

# Celebrate Science!



Scientific activities Goshen College students  
engaged in the past year.

# Science Speakers



❧ Perry Biddle, Matthew Glick, Josh Jantzi, and  
Samantha Weaver, Investigations into the Stability of  
3-Bromopyruvate, a Novel Anti-tumor Agent.

# General Chemistry Achievement Award



- 
- Presented by Professor Dan Smith
  - Prizes provided by CRC Press
  - Sophia Sears and Zachary Zimmerman

# Clemens Scholarship



œ Perry Biddle

# Leaf Scholars



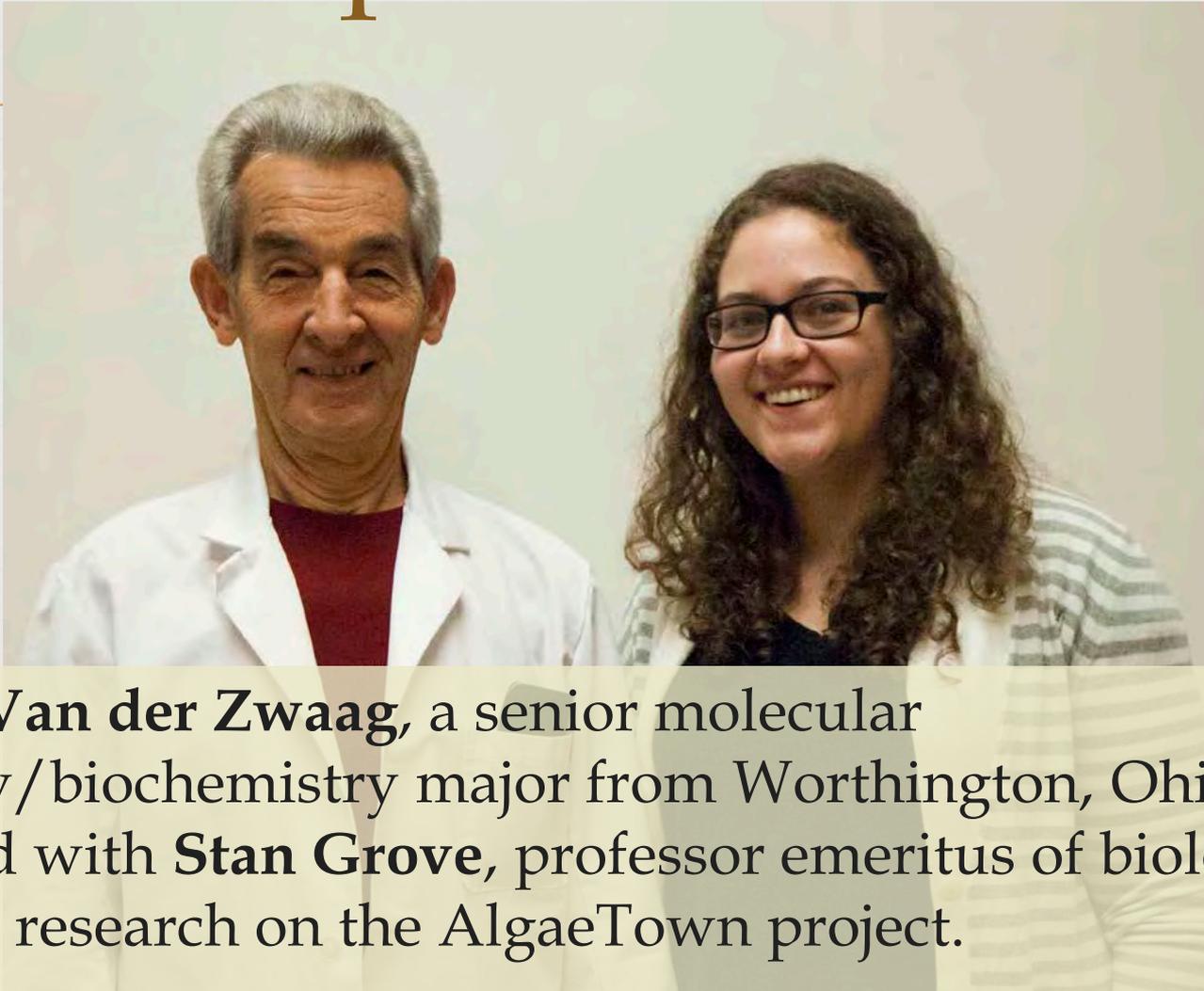
- ❧ Academically talented and financially needy first-generation students majoring in STEM.
- ❧ Josue De La Rosa
- ❧ Fabian Lopez
- ❧ Philip Chan
- ❧ Meghan Gerke
- ❧ Bryan Nguyen
- ❧ Dmitriy Shendel

# Maple Scholars



- ❧ From exploring stress on honeybees to the relationship between math and music to the stories of stillbirth, 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.

