



KEYNOTE SPEAKER

D. Marshall Porterfield, Ph.D.

**Division Director, NASA Space Life and Physical Sciences
Human Exploration and Operations Mission Directorate (NASA Headquarters)
Professor of Agricultural and Biological Engineering at Purdue University**

“The future of human space exploration, and the art of integrating science and engineering in designing bioregenerative life support for long duration missions”

Now that the National Aeronautics and Space Administration (NASA) had developed its roadmap to Mars the future needs for long-duration missions has started to be defined. As we move further away from missions in low-earth orbit aboard the International Space Station the cost and risks are both increased dramatically. The challenge for further expanded missions that create more permanent outposts will increasingly be associated the logistics of providing the necessities of life to the crew. Today aboard the international Space Station we are doing research to develop biomedical countermeasures for humans in space, developing and testing space-systems technologies, and doing research on biological systems that would contribute to the development of bioregenerative systems to support long duration exploration. This seminar will review various efforts in these areas and outline how they contribute to the ambitions of humanity to explore further out into the solar system, but also to create new sustainable systems that will help us protect our environment back on earth.

ABSTRACTS OF FACULTY RESEARCH TALKS



Scott Rothbart, Ph.D., Assistant Professor
Center for Epigenetics, Van Andel Research Institute

“Decoding the language of chromatin modifications”

Two major epigenetic signals regulating the structure and function of eukaryotic chromatin are methylation of DNA and post-translational modifications of histone proteins. Fundamental breakthroughs in our understanding of chromatin function have been made through the identification of protein machineries that incorporate (write), remove (erase), and bind (read) these epigenetic marks. Chromatin modification and remodeling shape cellular identity, and it is becoming increasingly apparent that deregulation of epigenetic signaling contributes to, and may cause, the initiation and progression of cancer and other human diseases. Unlike genetic abnormalities, chromatin modifications are reversible, making the writers, erasers, and readers of these marks attractive therapeutic targets. The goal of our research is to define molecular details of chromatin accessibility, interaction, and function. We are particularly interested in understanding how DNA and histone modifications work together as a language or “code” that is read and interpreted by specialized proteins to orchestrate the dynamic functions associated with chromatin. We hope our studies will lead to a better understanding of the etiology of disease and will contribute to the discovery of effective therapeutic approaches targeting the epigenetic machinery.



Jennifer Hampton, Ph.D., Associate Professor
Department of Physics, Hope College

“Magnetic Measurements of Electrodeposited Thin Films and Multilayers”

The 2007 Nobel Prize in Physics was awarded to two European physicists who discovered in 1988 that multilayered materials with alternating magnetic and nonmagnetic layers exhibit a large change in electrical resistance with the application of an external magnetic field. They named the effect Giant Magnetoresistance (GMR), and today it is the technology being used in almost every computer hard drive. In this talk, I will describe GMR and how it has been influential in the ever-increasing amount of data you can store on your computer. Then I will show how electrodeposition can be used to fabricate GMR-type materials and present data on their magnetic behavior.

ABSTRACTS OF FACULTY RESEARCH TALKS



Peter Wampler, Ph.D., Associate Professor
Geology Department, Grand Valley State University

“Wrestling with Wells and Water in Haiti”

Since 2007 I have been travelling to Haiti to learn about groundwater and safe and sustainable solutions to ground water contamination with undergraduate and graduate students (www.gvsu.edu/haitiwater). This research has revealed widespread contamination with fecal coliform bacteria in shallow karst aquifers. Water interventions such as biosand filters and chlorination work, but their implementation and sustained use by rural Haitians has been problematic. Hand-dug wells are common in many developed communities, but are uncommon in the rural mountainous areas of Haiti where natural springs are abundant. Rural Haitians typically send family members, usually women and children, to fetch water at springs 2-3 times daily using a combination of buckets and plastic containers. Bacterial contamination is common in natural springs in Haiti due to surface contamination, vulnerable karst aquifers, and inadequate sanitation. A common practice has been to install concrete structures to protect the area where the spring emerges, however water testing shows that both protected and unprotected springs are contaminated with bacteria. In June 2013 an alternative approach, referred to as in-situ filtration (ISF) wells, was tested on two pilot wells. An ISF well combines hand-construction techniques compatible with remote locations, simple and inexpensive hardware and maintenance, and the convenience and protection provided by a drilled well at a fraction of the cost. Since 2013 6 ISF wells have been installed in Haiti and monitoring indicates they are successfully reducing *E. coli* levels.



David Warners, Ph.D., Professor
Biology Department, Calvin College

“Helping to Heal a Creek with Undergraduate Research”

Plaster Creek flows for approximately 14 miles from agricultural lands in Southern Kent County through suburban, commercial, industrial and then low-income urban areas before emptying into the Grand River just south of downtown Grand Rapids. Plaster Creek is known as the most degraded waterway in West Michigan due to the large volume of stormwater runoff it carries, along with excess nutrients and sediment, as well as dangerously high levels of bacteria. Plaster Creek Stewards, a Calvin College based watershed group, was formed in 2009 in an attempt to address these problems by focusing on 1) education and outreach; 2) on-the-ground restoration work; and 3) research. This talk will highlight recent research projects including *E. coli* sourcing, habitat restoration, and hydrologic modeling that are providing Plaster Creek Stewards with valuable information as they work to restore this much maligned local stream.

9th ANNUAL
WEST MICHIGAN REGIONAL UNDERGRADUATE SCIENCE RESEARCH CONFERENCE
2015 POSTER PRESENTATIONS

AUTHORS LIST

Pages 4-7 includes a list of principal presenting authors by last name (alphabetical order)

Last Name	First Name	Poster Numbers	Institution/Organization	Field of Study
Abma	Aaron	137	Calvin College	Physics
Alenciks	Erin	49	Hope College	Biology
Anderson	Lauren	26	Calvin College	Biology
Armistead	Brooke	71	Grand Valley State University	Cell and Molecular Biology
Barry	Anna	72	Grand Valley State University	Cell and Molecular Biology
Bassler	Zachary	60	Grand Valley State University	Biomedical Sciences
Bazany	Garrett	2	Calvin College	Biochemistry
Blanchett	Reid	58	Kalamazoo College	Biology
Boersma	Peter	126	Calvin College	Microbiology
Bonnema	Alexis Bonnema	113	Calvin College	Engineering
Boomsma	Alex	1	Calvin College	Biochemistry
Bouma	David	27	Calvin College	Biology
Brands	Jeremy	28	Calvin College	Biology
Brown	Sarah	87	Grand Valley State University	Cell and Molecular Biology / Genetics
Brunges	Hunter	46	Grand Valley State University	Biology
Budi	Joey	29	Calvin College	Biology
Buiter	Stephan	30	Calvin College	Biology
Busscher	Brianna	3	Calvin College	Biochemistry
Cole	Julie	127	Grand Valley State University	Microbiology
Cunningham	Jeremy	96	Grand Valley State University	Chemistry
Dadzie	David	114	Calvin College	Engineering
DeGlopper	Kimberly	104	Hope College	Chemistry
DeGroot	Ryan	115	Calvin College	Engineering
DeJong	Leanna	31	Calvin College	Biology
DeJonge	Lydia	4	Calvin College	Biochemistry
Diklich	Nina	89	Aquinas College	Chemistry
Dilley	Chris	108	Calvin College	Computer Science
Dorn	Stanna	105	Hope College	Chemistry
Doster	Macy	47	Grand Valley State University	Biology
Doyle	Daniel	73	Grand Valley State University	Cell and Molecular Biology
Dunn	Natalie	23	Aquinas College	Biology
Dykstra	Wesley	32	Calvin College	Biology
Ellsworth	Brandon	50	Hope College	Biology
Ensink	Elizabeth	51	Hope College	Biology
Ensink	Elliot	74	Grand Valley State University	Cell and Molecular Biology
Favorite	Joshua	67	Ferris State University	Biotechnology
Foley	Hannah	16	Central Michigan University	Biochemistry
Foxa	Gabrielle	75	Grand Valley State University	Cell and Molecular Biology

Last Name	First Name	Poster Numbers	Institution/Organization	Field of Study
Fritzler	Jessica	61	Grand Valley State University	Biomedical Sciences
Gerber	Kathryn	33	Calvin College	Biology
Gilbert	Timothy	76	Grand Valley State University	Cell and Molecular Biology
Glass	Sarah	22	Kalamazoo College	Biochemistry
Glupker	Courtney	34	Calvin College	Biology
Groendyke	Bailey	140	Grand Valley State University	Physics
Gulotty	Eva	97	Grand Valley State University	Chemistry
Gunnink	Leesha	5	Calvin College	Biochemistry
Hall	Jacob	142	Calvin College	Pre-Medicine
Hasse	Brady	132	Central Michigan University	Neuroscience
Heidmann	Brian	6	Calvin College	Biochemistry
Hentig	James	135	Western Michigan University	Neuroscience
Hoekwater	Bretton	143	Calvin College	Psychology
Hohlman	Robert	92	Calvin College	Chemistry
Hromada	Susan	7	Calvin College	Biochemistry
Idyle	Kelsey	133	Central Michigan University	Neuroscience
Ivancich	Marko	59	Calvin College	Biomedical Sciences
Jensen	Craig	90	Aquinas College	Chemistry
Jones	Jordan	24	Aquinas College	Biology
Kang	Ha Ram	116	Calvin College	Engineering
Kempisty	Rachel	45	Ferris State University	Biology
Kennington	Lauren	21	Hope College	Biochemistry
Kerkstra	Brennan	139	Central Michigan University	Physics
Kesterson	Daniel	17	Central Michigan University	Biochemistry
Khacherian	Ohanes	144	Hope College	Psychology
Khudhur	Basma	62	Grand Valley State University	Biomedical Sciences
Kim	Sarah Faith	52	Hope College	Biology
Klamer	Zachary	77	Grand Valley State University	Cell and Molecular Biology
Kortman	Curtis	117	Calvin College	Engineering
Kruk	Katie	141	Grand Valley State University	Physics
Kuipers	Alexandra	35	Calvin College	Biology
Kyle	Barrett	78	Grand Valley State University	Cell and Molecular Biology
Lambert (Lozon)	Whitney (Darien)	44	Cornerstone University	Biology
Lander	Stephen	8	Calvin College	Biochemistry
Langerak	Shaughna	68	Ferris State University	Biotechnology
Leach	Erin	98	Grand Valley State University	Chemistry
Lear	Alan	99	Grand Valley State University	Chemistry
Lee	Kathryn	106	Hope College	Chemistry
Lee (Nguyen)	YeaEun (Thuy-Tien)	36	Calvin College	Biology
Leerar	John	37	Calvin College	Biology
Lensing	Jon	38	Calvin College	Biology
Link	Matthew	138	Calvin College	Physics
Lodge	Evans	111	Calvin College	Ecology and Evolution
Macqueen	Emily	123	Aquinas College	Geography
McWilliams	Drew	128	Grand Valley State University	Microbiology
Michmerhuizen	Anna	93	Calvin College	Chemistry
Milhorn	jacob	118	Calvin College	Engineering

Last Name	First Name	Poster Numbers	Institution/Organization	Field of Study
Mumuni	Salma	66	Western Michigan University	Biomedical Sciences
Neevel	Andrew	84	Hope College	Cell and Molecular Biology
Oram	Matthew	70	Calvin College	Cell and Molecular Biology
Pardy	Luke	79	Grand Valley State University	Cell and Molecular Biology
Peruzzi	Christopher	100	Grand Valley State University	Chemistry
Pickruma	Adam	129	Grand Valley State University	Microbiology
Pierce	Nick	91	Aquinas College	Chemistry
Piligian	Brent	18	Central Michigan University	Biochemistry
Pledger	Jacob	121	Hope College	Engineering
Porter	Lindsey	53	Hope College	Biology
Potter (Shannon)	Hannah (Mackenzie)	54	Hope College and Grand Valley State University	Biology
Powell	Brianna	48	Grand Valley State University	Biology
Powers	Ashley	25	Aquinas College	Biology
Prieskorn	Brooke	80	Grand Valley State University	Cell and Molecular Biology
Raybaud	Matt	124	Calvin College	Geography
Rohraff	Dallas	130	Grand Valley State University	Microbiology
Rohraff	Dallas	131	University of Georgia	Microbiology
Romero	Evan	86	Calvin College	Cell and Molecular Biology / Genetics
Ronspees	Austin	101	Grand Valley State University	Chemistry
Rose	Karine	9	Calvin College	Biochemistry
Rosette	Kylee	10	Calvin College	Biochemistry
Rovedatti	Vincent	119	Calvin College	Engineering
Rundell	Sarah	19	Central Michigan University	Biochemistry
Saunders	Jacqueline	136	Ferris State University	Pharmacy
Scheeres	Annaka	125	Calvin College	Geography
Schepers	Matthew	39	Calvin College	Biology
Schipper	Kayla	55	Hope College	Biology
Schroedter	Lindsey	63	Grand Valley State University	Biomedical Sciences
Shepard	Alyssa	134	Central Michigan University	Neuroscience
Smolen	Kali	81	Grand Valley State University	Cell and Molecular Biology
St Clair	Erica	122	Ferris State University	Forensic Biology
Starks	Leah	64	Grand Valley State University	Biomedical Sciences
Strohbehn	Lauren	11	Calvin College	Biochemistry
Stuut	Stacie	102	Grand Valley State University	Chemistry
Sugg	Kyle	82	Grand Valley State University	Cell and Molecular Biology
Swain	Alexander	85	Hope College	Cell and Molecular Biology
Swineford	Jacob	40	Calvin College	Biology
Thong	Tasha	94	Calvin College	Chemistry
Trentadue	Kathryn	107	Hope College	Chemistry
Tubergen	Philip	41	Calvin College	Biology
Twining	Andrew	120	Calvin College	Engineering
Unger	Javin	109	Calvin College	Computer Science
Van Baren	Megan	42	Calvin College	Biology
Van Staalduinen	Emily	43	Calvin College	Biology
Vander Stel	Kayla	12	Calvin College	Biochemistry
VanderWeide	Andrew	103	Grand Valley State University	Chemistry
VanLaar	Lucas	13	Calvin College	Biochemistry
VanWyngarden	Michael	56	Hope College	Biology

Last Name	First Name	Poster Numbers	Institution/Organization	Field of Study
Ward	Avery	20	Central Michigan University	Biochemistry
Weber	Alexis	88	Michigan State University	Cell and Molecular Biology / Genetics
Weidman	Jared	95	Calvin College	Chemistry
Wesley	John	65	Grand Valley State University	Biomedical Sciences
Wieckhorst	Matthew	83	Grand Valley State University	Cell and Molecular Biology
Wilson	Kathryn	69	Ferris State University	Biotechnology
Winkler	Danielle	145	Ferris State University	Public Health
Wodarek	Jeremy	14	Calvin College	Biochemistry
Wolff	Carter	57	Hope College	Biology
Zhang	Shiyuan	15	Calvin College	Biochemistry
Zylstra	Isaac	110	Calvin College	Computer Science

2015 POSTER PRESENTATIONS

Pages 8-22 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. Alex Boomsma, Calvin College Biochemistry
(Co-Authors: Robbie Hohlman, Sherrice Zhang)
"The Bromocyclocarbamation and Iodocyclocarbamation Reactions of N-Allyl-N-arylcarbamates and N-Homoallyl-N-arylcarbamates"

2. Garrett Bazany, Calvin College Biochemistry
(Co-Authors: Duanghathai Wiwatratana, William D. Atchison)
"Investigating the role of dimethyl fumarate in activating Nrf2 pathway associated genes and in the survival of motor neurons following MeHg-toxicity"

3. Brianna Busscher, Calvin College Biochemistry
(Co-Authors: John T. Wertz)
"Characterizing Commas: Discovery and exploration of a novel family of pleomorphic Rhizobiales bacteria isolated from herbivorous ants"

4. Lydia DeJonge, Calvin College Biochemistry
(Co-Authors: Nicole L. Michmerhuizen, Maggie A. Van Winkle, Amanda B. Witte, Kylin Hamann, and Kumar Sinniah)
"A Thermodynamic Study of the Interaction between Insulin and Insulin-Linked Polymorphic Region DNA"

5. Leesha Gunnink, Calvin College Biochemistry
(Co-Authors: Dr. Larry Louters)
"The Mechanism of Curcumin Inhibition on GluT1"

6. Brian Heidmann, Calvin College Biochemistry
(Co-Authors: Dr. Carolyn Anderson)
"Efforts towards the synthesis of β - and γ -amino acids containing N-alkyl pyridones"

7. Susan Hromada, Calvin College Biochemistry
(Co-Authors: Dr. David E Benson)
"Investigation of Tyrosine-Cysteine Crosslinks in a Model Protein"

8. Stephen Lander, Calvin College Biochemistry
(Co-Authors: Kylee Rosette, Calvin Van Opstall, Brendan Looyenga, PhD)
"Deciphering the Role of LRRK2 in the Cell Migration"

9. Karine Rose, Calvin College Biochemistry
(Co-Authors: Dr. Carolyn Anderson)
"Efforts Towards the Synthesis of N-Alkyl 2-Pyridone Containing Isoquinoline Alkaloids"

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- 10. Kylee Rosette, Calvin College** **Biochemistry**
(Co-Authors: Stephen Lander, Calvin Van Opstall, and Brendan Looyenga, PhD.)
"The Role of MET in the Proliferation of Papillary Renal Cell Carcinoma"
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- 11. Lauren Strohbehn, Calvin College** **Biochemistry**
(Co-Authors: Dr. Larry Louters)
"The Correlation of GluT1 Translocation to Lipid Rafts with its Activity"
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- 12. Kayla Vander Stel, Calvin College** **Biochemistry**
(Co-Authors: Abigail Leistra, Kumar Sinniah)
"A Single Molecule Force Spectroscopy Study of the Insulin-G-Quadruplex Interaction"
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- 13. Lucas VanLaar, Calvin College** **Biochemistry**
(Co-Authors: Roger L. DeKock)
"Effective Atomic Size Concept: A Dilemma"
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- 14. Jeremy Wodarek, Calvin College** **Biochemistry**
(Co-Authors: Eric Arnoys, PhD, Brendan Looyenga, PhD, Larry Louters, PhD)
"Building a GluT-1 Knockout"
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- 15. Shiyuan Zhang, Calvin College** **Biochemistry**
(Co-Authors: Dr. Michael Barbachyn, Dr. Ronald Blankespoor)
"The Iodocyclocarbamation Reaction of N-Allyl-N-arylcarbamates and N-Dienylmethyl-N-arylcarbamates"
-
- 16. Hannah Foley, Central Michigan University** **Biochemistry**
(Co-Authors: Jessica A. Stewart, Herbert W. Kavunja, Sarah R. Rundell, and Benjamin M. Swarts)
"Bioorthogonal Chemical Reporters for Selective In Situ Probing of Mycomembrane Components in Mycobacteria"
-
- 17. Daniel Kesterson, Central Michigan University** **Biochemistry**
(Co-Authors: Avery Ward, Chia-Heng Hsiung, Vasudeva Kamath, Edward McKee)
"NRTI Treatment Alters mRNA Tissue Specific Expression of Enzymes of Deoxynucleoside Salvage and Synthesis in a Neonatal Rat Model"
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- 18. Brent Piligian, Central Michigan University** **Biochemistry**
(Co-Authors: Jessica Alyse Stewart, Sarah Rose Rundell, Benjamin Michael Swarts)
"A Trifunctional Cyclooctyne for Modifying Azide-Labeled Biomolecules with Photocrosslinking and Affinity Tags"
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- 19. Sarah Rundell, Central Michigan University** **Biochemistry**
(Co-Authors: Zachary L. Wager, Lisa M. Meints, Anne W. Poston, Brent F. Piligian, Claire D. Olson and Benjamin M. Swarts)
"Fluorine-Modified Trehalose Analogues as Possible PET Probes for Mycobacterial Infection: Rapid Synthesis, Conformational Analysis, and Uptake by Mycobacteria"

-
- 20. Avery Ward, Central Michigan University** **Biochemistry**
(Co-Authors: Chia-Heng Hsiung, Daniel G. Kesterson, Vasudeva G. Kamath, Edward E. McKee)
"Deoxyguanosine Kinase, an Enzyme in the Mitochondrial Purine Nucleoside Salvage Pathway: A Target of Entecavir Drug Toxicity"
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- 21. Lauren Kennington, Hope College** **Biochemistry**
"Mutation of Putative Neddylation Site in VACM-1/Cul5 Attenuates its Effect on Proliferation and MAPK Phosphorylation"
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- 22. Sarah Glass, Kalamazoo College** **Biochemistry**
(Co-Authors: Laura Lowe Furge)
"Activity and Kinetic Characterization of Four Human CYP2D6 Polymorphisms using the Substrates Bufuralol and Dextromethorphan"
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- 23. Natalie Dunn, Aquinas College** **Biology**
(Co-Authors: Frank Vogt)
"Spectroscopic Monitoring of Nutrient Competition between Dunaliella salina and Nannochloropsis oculata"
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- 24. Jordan Jones, Aquinas College** **Biology**
(Co-Authors: Jamaal Tarpeh, Kendra Garcia, Kevin Stille, Emerald Butko, Natasha DelCid and L. Rob Peters, Ph.D.)
"Subcloning of zebrafish (Danio rerio) NOD1 and NOD2 mutants into a Gateway pENTR vector"
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- 25. Ashley Powers, Aquinas College** **Biology**
(Co-Authors: Dr. Clark A. Danderson)
"An Examination of the Plant Species Diversity at the Karner Blue Nature Sanctuary"
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- 26. Lauren Anderson, Calvin College** **Biology**
(Co-Authors: Amy M. Wilstermann, PhD)
"CancerEd: Creating Tools for Teaching Children About Cancer"
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- 27. David Bouma, Calvin College** **Biology**
(Co-Authors: Jenna Van Bruggen and Alaina Mahn)
"Great Lakes Restoration Initiative: Reassessment of Wildlife Reproduction and Health Impairments in the Saginaw Bay and River Raisin Areas of Concern and Grand Traverse Bay"
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- 28. Jeremy Brands, Calvin College** **Biology**
"Wildflower Bloom Times at Flat Iron Lake Preserve"
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- 29. Joey Budi, Calvin College** **Biology**
(Co-Authors: Thomas Sokolowski, Dominic Wong, Hannah Burrows, Fred Van Dyke, Benjamin Van Ee)
"Spatial Distribution and Identification of the Mottled Sculpin (Cottus Bairdii) for Stream Quality Analysis in the Manistee River Watershed, Michigan USA"

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- 30. Stephan Buiters, Calvin College** **Biology**
(Co-Authors: Katie E. Homa, Jenna R. Christensen)
"Profilin and its effects on cytokinesis in fission yeast"
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- 31. Leanna DeJong, Calvin College** **Biology**
"Restoring Native Prairie Habitat in a Suburban Campus Landscape"
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- 32. Wesley Dykstra, Calvin College** **Biology**
(Co-Authors: Dena DeKryger)
"Installation of Rain Gardens in the Alger Heights Community"
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- 33. Kathryn Gerber, Calvin College** **Biology**
(Co-Authors: Paul Schramm)
"Worldwide meta-analysis of the relationship between allergenic pollen seasons and climate change"
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- 34. Courtney Glupker, Calvin College** **Biology**
(Co-Authors: Peter M. Boersma, Mark P. Schotanus, Loren D. Haarsma, John L. Ubels)
"Effects of Ba²⁺ on ultraviolet B–induced activation of K⁺ channels and apoptotic signaling pathways in corneal epithelial cells"
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- 35. Alexandra Kuipers, Calvin College** **Biology**
(Co-Authors: Ryan Bebej, PhD)
"Evaluating Change in Hip and Hind Limb Form and Function to Assess Evolution of Swimming Mode in Early Cetaceans"
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- 36. YeaEun Lee and Thuy-Tien Nguyen, Calvin College** **Biology**
(Co-Authors: Andre Otte and Randall DeJong)
"Tracking Geographic and Taxonomic Sources of Fecal Microbes in Plaster Creek Tributaries"
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- 37. John Leerar, Calvin College** **Biology**
(Co-Authors: Mark Schotanus, John Ubels)
"Effect of UVB Radiation on Na⁺-K⁺ ATPase Activity in the Corneal Epithelium"
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- 38. Jon Lensing, Calvin College** **Biology**
(Co-Authors: Cassandra Diegel-Zylstra, Dr. Bart Williams)
"Conditional Knockdown of Wnt3a Using the CRISPR/Cas9 System"
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- 39. Matthew Schepers, Calvin College** **Biology**
(Co-Authors: Darren Proppe)
"Mitigating the negative effects of road noise on songbird abundance with conspecific playback"
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- 40. Jacob Swineford, Calvin College** **Biology**
"The Effects of Prairie Burning on insect populations at Flat Iron Lake"

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- 41. Philip Tubergen, Calvin College** **Biology**
(Co-Authors: Kara Smit; David Dornbos, PhD)
"Influence of Autumn Olive on Plant Community and Soil Composition"
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- 42. Megan Van Baren, Calvin College** **Biology**
(Co-Authors: Kellie Sisson, Matt Kortus, Jeff MacKeigan)
"When Broken Brakes are a Problem: Developing a TSC Cell-Based Screen for Compound Sensitivity"
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- 43. Emily Van Staaldunen, Calvin College** **Biology**
(Co-Authors: Dortehea Liesman, Dr. Garret Crow, Dr. David Warners)
"A Reassessment of the Grand Rapid Region's Flora After 100 Years of Development"
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- 44. Whitney Lambert and Darien Lozon, Cornerstone University** **Biology**
(Co-Authors: Rob Keys - Faculty Advisor)
"The influence of habitat and landscape associations on breeding birds in managed grasslands of Southwest Michigan"
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- 45. Rachel Kempisty, Ferris State University** **Biology**
(Co-Authors: Mary Beth Zimmer)
"The Effects of Spinal Cord Injury on Learning and Memory"
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- 46. Hunter Brunges, Grand Valley State University** **Biology**
(Co-Authors: James Dunn)
"The Effects of Invasive Earthworm Species on Salamanders in the Grand Valley State University Ravine Ecosystem"
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- 47. Macy Doster, Grand Valley State University** **Biology**
(Co-Authors: Anthony Weinke, Dirk Koopmans, Bopi Biddanda)
"Analyzing Drivers of and Linkages Between Hypoxia and Algal Blooms in a Great Lakes Estuary Using Time-Series Observations"
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- 48. Brianna Powell, Grand Valley State University** **Biology**
(Co-Authors: Cynthia Thompson, Chris Vinyard, Rebecca Britain)
"Behavioral thermoregulation during winter in Japanese macaques (Macaca fuscata)"
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- 49. Erin Alenciks, Hope College** **Biology**
(Co-Authors: G. S. Fraley, S.L. Meddle, and K. Frazier)
"Immunolesions of melanopsin receptive neurons in the adult Pekin drake attenuates the hormonal reproductive axis"
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- 50. Brandon Ellsworth, Hope College** **Biology**
(Co-Authors: Aaron O'Meara, Gerald G. Griffin)
"The 1-42 isoform of amyloid beta reduces cell viability of Salmonella. enterica"

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- 51. Elizabeth Ensink, Hope College** **Biology**
(Co-Authors: Morgan Ricker, Carrie Dummer, Vanessa Muilenburg, Justin M. Shorb)
"Design and Evaluation of Day1 Peer Partnership Learning Course Materials for General Chemistry and General Biology"
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- 52. Sarah Faith Kim, Hope College** **Biology**
(Co-Authors: Lydia Pagel)
"Loline biosynthesis gene expression by Epichloe fungi grown under in vivo and in vitro conditions"
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- 53. Lindsey Porter, Hope College** **Biology**
(Co-Authors: Fraley, G.S, L., E. Alenciks, M. Shannon, and H. Potter)
"Gonadal regression elicited in Pekin duck drakes and hens associated with a drop in light intensity"
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- 54. Hannah Potter and Mackenzie Shannon, Hope College and Grand Valley State University** **Biology**
(Co-Authors: Gregory S. Fraley)
"Increased hypothalamic GnIH-ir and decreased reproductive behaviors in an inbred line of Single comb white Leghorn egg-layers, GHs6"
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- 55. Kayla Schipper, Hope College** **Biology**
"Localization of Host Phospholipids in Comparison to Sties of Genome Replication in Flock House Virus"
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- 56. Michael VanWyngarden, Hope College** **Biology**
"Role of Membrane Rearrangement in Positive-strand RNA Virus Immune Evasion"
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- 57. Carter Wolff, Hope College** **Biology**
(Co-Authors: Santiago E. Rios)
"Endophytic Fungi Affects Insect Abundance and Reduces Plant Damage From Sucking Insects"
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- 58. Reid Blanchett, Kalamazoo College** **Biology**
(Co-Authors: Nikki Thellman, DVM; Carolyn Botting; Steve Triezenberg, PhD)
"Establishment of latency in human immortalized dorsal root ganglia with the neurotropic 17syn+ strain of herpes simplex virus type 1"
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- 59. Marko Ivancich, Calvin College** **Biomedical Sciences**
(Co-Authors: Neelu Puri, Ph.D, Perlina Fortinberry, Gagan Chhabra, Ph.D, Douglas Chan)
"Mechanism of Action of Oligonucleotides Homologous to the Telomere Overhang and Development of a Nano-Delivery Vehicle for Melanoma to Increase its Efficacy"
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- 60. Zachary Bassler, Grand Valley State University** **Biomedical Sciences**
(Co-Authors: Dawn M. Clifford Hart)
"The membrane anchored protein Mac1 facilitates Mid1 localization to interphase nodes"
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61. Jessica Fritzler, Grand Valley State University (Co-Authors: Timothy M. Evans) <i>"A Molecular Phylogeny of the African Plant Genus Palisota (family Commelinaceae)"</i>	Biomedical Sciences
62. Basma Khudhur, Grand Valley State University (Co-Authors: Katie Uhl) <i>"Biological Testing of Novel Telomerase Inhibitors"</i>	Biomedical Sciences
63. Lindsey Schroedter, Grand Valley State University (Co-Authors: Grace Peterson, Justin Bria, David Linn PhD) <i>"Characterization of a drug for Alzheimer's disease in a 'retina in a dish' culture system for glaucoma"</i>	Biomedical Sciences
64. Leah Starks, Grand Valley State University (Co-Authors: Bradley Ophoff) <i>"The Impact of Perfusion on Stored Blood Vessel Function"</i>	Biomedical Sciences
65. John Wesley, Grand Valley State University (Co-Authors: Michela Kastura) <i>"Impact of Acute Hyperbaric Oxygen Treatment on Gut Motility"</i>	Biomedical Sciences
66. Salma Mumuni, Western Michigan University (Co-Authors: Roderick Davis, Pamela Clarke, Bernard Kwabi-Addo1) <i>"Effect of sex steroid hormones, circumin, LPS, and retinoic acid on PTEN and p53 expression in prostate cancer cells"</i>	Biomedical Sciences
67. Joshua Favorite, Ferris State University (Co-Authors: Calvin Hancock) <i>"Acoustic Larvacide Effectiveness on Different Mosquito Developmental Stages"</i>	Biotechnology
68. Shaughna Langerak, Ferris State University (Co-Authors: PhD Changqi Zhu) <i>"Functional Study of Drosophila Activin Signaling in Aging Regulation in Fruit Flies"</i>	Biotechnology
69. Kathryn Wilson, Ferris State University (Co-Authors: Carlos Thomas, Alan Alfieri MS, Michael B. Prystowsky MD, PhD, Thomas J. Belbin PhD, Nicole Kiwachi, Evripidis Gavathiotis PhD, Chandan Guha MB, BS, PhD, Thomas J. Ow MD) <i>"Targeting BCL-2 Family Members to Treat Head and Neck Squamous Cell Carcinoma"</i>	Biotechnology
70. Matthew Oram, Calvin College (Co-Authors: Hiroyuki Mori, Ormond MacDougald) <i>"Wnt3a increases β-oxidation in adipocytes"</i>	Cell and Molecular Biology

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- 71. Brooke Armistead, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Emma Hahs, Sapana Shinde, Sok Kean Khoo)
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- 72. Anna Barry, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Eric Moore, Dawn Clifford-Hart)
"Analyzing a role for the PP1 phosphatase Dis2 on Mid1 localization in fission yeast cell division"
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- 73. Daniel Doyle, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Nicholas Huisingh, Steven Durham, Merritt Taylor)
"Nato3 Overexpression in the Midbrain Induces Ectopic Expression of Floor Plate Cell Markers"
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- 74. Elliot Ensink, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Jessica Sinha, Arkadeep Sinha, Huiyuan Tang, Heather M. Calderone, Galen Hostetter, Jordan Winter, David Cherba, Randall E. Brand, Peter J. Allen, Lorenzo F. Sempere, and Brian B. Haab)
"Segment and Fit Thresholding: A New Method for Image Analysis Applied to Immunofluorescence Data"
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- 75. Gabrielle Foxa, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Patrick Schneider, Ashley DeWitt, Dawn M. Clifford Hart)
"Nuclear transport of Anillin-related Mid1 requires the importin alpha Imp1 and influences fission yeast cell polarity"
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- 76. Timothy Gilbert, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Eric Moore, Dawn Clifford-Hart)
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- 77. Zachary Klamer, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Dr. Agnieszka Szarecka)
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- 78. Barrett Kyle, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Dr. Mark Staves)
"Blue Light Yields Clues to the Mechanism of Plant Gravity Sensing"
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- 79. Luke Pardy, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Chelsea Reiber, Robert Smart, William Schroeder, Osman V. Patel)
"Neoadjuvant therapy with BIBR 1532 Accelerates Senescence in Triple-Negative Breast Cancer Cells"
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- 80. Brooke Prieskorn, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Margaret Dietrich)
"A disruption in repeated sequence may be responsible for a P. patens mutant phenotype"
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- 81. Kali Smolen, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: R. A. Powers, F. Prati, E. Caselli, C. Romangoli, H. C. Swanson, A. Bouza, R. A. Bonomo, B. J. Wallar)
"Structure-function analysis of R2 substituents in boronic acid inhibitors of Acinetobacter-derived cephalosporinase (ADC-7)"
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- 82. Kyle Sugg, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Cynthia June, Rachel Powers, Dave Leonard)
"Structure of OXA-51, the native carbapenemase of Acinetobacter baumannii, reveals insights into gain-of-function clinical variants"
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- 83. Matthew Wieckhorst, Grand Valley State University** **Cell and Molecular Biology**
(Co-Authors: Dr. Matthew Christians)
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- 84. Andrew Neevel, Hope College** **Cell and Molecular Biology**
(Co-Authors: Gloria Chang, Wessel VandenBergh, Joseph Stukey, Virginia McDonough)
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- 85. Alexander Swain, Hope College** **Cell and Molecular Biology**
(Co-Authors: Kyle J Hill, Margaret J Lange, and Donald H Burke)
"Aptamers and HIV: A Story of Evolution"
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- 86. Evan Romero, Calvin College** **Cell and Molecular Biology / Genetics**
(Co-Authors: Dr. Carolyn Anderson)
"Asymmetric Gold(III)-Catalyzed Rearrangement of N-Propargyloxypyridines"
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- 87. Sarah Brown, Grand Valley State University** **Cell and Molecular Biology / Genetics**
(Co-Authors: William Thompson, Derrick Kroodsma, Aik Choon Tan, Stephen K. Obaro, Sok Kean Khoo)
"Gene Expression Changes in Blood Can Reflect Infection Stages of Typhoid Fever in Children"
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- 88. Alexis Weber, Michigan State University** **Cell and Molecular Biology / Genetics**
(Co-Authors: Laura Kirby, Donna Koslowsky)
"Understanding the Potential Coding Capacity of RNA Editing in Trypanosoma brucei"
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- 89. Nina Diklich, Aquinas College** **Chemistry**
(Co-Authors: Brittany E. Givens & Vicki H. Grassian)
"Adsorption of BSA protein on SiO2 nanoparticles in aqueous solution: Impact of pH on size and zeta potential at the nanoparticle-protein interface"
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- 90. Craig Jensen, Aquinas College** **Chemistry**
(Co-Authors: Dr. Timothy Henshaw)
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<p>91. Nick Pierce, Aquinas College (Co-Authors: Tie-bo Zeng, Ji Liao, FuJung Chang, Piroska Szabó) <i>"Generating compound heterozygous mice to study the imprinting regulation at the H19/Igf2 cluster"</i></p>	Chemistry
<p>92. Robert Hohlman, Calvin College (Co-Authors: Sherrice Zhang, Alex Boomsma, Dr. Ronald Blankespoor, Dr. Michael Barbachyn) <i>"Iodocyclocarbamation Reaction of N-Allenylmethyl-N-arylcarbamates"</i></p>	Chemistry
<p>93. Anna Michmerhuizen, Calvin College (Co-Authors: Dr. Douglas A. Vander Griend, Tasha Thong) <i>"The Binding Interactions of Triazolophane with Halides"</i></p>	Chemistry
<p>94. Tasha Thong, Calvin College <i>"Binding Interactions of Cu(I) with Phenanthroline Based Ligands"</i></p>	Chemistry
<p>95. Jared Weidman, Calvin College (Co-Authors: Roger DeKock) <i>"The Relationship Between Atomic Size, Charge, and Polarizability"</i></p>	Chemistry
<p>96. Jeremy Cunningham, Grand Valley State University (Co-Authors: Shannon Biros) <i>"Synthesis and Characterization of cis-1,2-bis(diphenylphosphino)ethylene Diselenide for the Selective Extraction of Actinides in Aqueous Media"</i></p>	Chemistry
<p>97. Eva Gulotty, Grand Valley State University (Co-Authors: Randy Winchester) <i>"Synthesis of tris(trimethylsilyl)-((9H-fluoren-9-ylidene)methyl)silane - a sterically hindered alkene"</i></p>	Chemistry
<p>98. Erin Leach, Grand Valley State University (Co-Authors: Shannon M. Biros) <i>"The Sensitization of Lanthanide Luminescence Through Coordination of Carbamoylmethylphosphine Oxide Ligands"</i></p>	Chemistry
<p>99. Alan Lear, Grand Valley State University (Co-Authors: Shannon M. Biros) <i>"Synthesis, Characterization, and Extraction Studies of CMPO derivatives for f-Element Coordination Chemistry"</i></p>	Chemistry
<p>100. Christopher Peruzzi, Grand Valley State University (Co-Authors: Scott N. Thorgaard) <i>"Detecting Single Platinum Nanoparticles Using Ultramicroelectrodes and Investigations of Modified Electrode Surfaces by Cyclic Voltammetry"</i></p>	Chemistry

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- 101. Austin Ronspees, Grand Valley State University** **Chemistry**
(Co-Authors: Scott N. Thorgaard)
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- 102. Stacie Stuut, Grand Valley State University** **Chemistry**
(Co-Authors: Dr. Matthew E. Hart)
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- 103. Andrew VanderWeide, Grand Valley State University** **Chemistry**
(Co-Authors: Shannon Biros)
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- 104. Kimberly DeGlopper, Hope College** **Chemistry**
(Co-Authors: Mason C. Yoder, Kyle G. Lindberg, Megan R. Kwiatkowski)
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- 105. Stanna Dorn, Hope College** **Chemistry**
(Co-Authors: Chad T. Compagner, Joseph M. Dennis, Connor D. McNeely, Jeffrey B. Johnson)
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- 106. Kathryn Lee, Hope College** **Chemistry**
(Co-Authors: Alexis Guttilla and Michael Pikaart*)
"Characterizing Escherichia coli in the Lake Macatawa Watershed and Testing Real-Time PCR Method for Monitoring Water Quality"
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- 107. Kathryn Trentadue, Hope College** **Chemistry**
(Co-Authors: Christian B. Otteman, Jessica Stachowski, Janelle K. Kirsch, Erik J.T. Phipps, Caroline E. Gregerson, Jeffrey B. Johnson)
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- 108. Chris Dilley, Calvin College** **Computer Science**
(Co-Authors: Joel Adams, Patrick Crain, Mark Vander Stel)
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- 109. Javin Unger, Calvin College** **Computer Science**
(Co-Authors: Dr. Serita Nelesen)
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110. Isaac Zylstra, Calvin College (Co-Authors: Victor Norman) <i>"SkelScratch: Scratch v. 2.0 with Kinect v. 2.0"</i>	Computer Science
111. Evans Lodge, Calvin College (Co-Authors: John M. Drake, PhD) <i>"Protective Population Behavior Change in Outbreaks of Emerging Infectious Disease"</i>	Ecology and Evolution
112. Sheila Wald, Grand Valley State University <i>"Site Comparison of Phenological Changes in Arctic White Heather (Cassiope Tetragona) in Response to Tundra Warming"</i>	Ecology and Evolution
113. Alexis Bonnema, Calvin College (Co-Authors: Professor Yoon Kim) <i>"Development of Solar Simulator System with High-Power Multi-Array LEDs"</i>	Engineering
114. David Dadzie, Calvin College (Co-Authors: Professor Yoon Kim) <i>"Development of Constant-Current DC-DC Converter Modules for High-Power LEDs"</i>	Engineering
115. Ryan DeGroot, Calvin College (Co-Authors: Robert Hoeksema, Julie Wildschut) <i>"Hydrologic Modeling of the Effects of Stormwater Runoff in Plaster Creek Watershed"</i>	Engineering
116. Ha Ram Kang, Calvin College <i>"Green Roof: Impact and Sustainability"</i>	Engineering
117. Curtis Kortman, Calvin College (Co-Authors: Matthew Kuperus Heun) <i>"Building Energy Efficiency Meets Internet of Things"</i>	Engineering
118. Jacob Milhorn, Calvin College (Co-Authors: Vincent Rovedatti, Professor R. De Jong) <i>"Road Tests of the Acoustic Loads on the Back Panel of a Pickup Truck"</i>	Engineering
119. Vincent Rovedatti, Calvin College (Co-Authors: Jacob Milhorn) <i>"Vehicle Wind Noise Measurements in a Wind Tunnel with a Contoured Top Profile"</i>	Engineering
120. Andrew Twining, Calvin College (Co-Authors: Mark Michmerhuizen) <i>"Simulation and Modeling of LED Characteristics in a Solar Simulator"</i>	Engineering

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- 121. Jacob Pledger, Hope College** **Engineering**
(Co-Authors: Dr. Stephen Remillard, Dr. Paul DeYoung)
"MeV Ion Beam Channeling Into Crystalline Structures"
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- 122. Erica St Clair, Ferris State University** **Forensic Biology**
(Co-Authors: Brandon Good and Katie Szczegieliak)
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- 123. Emily Macqueen, Aquinas College** **Geography**
(Co-Authors: James Rassmussen, Mary Clinthorne)
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- 124. Matt Raybaud, Calvin College** **Geography**
(Co-Authors: Henk Aay)
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- 125. Annaka Scheeres, Calvin College** **Geography**
(Co-Authors: Charlotte Reynolds, Dr. Jason VanHorn)
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- 126. Peter Boersma, Calvin College** **Microbiology**
(Co-Authors: Loren D. Haarsma, Mark P. Schotanus, John L. Ubels)
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- 127. Julie Cole, Grand Valley State University** **Microbiology**
(Co-Authors: Elizabeth A. Summers, Ian A. Cleary, Derek P. Thomas)
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- 128. Drew McWilliams, Grand Valley State University** **Microbiology**
(Co-Authors: Dr. Rick Rediske, Tori Harris)
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- 129. Adam Pickruma, Grand Valley State University** **Microbiology**
(Co-Authors: Steve Wilkinson, Jordan Zhou, M. Aaron Baxter)
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- 130. Dallas Rohraff, Grand Valley State University** **Microbiology**
(Co-Authors: William Schroeder, Robert Smart, Roderick Morgan)
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- 131. Dallas Rohraff, University of Georgia** **Microbiology**
(Co-Authors: Evelina Basenko, and Zachary Lewis)
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- 132. Brady Hasse, Central Michigan University** **Neuroscience**
(Co-Authors: Dr. Jamie Johansen, Jessie Zenchak)
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- 133. Kelsey Idyle, Central Michigan University** **Neuroscience**
(Co-Authors: Lucas Huffman, Dylan Dues, Aaron Antcliff, Dr. Andrew Crane, Dr. Kyle Fink, Dr. Julien Rossignol, Dr. Gary Dunbar)
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- 134. Alyssa Shepard, Central Michigan University** **Neuroscience**
(Co-Authors: Brook Stevens, Emily Cooksey, Michelle Steinhilb)
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- 135. James Hentig, Western Michigan University** **Neuroscience**
(Co-Authors: Christine Byrd-Jacobs)
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- 136. Jacqueline Saunders, Ferris State University** **Pharmacy**
(Co-Authors: Dr. Eric Nybo, Ph.D., Assistant Professor at Ferris State University College of Pharmacy)
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- 137. Aaron Abma, Calvin College** **Physics**
(Co-Authors: Jonathan Shomsky, Professor Matt Walhout)
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- 138. Matthew Link, Calvin College** **Physics**
(Co-Authors: Aaron Abma, Ryan Balili)
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- 139. Brennan Kerkstra, Central Michigan University** **Physics**
(Co-Authors: Brennan Kerkstra, Jamie Lomax, Karen Bjorkman, Jon Bjorkman, Kevin Covey, Brian Skiff, John Wisniewski)
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- 140. Bailey Groendyke, Grand Valley State University** **Physics**
(Co-Authors: Karen Gipson)
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- 141. Katie Kruk, Grand Valley State University** **Physics**
(Co-Authors: Jeffrey Gunter, Clifford Jack)
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- 142. Jacob Hall, Calvin College** **Pre-Medicine**
(Co-Authors: Ping Zhao, Mary Durston, Austin Voydanoff, Abhinav Beeravally Nagulapally, Jeffrey Bond, Giselle L. Saulnier Sholler)
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- 143. Bretton Hoekwater, Calvin College** **Psychology**
(Co-Authors: Eric Jones)
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- 144. Ohanes Khacherian, Hope College** **Psychology**
(Co-Authors: Brandi Ledbetter, Sean P. Deats, Antonio A. Nunez, Lily Yan, Laura Smale, and Andrew J. Gall)
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- 145. Danielle Winkler, Ferris State University** **Public Health**
(Co-Authors: Emmanuel Jadhav, DrPH, MHM)
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- 146. Will Adamson, Aquinas College** **Biology**
(Co-Authors: L. Rob Peters, Ph.D, Kevin Strychar, Ph.D, Claire Krohn, Isabella Deveau)
*“In Vitro Culturing of *Aiptasia pulchella* and *Montastraea cavernosa* ”*
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