

Celebrate Science!

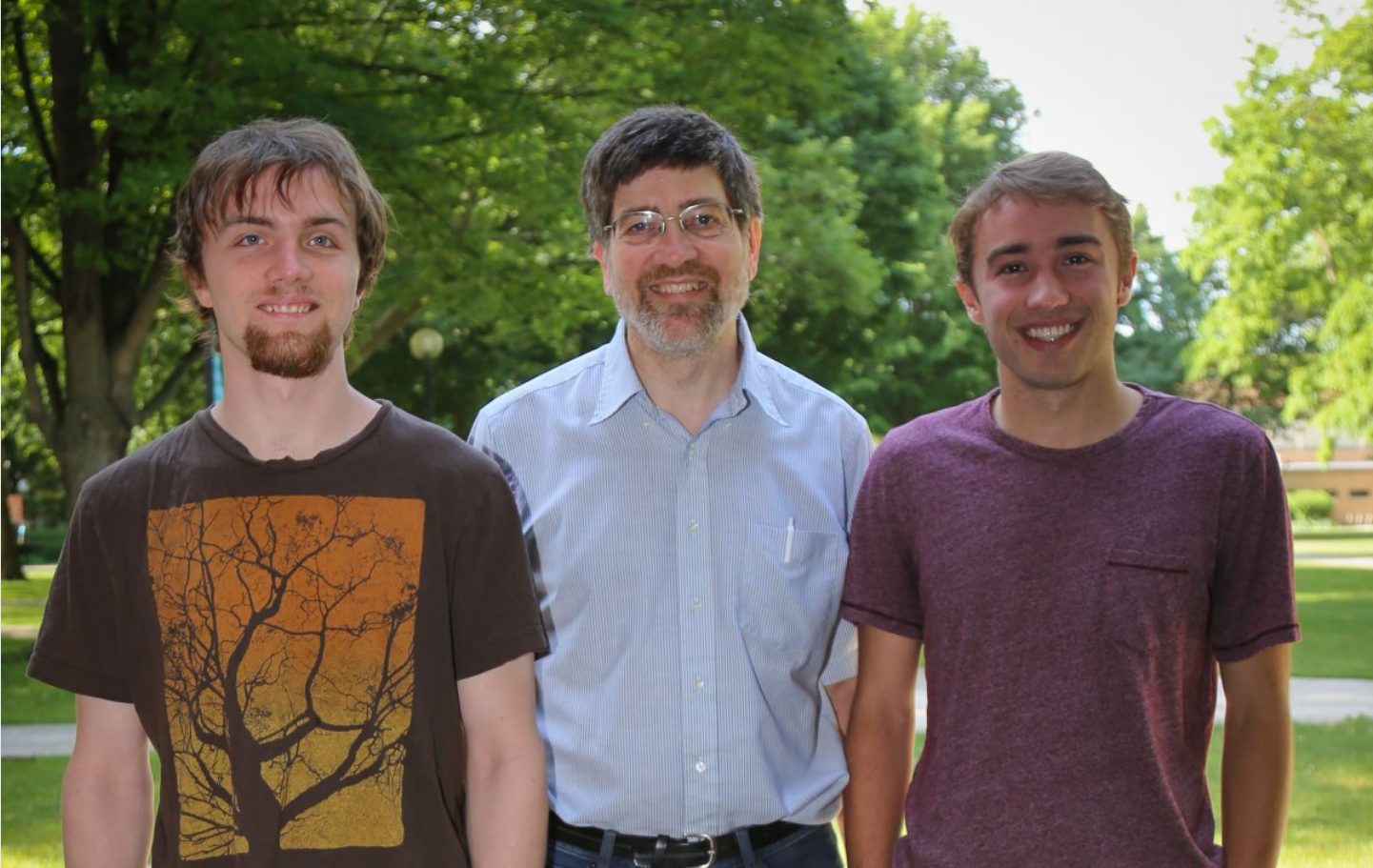


Scientific activities Goshen College students
engaged in the past year.

Maple Scholars



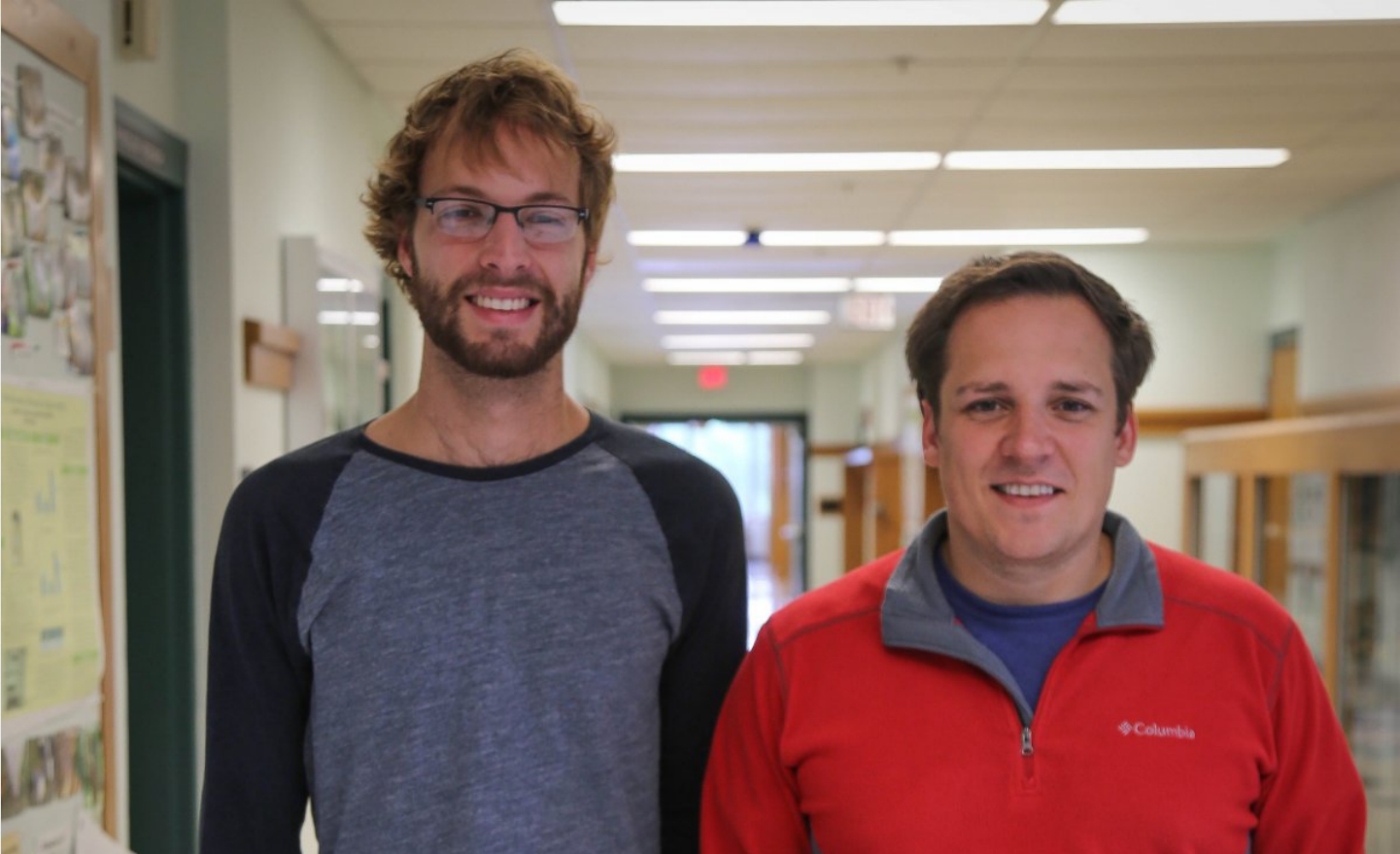
- ❧ Whether it's exploring the relationship between math and music, testing the stress levels of drunk honeybees, or developing curriculum for a criminal justice course at the county jail, each year Goshen College students spend the summer doing intense study and research during the college's eight-week Maple Scholars program.
- ❧ During the program, each scholar is paired with a faculty member who serves as both colleague and supervisor. Creating a community of scholars, the students are all housed together and in the Friday colloquium, scholars take turns presenting the work they are doing and answering questions from other students and faculty. At the end is a celebration day when the results of each project are presented to the public.



☞ **Spencer Aeschliman**, a junior physics major from Salem, Oregon, and **Reuben Leatherman**, a senior physics and music double major from Portland, Oregon, are working with Physics Professor John Ross Buschert on recording and understanding air quality data from Elkhart County. The TRAQR (traveling air quality recording project) aims to collect accurate data as well as raise awareness about levels of air pollution in the Elkhart area.



✂ **Christian Bechler**, a junior mathematics and history double major from Hudsonville, Michigan, is working with **Kenan Bitikofer**, a senior computer science and music double major from Saint George, Kansas. Together with Mathematics Professor David Housman, they will research a bounded algorithm for discrete, complete and envy-free resource allocation to better understand how groups of self-motivated individuals can effectively cooperate with other groups of self-motivated individuals. This research is fueled by a discovery in late 2016 that such an algorithm is not impossible, as previously thought.



✧ **Joel Gerig**, a senior molecular biology major from Goshen, is working in collaboration with Biology Professor Kris Schmidt to use new techniques to edit a specific genome. The changes they are making will allow them to better track and understand the gene, thus understanding more about human genes as well.



✧ **Julian Harnish**, a senior music and mathematics double major from Bluffton, Ohio, is working with **Vince Kurtz**, a 2017 graduate with a physics and music double major from Rochester, New York. Together with Professor of Physics Paul Meyer Reimer, they are focused on mapping worldwide changes in groundwater. Kurtz, Harnish and Meyer Reimer will compare actual measurements from satellites with predictions of a climate model to identify areas where groundwater levels have been directly impacted by human activities.



☞ **Apa Naik**, a senior biology major from Rasoda, India, is working with Michael Sherer, director of information technology at GC, to explore existing and emerging research about the bio-chemical mechanisms of redox imbalance and associated disease progression. Sherer has previously completed research on the subject, and Naik is working to further that.



❧ **Bridgette Webb**, a junior environmental science major from Goshen, is working with Biology Professor Andrew Ammons to research the role of mosquitoes in the spread of viruses and diseases. Webb is carrying out independent research in both the field and the lab and will present a final project at the end of the summer.

Internships

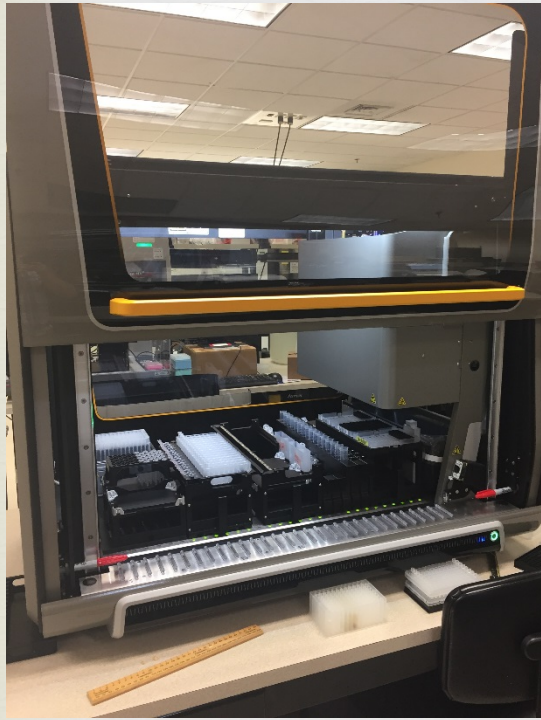


- ❧ **Simon Weaver**, Automating high-throughput nucleic acid purification and processing, Promega Corporation in Madison, Wisconsin (biotech company)
- ❧ **Hannah Thill & David Jantz**, Bird banding, Merry Lea Environmental Learning Center
- ❧ **Geoff Miller**, Fish electroshocking and population surveying, City of Elkhart
- ❧ **Caleb Liechty**, A natural history study of Limb Girdle Muscular Dystrophy type 2A in an Amish community, Clinic for Special Children (Strasburg, Pennsylvania)
- ❧ **Jess Raffel**, WPP internship at Merry Lea and ASI
- ❧ **Lisette Bermudez**, Laboratory technician internship, Agdia, Elkhart
- ❧ **Megan Gerke**, Coding internship, Solution Source
- ❧ **Anna Shetler**, SST service in KKKT Health Clinic laboratory in Tarime, Tanzania
- ❧ **Jacob Roth**, AbbVie

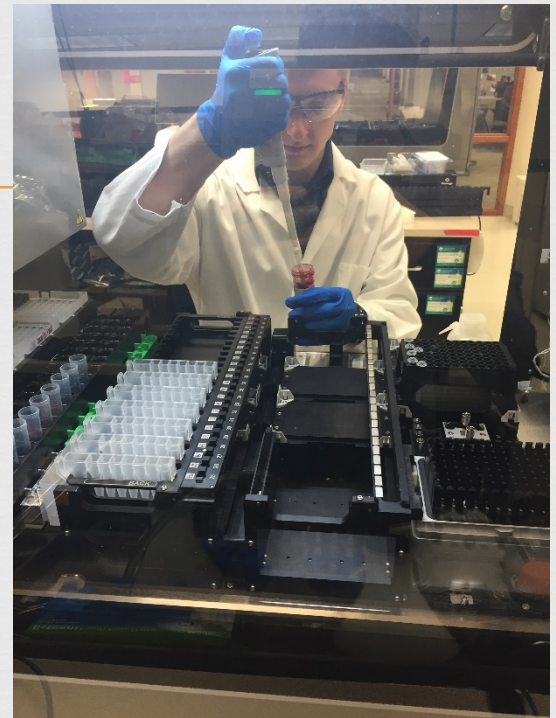
Promega Internship



Simon Weaver



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Academic Year Research



- ❧ Some courses have a research component.
- ❧ Often there is academic credit available.
- ❧ Career and graduate study exploration.
- ❧ Resume builder for job applications & graduate school recommendation letters.
- ❧ Pigeon Genetics mentored by Dan Smith: **Danny Aramouni, Stuart Kurtz, Tyler Lautenschleger, George Soto, Joe Wheeler**
- ❧ Distributive Drug Discovery mentored by Doug Schirch and Kristen Entwistle: **Josh Bustos, Megan Eigsti, Aaron Graber, Caleb Liechty, ByeongChan Lim, Hayley Mann, Natalie Mark, Deeksha Pagar, Jacob Roth, Simon Weaver, Lauren Wenger, Zach Zimmerman**

Research Programs



- ❧ Maple Scholars is a Goshen College eight-week program.
- ❧ National Science Foundation Research for Undergraduates (NSF REU) programs are offered at a variety of colleges and universities in a variety of research areas.
- ❧ The Oak Ridge Institute for Science and Education (ORISE) sponsors more than 50 research programs for undergraduate students at national laboratories and other federal research facilities in 24 states and some outside the United States.
- ❧ Universities, governments, and companies have their own research and internship program.

Research Programs



- ❧ **Mark Kreider**, Effects of biological and physical structure on forest productivity, Climate change in the Great Lakes Region, University of Michigan Biological Station
- ❧ **Lydia Miller**, Drivers of modularity in plant-pollinator networks of montane meadows, Eco-Informatics Summer Institute, Oregon State University
- ❧ **Nat Dick**, Compositional study of local-ecotype prairie restoration, Hesston College
- ❧ **Joshua Garcia**, Tallgrass prairie grazing project and wetland project, Merry Lea Environmental Learning Center

Conferences



- ❧ Butler Conference
 - ❧ **Maddy Garber, Emily Kauffman, Nick Yoder**, "Math is Hard!" A Gender Priming Study
 - ❧ **Barbara Hernandez-Walton, Brandon Vires**, Dishonesty Among College Students
- ❧ Indiana Academy of Science
- ❧ MathFest (Mathematical Association of America)
 - ❧ **Christian Bechler**, A Lower Upper Bound on Discrete and Envy-Free Cake Cutting
 - ❧ **Kenan Bitikoker**, An Empirical Treatment of N-person Cake Cutting
- ❧ Mathematical Association of America, Indiana Section:
 - ❧ Spring: **Christian Bechler, Kenan Bitikofer, Luke Graber, Julian Harnish, Leah Landis, Lydia Miller, Margaret Plank, Colleen Weldy**

Science Speakers



- ❧ **Peter Wise**, Stroud EnviroDIY Mayfly Data Logger and Modbus RS-485 Sensor
- ❧ **Vince Kurtz**, Learning Robust Failure Recovery for Autonomous Vision Based Flight
- ❧ **Aaron Graber**, Development of a Frizzled/G-Protein GTPyS Biosensor
- ❧ **David Jantz**, The SYSTEMS Intervention: Promoting Scientific Literacy and Healthy Lifestyles in Childhood
- ❧ **Jacob Roth**, Optimizing the Cellular Thermal Shift Assay to Validate Target Engagement in Cancer Drug Development
- ❧ **Isaac Godshalk**, Woody Perennial Polyculture Research at Merry Lea
- ❧ **Kate Crawford**, Enhancing the effect of chemotherapy by adding the antiangiogenic agent dovitinib in preclinical gastric cancer models
- ❧ **Lauren Wenger**, Development of Substituted Aryl Carbamates for the Treatment of Lymphatic Filariasis
- ❧ **Jacob Roth**, Establishing Novel Nuclear Magnetic Resonance (NMR) Capabilities at Goshen College
- ❧ **Sophie Sears**, Effects of Therapeutic Compounds on Cadmium-Induced Prostate Cancer

Leaf Scholars



- ❧ Academically talented first-generation students majoring in STEM.
- ❧ Money provided by the National Science Foundation.
- ❧ Sophomores : **Ameera Alshuga, Tyler Lautenschleger**
- ❧ Juniors : **Morgan Catron, McKinzi Vega**
- ❧ Senior s: **Philip Chan, Meghan Gerke, Bryan Nguyen, Dmitriy Shendel**

Grants



- ✧ **Meghan Gerke** and Jeanette Shown, Google IgniteCS, develop and deliver a computer science outreach program in our community

Science Olympiad



- Over 100 students, faculty, and community members volunteered to run 23 events for 12 middle school and 12 high school teams on Saturday, February, 11, 2017.
- This year, the Goshen College Regional Tournament will be on Saturday, February 10, 2018.



Contests



- ❧ Association for Computing Machinery Programming Contest (East Central North America Regional): **Christian Bechler, Kenan Bitikofer and Reed Yoder** (27th place) and **Christian Gehman, Vince Kurtz and Christian Stoltzfus** (100th place).
- ❧ Putnam Competition: **Kenan Bitikofer** (in the top 26% among 4,164 undergraduates) , **Christian Bechler, Julian Harnish, Anja Kenagy, Rae Ann Miller, and Christian Stoltzfus**
- ❧ Indiana Colleges Mathematics Contest: **Kenan Bitikofer, Colleen Weldy, and Margaret Plank** (8th place); **Christian Bechler and Luke Graber** (15th place); **Leah Landis, Julian Harnish. and Lydia Miller** (21st place).



Global Game Jam

- ∞ The Global Game Jam (GGJ) is the world's largest game creation event taking place around the world at physical locations. In January 2017, there were 36,401 people registered for 701 jam sites in 95 countries and 7,263 games were produced.
- ∞ Goshen College was one of the sites, drawing people from as far away as Ball State University as well as Goshen College students **Kenan Bitikofer, Cormac Koop-Liechty, Christian Stoltzfus, India Potter, Bryce Yoder, Christopher Gehman, Nick Walter, Reed Yoder, Allen Miller, Mikol Aspinwall, Carty Epp-McKay**. Also some GC Alumni: **Si Gustafson-Zook, Lucas Godshalk, Peter Miller**.
- ∞ This year, the GGJ will be held January 26-28, 2018.

Alicia Showalter

Reynolds Scholarship



- ☞ Awarded to women who are considering graduate studies in the sciences
- ☞ **Sophie Sears & Cecilia Lapp Stoltzfus (2015-16)**
- ☞ No one (2016-17)
- ☞ ? (2017-18)

Clemens Scholarship



- ✧ Awarded to an upper-level Chemistry major in honor of Don Clemens' 30+ years as a Chemistry Professor
- ✧ **Stuart Kurtz (2015-16)**
- ✧ **Lauren Wenger (2016-17)**
- ✧ **Joe Wheeler and Lauren Wenger (2017-18)**

Sarah G. Rody Scholarship



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- ✧ Awarded to women majoring in computing or mathematics
 - ✧ **Lydia Miller** (2015-16)
 - ✧ **Meghan Gerke** (2016-17)
 - ✧ **Meghan Gerke** (2017-18)

Mathematics Instructors' Scholarship



- ✧ Awarded annually to mathematics majors seeking secondary certification
- ✧ Leah Landis, Rae Ann Miller & Colleen Weldy (2016-17)
- ✧ Rae Ann Miller & Colleen Weldy (2017-18)

General Chemistry Achievement Award



- ❧ Presented by Professor Dan Smith
- ❧ Awarded to the highest achieving students in General Chemistry
- ❧ Prizes provided by CRC Press
- ❧ **Evan Beck and Luke Geiser**

Math Book Awards



- ✧ Awarded to first-year students for outstanding achievement in 200+ level mathematics courses.
- ✧ Started with a donation from Bruce Sellers
- ✧ **Ben Fox** (Calculus I, Calculus II)
- ✧ **Luke Rush** (Discrete Math, Calculus II)
- ✧ **Kyle Snyder** (Discrete Math, Calculus II)
- ✧ **Nick Schrock** (Multivariate Calculus)

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