# Maple Scholars



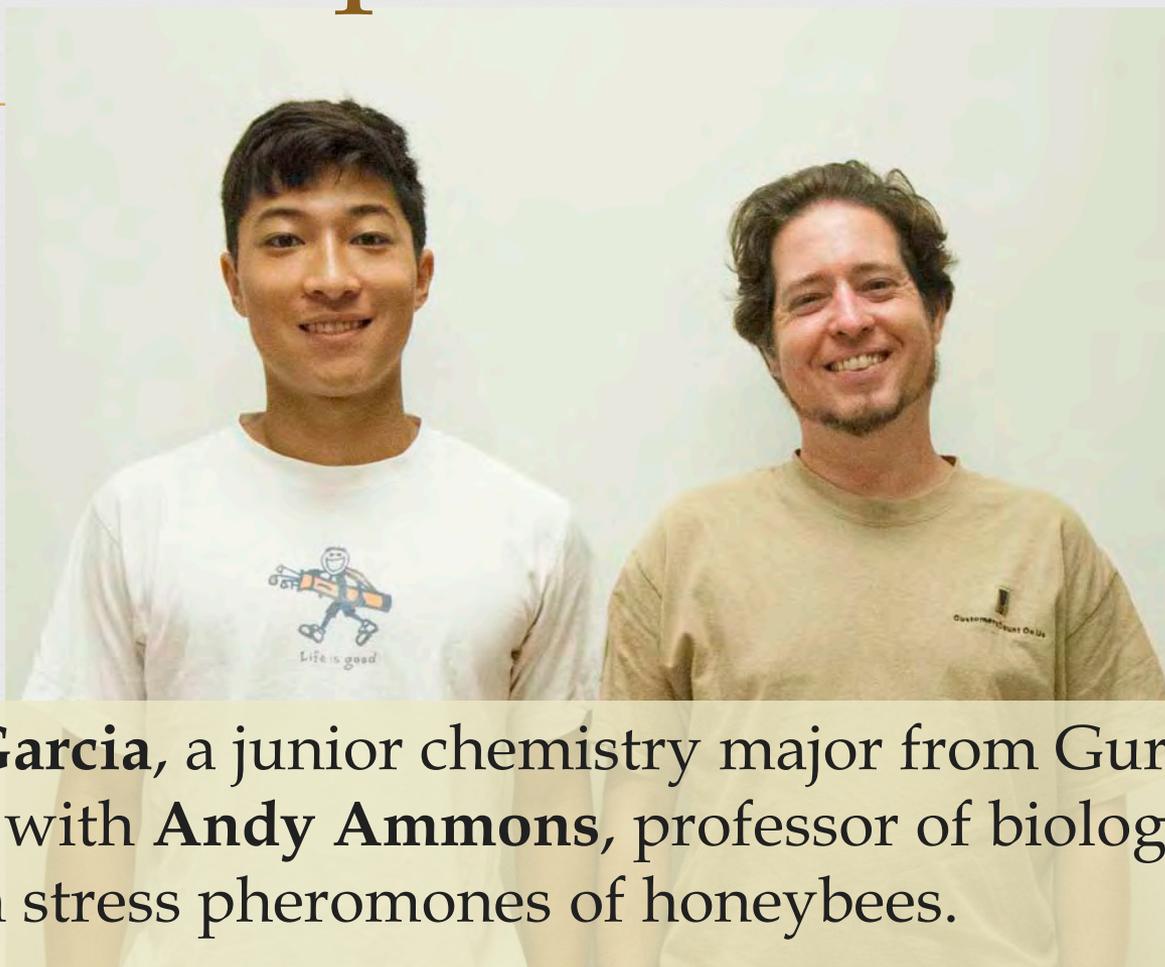
**Anna Van der Zwaag**, a senior molecular biology/biochemistry major from Worthington, Ohio, worked with **Stan Grove**, professor emeritus of biology, to further research on the AlgaeTown project.

# Maple Scholars



Garrett Alhgrim, a senior mathematics and interdisciplinary major, characterized three strategy symmetric strategic games with expandable stable coexistence strategies. Joel Pepala, a 2014 graduate with a degree in mathematics, examined measuring voting power in the U.S. Supreme Court. Both worked with David Housman, professor of mathematics and computing.

# Maple Scholars



**James Garcia**, a junior chemistry major from Gurnee, Ill., worked with **Andy Ammons**, professor of biology, to research stress pheromones of honeybees.

# Maple Scholars



**Ben Shelly**, a junior interdisciplinary major from Goshen, researched ecological restoration at Merry Lea Environmental Learning Center with **Dave Ostergen**, professor of environmental education.

# Maple Scholars



**Jack Shomberg**, a sophomore environmental science major from Lansdale, Pennsylvania, worked with **Dale Hess**, associate professor of agroecology, to research restoration agriculture at Merry Lea Environmental Learning Center.

# Maple Scholars



**Michael Yoder**, a senior informatics and biology double major, worked with **Kris Schmidt**, professor of biology, to tag the gene *unc-53* with green fluorescent protein in order to determine the expression pattern in *C. elegans*, a soil nematode.

# Merry Lea



Ellie Schretz and Abby Flickner worked on the national MAPS bird banding research project this summer at Merry Lea. This program monitors nesting populations of songbirds for survivorship and productivity of offspring. Abby and Ellie also monitored nesting bluebird, tree swallow, and house wren populations on the Merry Lea property to set up baseline data for further study on these species.

# NSF REU Programs



- ❧ Anna Costanza, at San Francisco State University, worked at the Romberg Tiburon Center for Environmental Studies researching the characterization of primary production and community composition of marine phytoplankton from the San Francisco Bay area.
- ❧ Elizabeth Bryant - Junior Seminar Project through Carnegie Mellon - Stress Response in Mice
- ❧ Mitchell Brickson
- ❧ Andrew Glick

# Research Experience for Undergraduates

## Summer 2014



Anna Costanza

San Francisco State University

NSF REU

Romberg Tiburon Center, Carpenter Lab



# What is an REU?

- The Research Experience for Undergraduate (REU) program is active research for undergraduate students in any area of research funded by the National Science Foundation (NSF)
- REU projects can be ongoing research programs or research projects specifically designed for the REU program.
- 10 week summer program
- Competitive- intensive research experience & PAID \$\$
- Include Ph.D. workshops, perks, connections, final research symposium

To find REU active Sites go to:

<http://www.nsf.gov/crssprgm/reu>

# Where are they?



Only 10 out of ~700+ REUs offered

# How to apply

- Use the web!
- Find research you're interested in
- Apply directly to REU Sites or to NSF-funded investigators.
- Complete application specific to REU site  
(deadlines usually around February-April for summer)

# What's the application process?

- Personal statement such as...

Describe how participation in our REU Program will benefit your future educational or career goals  
(500 words)

- Skills and previous experience
- Letters of Recommendation (usually 2-3)
- Misc: Resume/ cover letter/ transcripts
- List top research projects you are interested in and why  
**\*\*Contact the Principle Investigator (PI) of the lab\*\***

**San Francisco  
State  
University**





Romberg  
Tiburon Center  
for  
Environmental  
Studies





Characterization of  
primary production  
and community  
composition of  
marine  
phytoplankton from  
the San Francisco  
Bay area

# Extra, super cool fun stuff



Sierra Nevada



Point Reyes Regional Shoreline



UC Berkeley Vertebrate Museum



Monterey Bay Aquarium



Downtown San Francisco





# ALGAETOWN



 GOSHEN  
COLLEGE

PRESERVING THE PAST  
FORMCO INC.  
PRODUCING THE FUTURE



- ∞ Professor Stan Grove
- ∞ Tessa Yoder, Anna Costanza, and Jacob Nofziger
- ∞ Aaron Kauffmann and Aradhana Roberts

# C. Elegans Research



- ✧ Professor Kris Schmidt
- ✧ Michael Yoder - Maple Scholar - Tagging UNC-53 with GFP
- ✧ Anika Baumgartner and Grace Ispas - Neurosecretion in C. elegans
- ✧ Ali Hochstetler - Genetic Interactions with UNC-53

# Bee Research



✧ Professor Andy Ammons

✧ James Garcia, Alejandro Genis, and Theo Kuchar

# Chemistry Research



ELSEVIER

## Biochemical and Biophysical Research Communications

Available online 21 August 2014

In Press, Uncorrected Proof — Note to users



### The antitumor agent 3-bromopyruvate has a short half-life at physiological conditions

Matthew Glick, Perry Biddle, Josh Jantzi, Samantha Weaver, Doug Schirch  

Department of Chemistry, Goshen College, Goshen, IN, United States

Received 12 August 2014, Available online 21 August 2014

# Pigeon Genetics Project



- ✧ Professor Dan Smith
- ✧ Stuart Kurtz, Byeong Chan Lim, and Aaron Graber
- ✧ Michael W. Guernsey, Lars Ritscher, Matthew A. Miller, Daniel A. Smith, Torsten Schöneberg, and Michael D. Shapiro, A Val85Met Mutation in Melanocortin-1 Receptor Is Associated with Reductions in Eumelanic Pigmentation and Cell Surface Expression in Domestic Rock Pigeons (*Columba livia*), PLOS | One, August 15, 2013.

# Internships



- ❧ Jessica Davilla, Caritas Baby Hospital and Le *crèche* orphanage in Bethlehem, Palestine
- ❧ Jackson Bush, Woods & Poole Economics, Inc.
- ❧ Joel Pepala, Child and Parent Services, Elkhart
- ❧ Stephen Graber – Shadowed oncologists at Goshen Center for Cancer Care
- ❧ Leah Amstutz – Laboratory assistant in a health care clinic – Centro de Salud San Juan Bautista (St. John the Baptist Health Center) during SST
- ❧ Aaron Graber – Internship at Stanford University under Dr. Philip Beachy doing research on the protein Smoothed in the Sonic Hedgehog signaling pathway by means of mutagenesis

# Caritas Baby Hospital

Jessica Davila

- Pediatric Hospital
- Bethlehem Palestine
- Medical Experience
- Medical Services: Satisfaction
- Culture
- Insight into reality



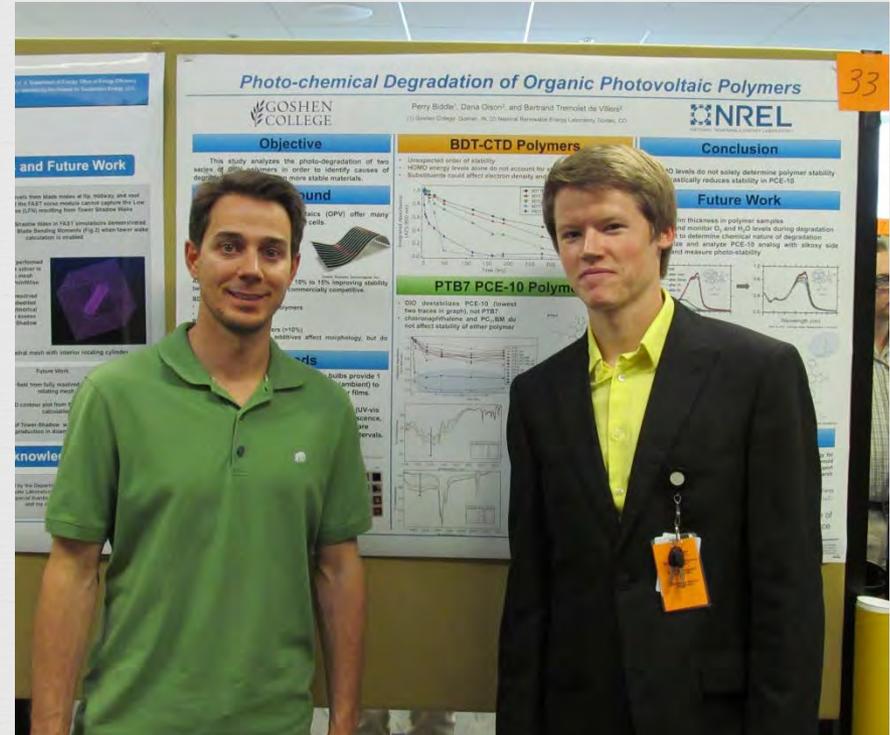
# La Crèche

- French founded; Catholic Orphanage
- Post War Trauma
- Attachment Theory



# Petey Biddle, National Lab Intern

- Chemistry research with solar cell materials
- Research similar to graduate school
- Results will likely become part of publication





# Internships



- ☞ Cecilia Lapp Stoltzfus - Patuxent River Park, Upper Marlboro, Maryland - Wild rice restoration and osprey banding
- ☞ Jessica Davila, Jacob Penner, Cortney Quick, & Peter Meyer Reimer - Research Assistants, Quantifying effects of fire on ant evacuation behaviors in an Acacia-ant mutualism, Mpala Research Centre, Kenya
- ☞ Peter Meyer Reimer, University of Goettingen, Germany - Department of Palynology and Climate Dynamics; Determining the interaction between fire regime, climate change, and local ecology in an Indonesian rainforest.
- ☞ Aisha Harris -Fort Wayne Children's Zoo working with the aquarist
- ☞ Kayla Gray - Lakes Environmental Association - worked to help prevent the spread of invasive Eurasian milfoil in lakes in Maine
- ☞ Aaron Stiffney & Caleb Longenecker -J.N. Roth Marine Biology Station - Worked with graduate students from Old Dominion University and University of Florida on sponge restoration and lobster ecology projects















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# Conferences



- ❧ Butler Conference: Julz Quiroz and Sandrine Sandrali (The Effects of Singing in Groups on Perceptions); Allison Krawiec, Maddie Ruth, and Lauren Slone (Problem Solving with Decoding, Repurposing, and Language Tasks in College Students: A Study in Creativity Priming)
- ❧ Mathematical Association of America, Indiana Section Spring Meeting: Garrett Ahlgrim, Hannah Bachman, Zoe Blosser, Michelle Espino, Daniel Fecher, Emily Fretz, Jacob Gerig, John Miller, