7th ANNUAL
WEST MICHIGAN REGIONAL UNDERGRADUATE SCIENCE (WMRUGS) RESEARCH CONFERENCE
SATURDAY, NOVEMBER 16, 2013

KEYNOTE SPEAKER

Scott Barolo, Ph.D.

Associate Professor of Cell & Development Biology
Director, Cell and Development Biology Graduate Program
Associate Director, Cellular and Molecular Biology Training Program
University of Michigan Medical School

"Working out the logic of gene regulation: a collaboration with undergraduate and graduate researchers"

DNA sequences called **enhancers** control where, when, and how strongly genes are expressed. They may be located near the genes they regulate, or very far away—even on the far side of other genes. Enhancers contain binding sites for **transcription factors**—proteins that bind to specific DNA sequences and help to turn genes on or off.

Very basic questions about biological patterning information and enhancer logic remain unanswered. These gaps in our knowledge are best illustrated by the fact that "synthetic" versions of well-characterized enhancers (that is, combinations of the known transcription factor binding sites) nearly always fail to drive gene expression in animals. It seems that we still don't understand how enhancers work, or how they evolve to produce new patterns. My lab is using transgenic, genetic, biochemical, evolutionary, and bioinformatics approaches to study these qestions, and we're finding some pretty surprising answers.

ABSTRACTS OF FACULTY RESEARCH TALKS

Virginia McDonough, Ph.D., Associate Professor of Biology, Hope College

"How do cells know what they eat? Molecular recognition of dietary lipids by cells"

Cells have exquisite molecular systems that respond to the presence or absence of nutrients available to them from the environment. In the case of fatty acids, cells can distinguish saturated from unsaturated, differing chain lengths, cis from trans double bonds, and even the position of the double bond in the fatty acyl chain. One can hypothesize that proteins could provide that level of identity through direct interaction with the fatty acid, or, that the cell can detect, in some manner, the physical changes the fed fatty acid species imparts to the membrane. In my lab, using molecular biological and biochemical methods in the model organism *Saccharomyces cerevisiae*, we are investigating how cells can "sense" the molecular species of fatty acid, and then transmit that information for gene expression changes.

Douglas A. Vander Griend, Ph.D., Professor of Chemistry, Calvin College

"Equilibrium snapshots of supramolecular assembly"

When in a 1:1 mole ratio, copper(I) cations assemble with a special *bis*-bidentate ligand, L, in dichloromethane to form a $[Cu_4L_4]^{4+}$ supramolecular square. Spectrophotometric titration of ligand with the metal cation yields raw absorbance data that can be modelled in order to elucidate equilibrium snapshots of the entire assembly and disassembly process, including detailed thermodynamic information on the step-wise reactions. Not only will this talk feature the possibilities of controlling supramolecular architectures, but it will also show you how to learn more from spectroscopic data than you may have thought possible.

ABSTRACTS OF FACULTY RESEARCH TALKS

Richard Vallery, Ph.D., Professor of Physics and Department of Physics Chair, Grand Valley State University

"Probing matter with antimatter: Using positrons to study materials at the nanoscale"

Novel materials enable advances in many high tech areas such as medicine, information technology, and energy storage. In many cases the macroscopic properties of these materials are determined by engineering the composition at the nanoscale. To understand fundamental makeup of the materials in turn, requires new probes to characterize the structure at these very small length scales. Positronium, the hydrogen-like bound state of an electron and a positron is a very sensitive probe of void structure of matter at scales down to 3 nm. Positronium Annihilation Lifetime Spectroscopy (PALS) is a unique metrology which studies the annihilation of positronium, whose mass is completely converted into energy as governed by Einstein's famous equation $E = mc^2$, to characterize the pores/voids in materials.

Jeremy Van Raamsdonk, Ph.D., Assistant Professor and Head of the Laboratory of Aging and Neurodegenerative Disease, Van Andel Research Institute

"Using small worms to answer big questions: insights from C. elegans on the aging process"

Traditionally, aging was thought to result from a stochastic process of damage accumulation. However, it is now known that genes strongly influence longevity. This paradigm shift began in 1993 when the first lifespan-extending gene was discovered using a microscopic worm called *Caenorhabditis elegans*. This gene was called *daf-2* and it encodes the insulin-IGF-1 receptor, which is involved in a nutrient signaling pathway. Since that time, genes in this same nutrient signaling pathway were shown to increase lifespan in yeast, flies and mice. In addition, genetic variants in this pathway are also associated with long life in humans. Based on demonstrated evidence of conservation across species of lifespan extending mechanisms, it has been possible to study aging in model organisms with the ultimate goal of promoting healthy aging in humans. Much of this work has been done in the worm *C. elegans* because of its advantageous features as a genetic model organism. In fact there have now been hundreds of genes identified in the worm that have the ability to increase lifespan. Thus, by using a simple model organism it has been possible to gain valuable insights into the human aging process.

7th ANNUAL
WEST MICHIGAN REGIONAL UNDERGRADUATE SCIENCE RESEARCH CONFERENCE
2013 POSTER PRESENTATIONS

AUTHORS LIST
Pages 4-8 includes a list of principal presenting authors by last name (alphabetical order)

Last Name	First Name	Poster Number	Student Institution	Field of Study
Adamove Osho	Laura Blohm	1	Calvin College	Biochemistry
Aguilar	Yesenia	21	Kalamazoo College	Biology
Alabi	Ola-Oluwakiti	2	Calvin College	Biochemistry
Andrews	Emily	59	Grand Valley State University	Biomedical Sciences
Antonides	Kendra	22	Calvin College	Biology
Bailey	Matthew	94	Grand Valley State University	Chemistry
Barnhart	Chad	95	Alma College	Chemistry
Bolles	Amanda	3	Kalamazoo College	Biochemistry
Boss	John	57	Hope College	Biomedical Engineering
Bouza	Allie	96	Grand Valley State University	Chemistry
Breit	Collin	4	Hope College	Biochemistry
Campbell	Karl	143	Grand Valley State University	Geology
Campbell	Chelsea	23	Hope College	Biology
Carl Deeg	Shinnosuke Kondo	178	Hope College	Computer Science
Carlson	Abigail	180	Grand Valley State University	Biomedical Sciences
Carson Tobias	Lane Heyboer	58	Hope College	Biomedical Engineering
Cholger	Dan	60	Grand Valley State University	Biomedical Sciences
Clark	Alexandria	24	Hope College	Biology
Clasman	Jozlyn	5	Grand Valley State University	Biochemistry
Coburn	Katherine	97	Grand Valley State University	Chemistry
Colley	Nathan	167	Grand Valley State University	Science Education
Combs	Erin	166	Grand Valley State University	Science Education
Conrad	Sara	168	Calvin College	Science Education
Cooke	Brittany	156	Grand Valley State University	Physics
Cruz-Olguin	Yolanda	155	Grand Rapids Community College	Nursing
Davidson	Matt	153	Kalamazoo College	Neuroscience
DeBruine	Zachary	77	Hope College	Cell and Molecular Biology

Last Name	First Name	Poster Number	Student Institution	Field of Study
DeGlopper	Kimberly	98	Hope College	Chemistry
Dekker	Raven	71	Ferris State University	Biotechnology
Dennis	Joseph	99	Hope College	Chemistry
DeVries	Andrew	139	Calvin College	General Biology/ Pre-Med
Diener	Zachary	179	Hope College	Physics
Elenbaas	John	100	Calvin College	Chemistry
Farr	Rebecca	152	University of Michigan-Flint	Molecular Biotechnology
Fernandez	Nico	149	Grand Valley State University	Microbiology
Fisch	Alexander	78	Grand Valley State University	Cell and Molecular Biology
Flikweert	Niecia	101	Calvin College	Chemistry
Fodor	Sarah	102	Hope College	Chemistry
Fujiwara	Rina	103	Kalamazoo College	Chemistry
Fuller	Emily	25	Calvin College	Biology
Gaide	Rachel	133	Calvin College	Engineering
Gilewski	Carlene	144	Grand Valley State University	Geology
Gipe	Jackie	148	Aquinas College	Mathematics
Gjebic	Julia	157	Grand Valley State University	Physics
Grant	Nkrumah	26	Grand Valley State University	Biology
Green	David	104	Hope College	Chemistry
Greenberger	Virginia	105	Kalamazoo College	Chemistry
Grit	Jamie	79	Hope College	Cell and Molecular Biology
Harbour	Marvin	27	Michigan State University	Biology
Haria	Devi	106	Grand Valley State University	Chemistry
Harris	Danielle	158	Grand Valley State University	Physics
Haveman	Matthew	107	Calvin College	Chemistry
Hegg	Taylor	18	Calvin College	Biochemistry
Hoerr	Alexandria	108	Calvin College	Chemistry
Hoogmoed	Ryan	80	Grand Valley State University	Cell and Molecular Biology
Hook	Jamie	72	Ferris State University	Biotechnology
Hosmer	Allison	73	Ferris State University	Biotechnology
Hui	Esther	28	Calvin College	Biology
Ikponmwonba	Christine	6	Calvin College	Biochemistry
Jack	Sarah	109	Alma College	Chemistry
Jacob Lampen	Margeaux Carter	159	Calvin College	Physics
Jensen	Corbin	90	Grand Rapids Community College	Cell and Molecular Biology / Genetics
Jiang	Jiaming	130	Calvin College	Computer Science
John Letherer	Chase Judy	74	Ferris State University	Biotechnology
Julie Swierenga	Jeremiah Rocha	134	Calvin College	Engineering
Kamgang	Ronald	81	Grand Valley State University	Cell and Molecular Biology
Kanjanakuha	Patchamol	29	Kalamazoo College	Biology

Last Name	First Name	Poster Number	Student Institution	Field of Study
Kasey McKay	Nick Poirier	61	Grand Valley State University	Biomedical Sciences
Kathryn Westergren	Ian Noyes	30	Calvin College	Biology
Kennedy	Jenna	31	Calvin College	Biology
Kerk	Sam	7	Calvin College	Biochemistry
Khoi Vu	Aldo Daniel	135	Calvin College	Engineering
Kim	SeongEun	8	Calvin College	Biochemistry
Korn	Michael	164	Kalamazoo College	Pre-Medicine
Kowalski	Evan	32	Aquinas College	Biology
Krumm	Drew	82	Hope College	Cell and Molecular Biology
Ladd	Nicole	9	Hope College	Biochemistry
LaGrand	John	110	Calvin College	Chemistry
Lamine	James	131	Calvin College	Computer Science
Langerak	Shaughna	75	Ferris State University	Biotechnology
Laut	Clare	150	Michigan State University	Microbiology
Le	Kelly	111	Grand Valley State University	Chemistry
Leisman	Dorthea	33	Calvin College	Biology
Leistra	Abigail	10	Calvin College	Biochemistry
Leonard	Sara	34	Grand Valley State University	Biology
Linn	David	62	Grand Valley State University	Biomedical Sciences
Liu	Chengbi	141	Calvin College	Geography
Lutz	Joseph	169	Grand Valley State University	Science Education
Manning	Zackery	112	Alma College	Chemistry
Mathyer	Mary	35	Kalamazoo College	Biology
McMillan	Adam	63	Grand Valley State University	Biomedical Sciences
McReynolds	Nathan	160	Calvin College	Physics
Meloche	Chelsea	64	Grand Valley State University	Biomedical Sciences
Meyer	Ashley	170	Grand Valley State University	Science Education
Michael Kneeshaw	Dana Collins	65	Grand Valley State University	Biomedical Sciences
Michmerhuizen	Nicole	11	Calvin College	Biochemistry
Moore	Eric	83	Grand Valley State University	Cell and Molecular Biology
Moore	Kristy	36	Grand Valley State University	Biology
Morales	Saray	145	Grand Valley State University	Geology
Morrison	Ellie	66	Grand Valley State University	Biomedical Sciences
Morrow	Andrea	37	Grand Valley State University	Biology
Murray	Nathan	113	Michigan State University	Chemistry
Mustert	Marie	38	Calvin College	Biology
Myers	Kara	84	Grand Valley State University	Cell and Molecular Biology
Myint	Okkar	136	Calvin College	Engineering
Navarro	Jerome	137	Calvin College	Engineering

Last Name	First Name	Poster Number	Student Institution	Field of Study
Nicholson	Benjamin	114	Grand Valley State University	Chemistry
Niyibizi	Auguste	12	Calvin College	Biochemistry
Oliver	Margot	39	Calvin College	Biology
Olson	Tim	40	Grand Valley State University	Biology
Paige Stephens	Jonathan Knott	41	Calvin College	Biology
Patmore	Emma	161	Alma College	Physics
Peecher	Benjamin	162	Hope College	Physics
Pettinga	Dean	42	Calvin College	Biology
Polet	Rachel	43	Calvin College	Biology
Porter	Amanda	13	Hope College	Biochemistry
Postema	Dan	176	Grand Valley State University	Target Inquiry Program
Praamsma	Riemer	14	Calvin College	Biochemistry
Qiblawi	Sultan	115	Michigan State University	Chemistry
Reiss	Krystle	116	Alma College	Chemistry
Rens	Dustin	117	Hope College	Chemistry
Rhude	Emily	118	Calvin College	Chemistry
Richard	Alaina	119	Alma College	Chemistry
Richison	Joanna	171	Grand Valley State University	Science Education
Rieger	Kristy	154	Grand Valley State University	Neuroscience
Roth	Andrew	19	Calvin College	BioMolecular Science
Roth	Mitch	85	Grand Valley State University	Cell and Molecular Biology
Rupp	Lindsay	44	Siena Heights University	Biology
Russo	Craig	67	Grand Valley State University	Biomedical Sciences
Saladin	Marissa	120	Aquinas College	Chemistry
Sanchez	Maria	165	DePaul University	Pre-Medicine
Schenk	Allyson	45	Hope College	Biology
Schneider	Patrick	86	Grand Valley State University	Cell and Molecular Biology
Schriemer	Clara	46	Hope College	Biology
Shady	Justin	121	Grand Valley State University	Chemistry
Shaw	Kenton	146	Grand Valley State University	Geology
Sheikh	Elaine	140	Grand Valley State University	General Biology/ Pre-Med
Shoaff	Jonathan	47	Cornerstone University	Biology
Shomsky	Jonathan	163	Calvin College	Physics
Smith	Mallory	76	Ferris State University	Biotechnology
Snyder	Alyssa	68	Grand Valley State University	Biomedical Sciences
Stacy Hooker	Monica Langeland	48	Calvin College	Biology
Stevens	Brad	172	Grand Valley State University	Science Education
Stoscup	Julie	122	Grand Valley State University	Chemistry
Straight	Jordan	87	Grand Valley State University	Cell and Molecular Biology

Last Name	First Name	Poster Number	Student Institution	Field of Study
Strikwerda	John	123	Calvin College	Chemistry
Swain	Alexander	49	Hope College	Biology
Swanson	Hollister	15	Grand Valley State University	Biochemistry
Sylvester	Kevin	173	Grand Valley State University	Science Education
Tauscher	Rebecca	174	Michigan State University	Science Education
Timothy Johnson	Deborah Cushman	50	Cornerstone University	Biology
Uhl	Katie	88	Grand Valley State University	Cell and Molecular Biology
Uitvlugt	Caleb	124	Calvin College	Chemistry
Valesano	Andrew	151	Hope College	Microbiology
VandeHaar	Peter	129	Calvin College	Computational Biology / Bioinformatics
VanOeffelen	Rachel	52	Calvin College	Biology
VanOeveren	Sarah	91	Grand Valley State University	Cell and Molecular Biology / Genetics
VanWyngarden	Christian	147	Grand Valley State University	Geology
Veldkamp	Kelsey	51	Calvin College	Biology
Ver Hoef	Christopher	70	Calvin College	Biophysics
Verstraete	Lauren	53	Calvin College	Biology
Visser	Brooke	125	Grand Valley State University	Chemistry
Waldvogel	Jake	54	Siena Heights University	Biology
Walton-Durst	E Yasmine	126	Grand Rapids Community College	Chemistry
Weber	Sarah	177	Grand Valley State University	Target Inquiry Program
Weidman	Jared	16	Calvin College	Biochemistry
Wells	Tiffany	55	Siena Heights University	Biology
Wiersma	Christine	56	Alma College	Biology
Williams	Jacqueline	127	Grand Valley State University	Chemistry
Wilson	Melinda	92	Lansing Community College	Cell and Molecular Biology / Genetics
Wilson	Melinda	93	Lansing Community College	Cell and Molecular Biology / Genetics
Wodarek	Thomas	132	Calvin College	Computer Science
Woltjer	Lukas	138	Calvin College	Engineering
Woodin	Brian	142	Aquinas College	Geography
Woods	Jennifer	175	Grand Valley State University	Science Education
Wrobel	Kathryn	17	Calvin College	Biochemistry
Wyman	Leslie	89	Grand Valley State University	Cell and Molecular Biology
Zahrt	Andrew	128	Aquinas College	Chemistry
Zucker	Noah	69	Grand Valley State University	Biomedical Sciences
Zuhl	Alex	20	Grand Valley State University	Biochemistry

2013 POSTER PRESENTATIONS

Pages 9-22 include a list of principal presenting authors and the titles of their presentations. This list is in alpha order by major and then institution.

1. Laura Blohm & Adamove Osho, Calvin College **Biochemistry**
(Co-Author: Dr. Larry Louters)

"Activity of Tea Extracts & (-)-Catechin on GluT1 Transport"

2. Ola-Oluwakiti Alabi, Calvin College **Biochemistry**
(Co-Authors: Sam Kerk, Kathryn Wrobel, Riemer Praamsma, Dr. Eric Arnoys, Dr. Larry Louters)

"The Effect of Quercetin on GluT1 Activity"

3. Amanda Bolles, Kalamazoo College **Biochemistry**
(Co-Author: Dr. Laura L. Furge)

"5-Fluoro-2-[4-[(2-phenyl-1H-imidazol-5-yl)methyl]-1-piperazinyl]pyrimidine is a Mechanism Based Inactivator of Cytochrome P450 3A4"

4. Collin Breit, Hope College **Biochemistry**
(Co-Author: Maria Burnatowska-Hledin*)

"Resveratrol Affects Localization of VACM-1/cul5 in Endothelial Cells"

5. Jozlyn Clasman, Grand Valley State University **Biochemistry**
(Co-Authors: Jozlyn R. Clasman, Joshua M. Mitchell, Kip-Chumba J. Kaitany, Neil V. Klinger, Cynthia M. June, Robert A. Bonomo, Rachel A. Powers and David A. Leonard)

"Understanding the Structural Basis of Activity Against Aztreonam and Expanded-Spectrum Cephalosporins for Two Clinically-Derived Carbapenem-Hydrolyzing Class D β-Lactamases in Acinetobacter spp."

6. Christine Ikponmwonba, Calvin College **Biochemistry**
(Co-Author: Dr. Eric Arnoys)

"Cloning and Sequencing of Point Mutants"

7. Sam Kerk, Calvin College **Biochemistry**
(Co-Authors: Ola Alabi, Kathryn Wrobel, Riemer Praamsma)

"Characterization of glucose uptake in human kidney cells"

8. SeongEun Kim, Calvin College **Biochemistry**
(Co-Author: Prof. Douglas A. Vander Griend)

"The self-assembley of a supramolecular cube"

---

9. Nicole Ladd, Hope College **Biochemistry**
(Co-Authors: Elizabeth Unterbrink, Sara Lang, Anne Georges, Cassondra Cramer, Leah Chase)

"Identification of Endocytic Motifs in the C-Terminus of xCT"

---

10. Abigail Leistra, Calvin College **Biochemistry**
(Co-Authors: Amanda Witte, Jong Hyun Han, Seok Ki Choi, Kumar Sinniah)

"An AFM Force Pulling Study of Riboflavin Receptor Targeting Nanoparticles"

---

11. Nicole Michmerhuizen, Calvin College **Biochemistry**
(Co-Authors: Margaret A. Van Winkle, Kumar Sinniah)

"A Microcalorimetry Study of the Interaction between Insulin and G-Quadruplex DNA"

---

12. Auguste Niyibizi, Calvin College **Biochemistry**

"Using Raman and Fourier Transform Infrared Spectroscopy to Obtain Quantitative and Qualitative Data on Polystyrene and Polycarbonate Films"

---

13. Amanda Porter, Hope College **Biochemistry**
(Co-Authors: Sarah Colton, Chelsea Campbell, Elizabeth Gerometta, Rachel Haas, Abigail Lindberg, Sara Gallemore, Advisers: Drs. Gregory S. Fraley, Aaron A. Best, & Susan M. Fraley)

"Gut bacterial ecology of developing Pekin ducks in the food industry"

---

14. Riemer Praamsma, Calvin College **Biochemistry**
(Co-Author: Professor Eric Arnoys)

"Mechanistic Study of Glucose Transporter 1"

---

15. Hollister Swanson, Grand Valley State University **Biochemistry**
(Co-Authors: Hollister C. Swanson, Rachel A. Powers, and Bradley J. Wallar)

"X-ray crystal structure of the extended-spectrum class C Beta-lactamase, ADC-7, in apo form and in complex with a boronic acid transition state analog"

---

16. Jared Weidman, Calvin College **Biochemistry**
(Co-Author: Roger L. DeKock)

"Core Electron Ionization and the Periodic Table"

17. Kathryn Wrobel, Calvin College **Biochemistry**
(Co-Authors: Ola Alabi, Sam Kerk, Riemer Praamsma; Dr. Eric Arnoys, Dr. Larry Louters, Dr. Brendan Looyenga)

"The Effect of pH on GluT1 Activity"

---

18. Taylor Hegg, Calvin College **Biochemistry**
(Co-Authors: Brett DeVries, Matthew Hollowell, Emily Golz, David Benson)

"Detection and Quantification of Tyrosine-Cysteine Crosslinks"

---

19. Andrew Roth, Calvin College **BioMolecular Science**
(Co-Authors: Andrew G. Roth, Taylor H. Hegg, Emily K. Golz, Brett T. De Vries, Matthew T. Hollowell, David E. Benson)

"Quantified Correlation of Activity and Tyr-Cys Crosslink in Cysteine Dioxygenase by NMR"

---

20. Alex Zuhl, Grand Valley State University **Biochemistry**
(Co-Author: Matthew E. Hart)

"Progress towards the synthesis of N-[2-(2-aminoethyl) phenyl]-N'-phenyl urea and like TAAR activating derivatives"

---

21. Yesenia Aguilar, Kalamazoo College **Biology**
(Co-Authors: Jiaqiong Wang, Damien Pearse)

"Functional and Histological outcome of Bilateral Cervical Spinal Cord Contusion Injury in Fischer Rats"

---

22. Kendra Antonides, Calvin College **Biology**
(Co-Authors: Prof. Rob Keys, Prof. Sam Riffle, Fred Van Dyke)

"What is the relationship between sculpin abundance and water quality in streams in northwestern Michigan?"

---

23. Chelsea Campbell, Hope College **Biology**
(Co-Authors: Campbell, Chelsea L., Sarah Colton, Meredith Rice, Mike Turk, Susan M. Fraley and Gregory S. Fraley)

"The effect of different wavelengths of light on development and behavior of grow-out Pekin ducks"

---

24. Alexandria Clark, Hope College **Biology**

"Herbivore response to naturalized tall fescue and its endophytic fungus"

---

25. Emily Fuller, Calvin College **Biology**

*"*Water Quality Assessment of Bear Creek. Kent County, MI

26. Nkrumah Grant, Grand Valley State University **Biology**
(Co-Authors: Nkrumah Grant, Nick Smith, William Schroeder, Robert Smart, Roderick Morgan)

"GV-2 - A Novel Anthranilic Acid Derived Therapeutic to treat MRSA and other Antibiotic Resistant Microorganisms and its Inhibitory Interaction with Human Serum Albumin"

---

27. Marvin Harbour, Michigan State University **Biology**
(Co-Authors: Schuyler Pike and Norbert Kaminski)

"Engineering of a Dual Promoter Construct to Quantitatively Evaluate TCDD-Induced"

---

28. Esther Hui, Calvin College **Biology**
(Co-Authors: Anthony Tam, Lam Fung Kwok, YS Chan, Daisy SK Shum)

"Production of Purified Chondroitinase ABC II in use for Studies of Spinal Cord Nerve Regeneration"

---

29. Patchamol Kanjanakuha, Kalamazoo College **Biology**

"Analysis of Marine Bivalve along the Coast of Thailand for Toxoplasma gondii: Comparison between methods to optimize the detection sensitivity in the standardisation phase using cockles (Anadara granosa)"

---

30. Ian Noyes & Kathryn Westergren, Calvin College **Biology**
(Co-Author: Dr. Dave Warners)

"Restoring Native Habitats to Urban Landscapes"

---

31. Jenna Kennedy, Calvin College **Biology**
(Co-Authors: Jenna Kennedy, Dean Pettinga, and Darren S. Proppe)

"The Effect of Anthropogenic Noise on Songbird Response to an Avian Predator"

---

32. Evan Kowalski, Aquinas College **Biology**
(Co-Author: Dr. Jeffrey McKelvey)

"Factors influencing foraging of native woodpeckers for emerald ash borer"

---

33. Dorthea Leisman, Calvin College **Biology**
(Co-Author: Dr. David Warners)

"Flat Iron Lake Preserve Phenology and Floral Inventory"

---

34. Sara Leonard, Grand Valley State University **Biology**
(Co-Authors: Jessica Meppelink, Joseph Jacquot, Paul Keenlance, Doug Graham, Sara Leonard)

"Got Worms? Distribution and prevalence of Baylisascaris procyonis in raccoon populations throughout Allegan and Barry Counties in Michigan"

35. Mary Mathyer, Kalamazoo College **Biology**
(Co-Authors: Brandon K. Swan, Ramunas Stepanauskas)

"Carbon and Nitrogen Cycling by Nitrospina in the Dark Ocean"

---

36. Kristy Moore, Grand Valley State University **Biology**
(Co-Author: Eric Snyder)

"Unionids: their current status in Cedar Creek and their association with benthic macroinvertebrates"

---

37. Andrea Morrow, Grand Valley State University **Biology**
(Co-Authors: Melissa Tallman and Andrea Morrow)

"A comparative analysis of the tibia of Paralouatta varonai, an extinct Cuban primate"

---

38. Marie Mustert, Calvin College **Biology**
(Co-Authors: Marie Mustert, Daniel Michele)

"The Use of Induced Pluripotent Stem Cells for a Genetic Model of Muscular Dystrophy"

---

39. Margot Oliver, Calvin College **Biology**
(Co-Authors: Emily Diekema and Dr. Amy Wilstermann)

"Growth Characteristics of Lactobacillus iners that Promote Persistence in Bacterial Vaginosis"

---

40. Tim Olson, Grand Valley State University **Biology**
(Co-Authors: Dr. Eric Snyder and Tim Olson)

"A Longitudinal Stream Health Study of Pine Creek in western Ottawa County, MI"

---

41. Jonathan Knott & Paige Stephens, Calvin College **Biology**
(Co-Authors: Herb Fynewever and David Koetje)

"Teaching Ecology and Evolution Through the Lens of Vision and Change"

---

42. Dean Pettinga, Calvin College **Biology**
(Co-Authors: Dean Pettinga, Jenna Kennedy, Darren Proppe PhD, Dave Warners PhD)

"Monitoring the Plaster Creek Watershed"

---

43. Rachel Polet, Calvin College **Biology**
(Co-Authors: Jacob Jensen, Nathan Johnson, Curtis Wilkerson)

"Investigating the synthesis of xylan for the development of biofuel crops"

---

44. Lindsay Rupp, Siena Heights University **Biology**

"Barred Owl Pellets"

45. Allyson Schenk, Hope College **Biology**
(Co-Authors: Allyson N. Schenk, Alexis Meelker, Amanda L. Porter, Chelsea Campbell, Susan M. Fraley, & Gregory S. Fraley)

"A Comparison of Water Lines vs. Water Troughs in an Aviary Setting: Environmental, Behavioral, Body Condition, and Production Data in Pekin Ducks"

---

46. Clara Schriemer, Hope College **Biology**
(Co-Authors: Clara Schriemer, Marshall Willey, Mathew Ochs, Lauren Bedard, and Virginia McDonough)

"Differential regulatory response for the Δ9 desaturase in Saccharomyces cerevisiae based on fatty acid species and intracellular amount"

---

47. Jonathan Shoaff, Cornerstone University **Biology**
(Co-Author: David C. Mahan)

"Dam Removal and Macroinvertebrate Response"

---

48. Monica Langeland & Stacy Hooker, Calvin College **Biology**
(Co-Authors: Sylvia Fuhrman, Stacy Hooker, Keith Grasman)

"Great Lakes Restoration Initiative: Reassessment of Wildlife Reproduction and Health Impairments in the Saginaw Bay and River Raisin Areas of Concern"

---

49. Alexander Swain, Hope College **Biology**

"Endophytic Response to Methyl Jasmonate and Loline Quantification"

---

50. Deborah Cushman & Timothy Johnson, Cornerstone University **Biology**
(Co-Authors: Dr. Robert Keys, Mentor)

"Using electronic field recordings to increase the detectability of bird species at point count sites"

---

51. Kelsey Veldkamp, Calvin College **Biology**
(Co-Author: Randall DeJong)

"In-Depth Analysis of Bacteriophage Esperanza"

---

52. Rachel VanOeffelen, Calvin College **Biology**
(Co-Authors: Rachel VanOeffelen, Paula Kuiper, Herb Fynewever)

"What kind of professor are you?"

---

53. Lauren Verstraete, Calvin College **Biology**

"The Effect of Prairie Burns on Insect Populations at Flat Iron Lake, Kent County, MI"

54. Jake Waldvogel, Siena Heights University **Biology**
(Co-Authors: R.R. Smith, J.L. Bateson and M.J. Luce)

"Glyphosate decreases the reproductive success of the red worm, Eisenia fetida"

---

55. Tiffany Wells, Siena Heights University **Biology**

"The Larva Survival and Development of Pieris rapae on Berteroa incana"

---

56. Christine Wiersma, Alma College **Biology**
(Co-Authors: Shannon J. Timpe, Brian J. Doyle)

"A Quartz Crystal Microbalance Biosensor for Screening Botanical Extracts"

---

57. John Boss, Hope College **Biomedical Engineering**
(Co-Authors: Julia Slopsema, Johanna Forst, Derek Blok, Dr. Katharine Polasek)

"Feasibility of Surface Stimulation to Alleviate Phantom Limb Pain"

---

58. Lane Heyboer & Carson Tobias, Hope College **Biomedical Engineering**

"Alleviation of Phantom Limb Pain through Surface Stimulation"

---

59. Emily Andrews, Grand Valley State University **Biomedical Sciences**
(Co-Author: Dr. Jeremy Van Raamsdonk)

"Stress Resistance and Longevity can be Experimentally Dissociated"

---

60. Dan Cholger & Nick Poirier, Grand Valley State University **Biomedical Sciences**
(Co-Author: Dr. Eric Ramsson)

"Paraffin Wax Sealing of Carbon Fiber Microelectrodes is a Comparable Electrode Sealing Agent to Epoxy"

---

61. Kasey McKay & Craig Russo, Grand Valley State University **Biomedical Sciences**
(Co-Authors: Joshua Lee and Merritt Taylor)

"Screening the effects of candidate self-renewal regulatory genes in the developing chick embryo"

---

62. David Linn, Grand Valley State University **Biomedical Sciences**
(Co-Authors: Aula Ramo, Lindsey Schroedter, Lindsey Lusardi, Sabreen Faqihi and David M. Linn, PhD)

"Activation of Neuroprotective Receptors in Pig Retina: Implications for Glaucoma?"

---

63. Adam McMillan, Grand Valley State University **Biomedical Sciences**
(Co-Authors: Micheal Snider, Bopaiah Biddanda)

"Motility of Lake Huron Cyanobacterial Mats"

64. Chelsea Meloche, Grand Valley State University **Biomedical Sciences**

"Utilizing Biomass As An Energy Source"

---

65. Dana Collins & Michael Kneeshaw, Grand Valley State University **Biomedical Sciences**
(Co-Author: Dr. John Capodilupo)

"Immunodetection of Isoforms of GAP-43"

---

66. Ellie Morrison, Grand Valley State University **Biomedical Sciences**
(Co-Author: Dr. Margaret Dietrich)

"Atypical Apical Growth, Timing and Hormone Response in a Physcomitrella patens Developmental Mutant"

---

67. Craig Russo & Kasey McKay, Grand Valley State University **Biomedical Sciences**
(Co-Authors: Joshua Lee and Merritt Taylor)

"Screening the effects of candidate self-renewal regulatory genes in the developing chick embryo"

---

68. Alyssa Snyder, Grand Valley State University **Biomedical Sciences**

"Novel Biphenyl Ureas as Regulators of the Trace Amine Associated Receptor"

---

69. Noah Zucker, Grand Valley State University **Biomedical Sciences**
(Co-Author: David Kurjiaka, PhD)

"Effect Of Fatty Acid Structure On Endothelial Cell Connexin43 Levels"

---

70. Christopher Ver Hoef, Calvin College **Biophysics**

"The Mathematics of the Lipid Monoolein and its Cubic Phases"

---

71. Raven Dekker, Ferris State University **Biotechnology**
(Co-Authors: Piyadarsha Amaratunga, PhD, Bridget Lorenz Lemberg, Raven Dekker)

"Evaluation of Amphetamine ELISA Screening Plates"

---

72. Jamie Hook, Ferris State University **Biotechnology**
(Co-Authors: Xin Hong, Steve Kalkanis)

"Expression of stem cell marker nestin is correlated with glioblastoma cell proliferation"

---

73. Allison Hosmer, Ferris State University **Biotechnology**

"Substrate Ubiquitinylation by K6-only Ubiquitin"

74. Chase Judy & John Letherer, Ferris State University **Biotechnology**
(Co-Authors: Clarence Salazar, Aminna McGee, Abigail Solitro, and Bradley J. Isler)

"A study of the association between anophthalmic conditions and variation in several candidate genes in rats"

---

75. Shaughna Langerak, Ferris State University **Biotechnology**
(Co-Author: Dr. C. Zhu)

"Dosage effect of TGF-β signaling on aging regulation in Fruit flies (Drosophila melanogaster)"

---

76. Mallory Smith, Ferris State University **Biotechnology**
(Co-Authors: Dr. Gary Rodabaugh; Ferris State University-Biology Department, Lead Forensic Advisor Mallory Smith; Ferris State University-Biotechnology/Forensic Biology)

"The Effect of Sunscreen on the Rate of Decomposition"

---

77. Zachary DeBruine, Hope College **Cell and Molecular Biology**
(Co-Author: Dr. Maria Burnatowska-Hledin)

"Antiproliferative Effect of Resveratrol in Rat Endothelial Cells in vitro is Dependent on the Post-translational Modification of VACM-1/cul5"

---

78. Alexander Fisch, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Rebecca Uzarski, Robert Smart, William Schroeder, Osman Patel)

"Effect of Telomerase Inhibitors on Malignant Breast Cancer Cells"

---

79. Jamie Grit, Hope College **Cell and Molecular Biology**
(Co-Author: Dr. Steven J. Triezenberg)

"Post-translational modification of a key transcription factor for herpes simplex virus infection"

---

80. Ryan Hoogmoed, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Ryan C. Hoogmoed, Neil V. Klinger, Rachel A. Powers)

"Fragment-based discovery of novel inhibitors for the class D β-lactamase OXA-24"

---

81. Ronald Kamgang, Grand Valley State University **Cell and Molecular Biology**
(Co-Author: Dr. Margaret Dietrich)

"Characterization of Polar Growth in a Physcomitrella patens Insertional Mutant"

---

82. Drew Krumm, Hope College **Cell and Molecular Biology**
(Co-Authors: Andrew Neevel, Danielle Goodman, Megan Ludwig, Daniel Obregon, Virginia McDonough and Joseph Stukey)

"Investigating the cytotoxic effects of mycobacteriophage Vix Gene 80"

83. Eric Moore, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Ashley K. DeWitt, Dr. Dawn Clifford Hart)

"Investigation of cellular interaction of Mid1 and potential phosphatase regulator, Dis2, in S. pombe"

---

84. Kara Myers, Grand Valley State University **Cell and Molecular Biology**
(Co-Author: Dr. Margaret Dietrich)

"Pistil Composition and Flower Morphology in Arabidopsis thaliana and a cbl10 Mutant"

---

85. Mitch Roth, Grand Valley State University **Cell and Molecular Biology**
(Co-Author: Dr. Margaret Dietrich)

"The Role of CBL10 in Stamen Development in Arabidopsis thaliana"

---

86. Patrick Schneider, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Ashley DeWitt, Dawn M. Clifford Hart)

"Codifying the proteins involved in the nuclear localization of the Mid1 protein in fission yeast cell division"

---

87. Jordan Straight, Grand Valley State University **Cell and Molecular Biology**
(Co-Author: Dr. Merritt Taylor)

"Nato3 induces the expression of key DA neuron markers in a regionally and temporally specific manner within the developing CNS"

---

88. Katie Uhl, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Katie Uhl, Dr. Robert Smart, Dr. William Schroeder)

"Novel Telomerase Inhibitors synthesized from BIBR 1532 derivatives"

---

89. Leslie Wyman, Grand Valley State University **Cell and Molecular Biology**
(Co-Authors: Neil V. Klinger, Rachel A. Powers, Leslie A. Wyman)

"Structure-Based Discovery of a Novel Inhibitor of OXA-1 Beta-lactamase"

---

90. Corbin Jensen, Grand Rapids Community College **Cell and Molecular Biology/Genetics**
(Co-Authors: Corbin C. Jensen, Sander B. Frank, Cindy K. Miranti)

"Investigating a Mechanism for p38-MAPK Regulation of Notch"

---

91. Sarah VanOeveren, Grand Valley State University **Cell and Molecular Biology/Genetics**
(Co-Authors: Marian Testori and Dawn M. Clifford Hart)

"Identification of potential cytoskeletal proteins as binding partners of Mid1 in Schizosaccharomyces pombe"

92. Melinda Wilson, Lansing Community College **Cell and Molecular Biology/Genetics**
(Co-Authors: Jeff Cho, Nichole Coleman, John Shideler, Zachary Sokolowski, Robert Thomas, Elizabeth Thompson, and Melinda Wilson)

"DNA Barcoding of Medicinal Marijuana"

---

93. Melinda Wilson, Lansing Community College **Cell and Molecular Biology/Genetics**
(Co-Authors: Authors: (in alphabetical order) Jeff Cho, Nichole Coleman, Kirsten Robinson, Katelynn Shaw, John Shideler, Zachary Sokolowski, Robert Thomas, Elizabeth Thompson, and Melinda Wilson)

"Lansing Community College Shigematsu Memorial Garden Plant DNA Barcoding"

---

94. Matthew Bailey, Grand Valley State University **Chemistry**
(Co-Authors: K. Stillwell William and R. Winchester)

"Synthesis of Chiral Silanes"

---

95. Chad Barnhart, Alma College **Chemistry**
(Co-Authors: A. J. Ramirez, N. C. Dopke, J. A. Dopke)

"Metal Catalyzed Substitutions of Dodecaborates"

---

96. Allie Bouza, Grand Valley State University **Chemistry**
(Co-Authors: Roderick Morgan, PhD, William Schroeder, PhD & Robert Smart, PhD)

"Antibiotics to Fight Gram Positive Bacterium"

---

97. Katherine Coburn, Grand Valley State University **Chemistry**
(Co-Authors: Michael T. Peruzzi and Shannon M. Biros)

"Extraction of Lanthanide and Actinide Metals with Multidentate Carbamoylmethyl Phosphine Oxide Compounds"

---

98. Kimberly DeGlopper, Hope College **Chemistry**
(Co-Authors: Joseph M. Dennis, Catherine M. Calyore, Jeffrey B. Johnson)

"Preparation of Gamma-Lactams via a Nickel-Catalyzed Addition of in-situ Generated Diorganozinc Reagents to Imides"

---

99. Joseph Dennis, Hope College **Chemistry**
(Co-Author: Jeffrey B. Johnson)

"Development of Nickel-Mediated Decarbonylative Cross-Coupling Reactions of Phthalimides and Pendant Nucleophiles"

100. John Elenbaas, Calvin College **Chemistry**
(Co-Authors: Niecia Flikweert, John Elenbaas, Dr. Michael Barbachyn)

"Preparation of Bicyclo[1.1.1]pentyl Stannanes and Their Applications in Palladium-Catalyzed Cross Coupling Reactions"

---

101. Niecia Flikweert, Calvin College **Chemistry**
(Co-Authors: John Elenbaas and Michael Barbachyn)

"Substitution of the Benzylic Position of Quinoline Pyrimidinetrione (QPT) Antibacterial Agents"

---

102. Sarah Fodor, Hope College **Chemistry**
(Co-Author: Jeffrey B. Johnson)

"Exploring the Decarbonylation of Cyclic Imides Utilizing a Nickel Catalyst"

---

103. Rina Fujiwara, Kalamazoo College **Chemistry**
(Co-Author: Dr. Laura Lowe Furge)

"Inactivation of Human CYP3A4 by a Piperazine-containing Compound"

---

104. David Green, Hope College **Chemistry**

"Testing quinazolinespirohexadienone photochromes as gatable photoinduced charge transfer initiators"

---

105. Virginia Greenberger, Kalamazoo College **Chemistry**
(Co-Author: Regina Stevens-Truss)

"Bacterial Action of Novel Cationic Peptides"

---

106. Devi Haria, Grand Valley State University **Chemistry**
(Co-Authors: James O'Keefe, Dr. Richard Rediske)

"An Analysis of the Nuisance Cyanobacterium Gloeotrichia in Silver Lake, Michigan"

---

107. Matthew Haveman, Calvin College **Chemistry**
(Co-Authors: Matthew Haveman, Professor Douglas A. Vander Griend)

"Examination of Protein Folding Using Sivvu™"

---

108. Alexandria Hoerr, Calvin College **Chemistry**
(Co-Author: Andrea Bootsma)

"Fluorescence of Aqueous Sycamore Extracts"

109. Sarah Jack, Alma College **Chemistry**
(Co-Authors: M. M. Strait, G. J. Flynn, D. D. Durda)

"Using Porous Materials to Model Asteroid Disruption"

---

110. John LaGrand, Calvin College **Chemistry**
(Co-Author: Dr. Carolyn E. Anderson)

"Efforts Towards the Synthesis of Amino-Substituted β-Iodo N-Alkenyl Pyridones"

---

111. Kelly Le, Grand Valley State University **Chemistry**
(Co-Author: Randy Winchester)

"Synthesis of Vinyl Substituted Chiral Silanes"

---

112. Zackery Manning, Alma College **Chemistry**
(Co-Author: Nancy Carter Dopke, Ph.D.)

"Synthesis and characterization of platinum-ruthenium heterometallic complexes"

---

113. Nathan Murray, Michigan State University **Chemistry**
(Co-Authors: Nathan H. Murray, Dr. Robert L. LaDuca)

"Unexpected Lactonization of Divalent Metal Coordination Polymers Containing 3-pyridylisonicotinamide and Their Related Structures"

---

114. Benjamin Nicholson, Grand Valley State University **Chemistry**
(Co-Authors: Paul M. Morse and Shannon M. Biros)

"Modified Bidentate Phosphoryl Compounds for f-Element Complexation"

---

115. Sultan Qiblawi, Michigan State University **Chemistry**
(Co-Author: Principal Investigator: Dr. Robert LaDuca)

"Divalent Copper trans-1,4-Cyclohexanedicarboxylate Coordination Polymers with Isomeric Dipyridylamide Ligands: New Pillared and Self-Penetrated Binodal Networks"

---

116. Krystle Reiss, Alma College **Chemistry**
(Co-Authors: Conner Daugherty, Kayla Tuttle, and Melissa Strait)

"Searching for Chlorpyrifos in Gratiot County Produce"

---

117. Dustin Rens, Hope College **Chemistry**
(Co-Authors: Dr. Kenneth Brown, Hope College Dr. Thomas Neils, Grand Rapids Community College)

"The Electrochemistry of Tris[5-amino-1,10-phenanthroline] Iron (II/III) Polymer Films"

118. Emily Rhude, Calvin College **Chemistry**
(Co-Author: Prof. Douglas A. Vander Griend)

"Metal Ligand Solution Structure"

---

119. Alaina Richard, Alma College **Chemistry**
(Co-Authors: R. Steeples, A. J. Ramirez, J. A. Dopke)

"Buchwald-Hartwig Amination of Arenes with Cluster-Substituted Amines"

---

120. Marissa Saladin, Aquinas College **Chemistry**
(Co-Authors: Manasi Pethe, Dr. Sagar Khare)

"A Structure-Based Predictive Model for the Substrate Specificity of the Tobacco Etch Virus Protease"

---

121. Justin Shady, Grand Valley State University **Chemistry**
(Co-Authors: Alyssa A. Kulesza, Brooke Visser, Adam C. Boyden, Shannon M. Biros)

"Synthesis of New Compounds For Sensitizing Lanthanide Luminescence"

---

122. Julie Stoscup, Grand Valley State University **Chemistry**
(Co-Author: Principal Investigator: Shannon M. Biros)

"Investigation of Multidentate Carbamoylmethylphosphine Oxide Compounds for Lanthanide and Actinide Chelation"

---

123. John Strikwerda, Calvin College **Chemistry**
(Co-Author: Dr. Roger L. DeKock)

"Successive Ionization Energies of Atoms: Theoretical Interpretation"

---

124. Caleb Uitvlugt, Calvin College **Chemistry**
(Co-Authors: Caleb Uitvlugt, Professor Chad Tatko)

"Electrochemistry of Catechols"

---

125. Brooke Visser, Grand Valley State University **Chemistry**
(Co-Authors: Justin R. Shady Alyssa A. Kulesza Adam C. Boyden Shannon M. Biros)

"Synthesis of a New Compound for Lanthanide Luminescence"

---

126. E Yasmine Walton-Durst, Grand Rapids Community College **Chemistry**
(Co-Authors: E. Yasmine Walton-Durst; Will Cantrell)

"Effect of a Surfactant on the Contact Nucleation of Ice: A Study in Atmospheric Physics"

127. Jacqueline Williams, Grand Valley State University **Chemistry**
(Co-Authors: Matthew E. Hart PhD)

"Progress towards the development of urea based modulators of the trace amine associated receptor: Meta linked ureas"

---

128. Andrew Zahrt, Aquinas College **Chemistry**
(Co-Authors: Andrew Zahrt and Jonathan Fritz)

"Ligand Structure Influences Direct Arylation Regioselectivities"

---

129. Peter VandeHaar, Calvin College **Computational Biology/Bioinformatics**
(Co-Author: Juan Pedro Steibel, Ph.D, Michigan State University)

"Exploration and Exploitation of Linkage Disequilibrium"

---

130. Jiaming Jiang, Calvin College **Computer Science**
(Co-Author: Becky Haney, Loren Haarsma, Victor Norman)

"Wealth & Inequality: What can Agent-Based Model Simulations Tell Us?"

---

131. James Lamine, Calvin College **Computer Science**
(Co-Authors: Loren Haarsma, Serita Nelesen)

"Modeling the Evolution of Complexity with Digital Organisms"

---

132. Thomas Wodarek, Calvin College **Computer Science**
(Co-Authors: Abigail J. Streelman, Dr. Serita M. Nelesen, Dr. John T. Wertz)

"HTMAD: High-Throughput Microbial Analysis and Dereplication"

---

133. Rachel Gaide, Calvin College **Engineering**
(Co-Authors: Professor: Xiuhua A. Si Student: Rachel Gaide)

"Electrophoretic Focusing and navigation for Intranasal"

---

134. Jeremiah Rocha & Julie Swierenga, Calvin College **Engineering**
(Co-Author: Professor David Wunder)

"Impact of Antibiotics on Denitrifying Biofilm Bacteria"

---

135. Aldo Daniel Khoi Vu, Calvin College **Engineering**
(Co-Author: Professor Yoon G. Kim)

"Development of portable battery-operated wireless devices for environmental monitoring"

136. Okkar Myint, Calvin College **Engineering**
(Co-Author: Prof. Yoon Kim)

"Development of Maximum Power Point Tracking (MPPT) Controller for Photovoltaic (PV) Cells"

---

137. Jerome Navarro, Calvin College **Engineering**

"From Field to Filter: Fluoride Sorption onto Bagasse Charcoal"

---

138. Lukas Woltjer, Calvin College **Engineering**
(Co-Authors: Professor Richard DeJong and Matthew De Young)

"Thermal Testing of Fenestration Systems"

---

139. Andrew DeVries, Calvin College **General Biology/Pre-Med**
(Co-Authors: Dr. David Dornbos, Dr. John Wertz)

"Exploring the Symbiosis of Frankia Bacteria with the Invasive Shrub, Autumn Olive"

---

140. Elaine Sheikh, Grand Valley State University **General Biology/Pre-Med**

"Endosymbionts and the Evolution of Host Sociality"

---

141. Chengbi Liu, Calvin College **Geography**
(Co-Authors: William SooHoo and Jason VanHorn)

"Creating a Web Application for Plaster Creek Watershed"

---

142. Brian Woodin, Aquinas College **Geography**

"Sedimentation Rates and Sediment Composition in Brewster Lake as Indicators of Anthropogenic Land Use Changes Across Time"

---

143. Karl Campbell, Grand Valley State University **Geology**
(Co-Authors: John Weber, Grand Valley State University, Department of Geology Jenny Arkle, University of Cincinnati, Department of Geology)

"Source to Sink, Trinidad and Tobago: Thermochronology of Pliocene Sediment from the Caribbean Sea"

---

144. Carlene Gilewski, Grand Valley State University **Geology**
(Co-Author: Dr. Ginny Peterson)

"Constraints on P-T conditions during deformation within the Chunky Gal Mountain Fault, Central Blue Ridge, North Carolina"

145. Saray Morales, Grand Valley State University **Geology**
(Co-Authors: Dr.John Weber (GVSU), Dr. Pablo Llerandi-Roman (GVSU), Dr. Peter La Femina (PSU), Halldor Geirsson, (PSU), Saray Morales)

"GPS-derived Preliminary Vertical Tectonic Motions and Causes, Puerto Rico and Trinidad"

---

146. Kenton Shaw, Grand Valley State University **Geology**
(Co-Authors: Dr. John Weber, Grand Valley State University, Department of Geology Dr. Peter LaFemina, The Pennsylvania State University, Department of Geosciences Halldor Geirsson, The Pennsylvania State University, Department of Geosciences Kenton Shaw, Grand Valley State Universit)

"GPS Geodesy Study of Seismic Risk on the Central Range Fault, Trinidad"

---

147. Christian VanWyngarden, Grand Valley State University **Geology**
(Co-Authors: Christian VanWyngarden, John Weber)

"An apatite fission-track study of Exhumation, Greater Caucasus Mountains, Azerbaijan"

---

148. Jackie Gipe, Aquinas College **Mathematics**
(Co-Author: Dr. Michael McDaniel)

"Consequences of working with chord diagrams from the open wheel Jacobi Diagram"

---

149. Nico Fernandez, Grand Valley State University **Microbiology**
(Co-Author: Thomas, Derek. P)

"The Role of Post-Translational Modification of Rfg1 in the Regulation of Candida albicans Filamentation"

---

150. Clare Laut, Michigan State University **Microbiology**
(Co-Authors: Clare Laut, Robert Parker, Carl Boehlert, and Shannon D. Manning)

"Effects of pH and Nutrition Depletion on Group B Streptococcus Cells that Exist in Biofilms"

---

151. Andrew Valesano, Hope College **Microbiology**
(Co-Author: Dr. Aaron Best)

"Transcriptome Profiling of the Life Cycle of Giardia lamblia using RNA-seq"

---

152. Rebecca Farr, University of Michigan-Flint **Molecular Biotechnology**
(Co-Authors: Asadullah Siddiqui, Kevin Tang)

"Molecular phylogeny of cusk-eels (Teleostei: Ophidiiformes: Ophidiidae)"

---

153. Matt Davidson, Kalamazoo College **Neuroscience**
(Co-Authors: Briana Franz, Nick Hibbard, James McKim)

"Naloxone Inhibits TLR4 Signaling in a Human Monocyte Model"

154. Kristy Rieger, Grand Valley State University **Neuroscience**
(Co-Authors: Derek Haas, Merritt Taylor)

"An In Vivo study of the Effects of Long Chain Fatty Acids on Neurogenesis"

---

155. Yolanda Cruz-Olguin, Grand Rapids Community College **Nursing**
(Co-Authors: Rakumbar Mohan, Yiping Mao, Shungang Zhang, and Xiaoquing Tang)

"Role of MicroRNA in Pancreatic Beta Cell Pathogenesis"

---

156. Brittany Cooke, Grand Valley State University **Physics**
(Co-Authors: Advisor: Dr. Richard S. Vallery, Brittany Cooke)

"Generation of Diffraction Gratings Using Photographic Film"

---

157. Julia Gjebic, Grand Valley State University **Physics**
(Co-Authors: Dr. Karen Gipson, Dr. Marlen Vavrikova, Julia Gjebic (P.I.))

"A Study of Oboe Reed Construction"

---

158. Danielle Harris, Grand Valley State University **Physics**
(Co-Authors: Dr. Richard S. Vallery)

"DDS/DGEBA Epoxy Used as a Model for Studying Polymer Confinement in Polymer Nanocomposites"

---

159. Margeaux Carter & Jacob Lampen, Calvin College **Physics**
(Co-Author: Professor Matthew Walhout)

"Laser Frequency Stabilization Using an Acousto-Optic Modulator"

---

160. Nathan McReynolds, Calvin College **Physics**
(Co-Author: Nathan McReynolds)

"Data Acquisition and Analysis with LabVIEW"

---

161. Emma Patmore, Alma College **Physics**
(Co-Authors: M.M. Strait, G.J. Flynn, D.D. Durda)

"Detectors to Determine Variable of Particles in Impact Experiments"

---

162. Benjamin Peecher, Hope College **Physics**
(Co-Author: Dr. Jennifer Hampton)

"Electrodeposition and Dealloying of Nickel-Cobalt Thin Films"

163. Jonathan Shomsky, Calvin College **Physics**
(Co-Author: Prof. Matt Walhout)

"Using laser light to decelerate argon and krypton atoms"

---

164. Michael Korn, Kalamazoo College **Pre-Medicine**
(Co-Authors: Max E. Davis, Jonathan P. Gumucio, Asheesh Bedi, Christopher L. Mendias)

"The protective effects of simvastatin on muscle in a rat model of chronic rotator cuff injury"

---

165. Maria Sanchez, DePaul University **Pre-Medicine**
(Co-Authors: Maria Sanchez andDavid N Everly Jr.)

"Identification of Potential LMP1 Binding Proteins for Signaling of EBV Associated Diseases Using Bimolecular Fluorescence Complementation"

---

166. Erin Combs, Grand Valley State University **Science Education**
(Co-Authors: Veronique Shulz, Dr. Cindy Miranti)

"How Do Cancer Cells Communicate with their Environment?"

---

167. Nathan Colley, Grand Valley State University **Science Education**
(Co-Authors: Nathan Colley, Wendal Kane, Jared Toogood, Gary Greer)

"Niche and Neutrality of Vascular Epiphytes at Mid-Elevation in Puerto Rico"

---

168. Sara Conrad, Calvin College **Science Education**
(Co-Authors: Karyssa C. Schrouder and Amy M. Wilstermann, PhD.)

"Cancer Curriculum Initiative: Developing Resources to Improve Children's Understanding of Cancer"

---

169. Joseph Lutz, Grand Valley State University **Science Education**
(Co-Authors: Sarah Staman, Dr. Rick Rediske)

"In-Country Prototype Biosand Filters"

---

170. Ashley Meyer, Grand Valley State University **Science Education**
(Co-Authors: All work done under Dr. B. Biddanda at AWRI)

"Climate Change, Lake Ecosystem Dynamics and Lesson Plan"

---

171. Joanna Richison, Grand Valley State University **Science Education**
(Co-Authors: Joanna Richison, Joeseph Jaquot, and Paul Keenlance)

"Impacts of Savannah Restoration on Small Mammal Density and Diversity in West Michigan"

172. Brad Stevens, Grand Valley State University **Science Education**
(Co-Authors: Patrick M. Colgan and Bradley S. Stevens)

"Radiocarbon and sediment evidence for the Nipissing Transgression (~7000 to 6000 years ago) at Hemlock Crossing County Park, Michigan"

---

173. Kevin Sylvester, Grand Valley State University **Science Education**
(Co-Author: Principal Investigator: Ryan Thum Ph.D.)

"eDNA Detection of an Invasive Aquatic Plant Species"

---

174. Rebecca Tauscher, Michigan State University **Science Education**
(Co-Authors: Alexandra Collins-Webb, Kathleen A. Jeffery, Lindsey Phillips, Ryan D. Sweeder*)

"Comparing the longitudinal impacts of active-learning and module-based undergraduate, general chemistry lectures"

---

175. Jennifer Woods, Grand Valley State University **Science Education**
(Co-Authors: Jennifer C. Waller, David J. Janetski, Carl R. Ruetz III, and James N. McNair)

"Settling rates of stream invertebrates"

---

176. Dan Postema, Grand Valley State University **Target Inquiry Program**
(Co-Authors: Mattox, Stephen, Grand Valley State University, and Herrington, Deborah, Grand Valley State University)

"Using Pillow Lava Erratics to Investigate Glacial Pathways in Michigan"

---

177. Sarah Weber, Grand Valley State University **Target Inquiry Program**
(Co-Authors: Hollister C. Swanson Rachel A. Powers Bradley J. Wallar)

"Initial Characterization of a Catalytic Amino Acid in the Extended-Spectrum Class C □-lactamase, ADC-7"

---

178. Shinnosuke Kondo & Carl Deeg, Hope College **Computer Science**
(Co-author: Matthew DeJongh)

"*Proposing Genes for Gap Reactions in Metabolic Pathways*"

---

179. Zachary Diener, Hope College **Physics**
(Co-Authors: Matthew Weiss, Dr. Paul DeYoung and Dr. Stephen Remillard)

"Analysis of Thin Semiconducting Films' Thickness and Stoichiometry"

---

180. Abigail Carlson, Grand Valley State University **Biomedical Sciences**
(Co-Authors: Daniel Bergman)

"Crayfish cerebral ganglia preservation and sectioning for an assessment of exercise induced neurogenisis"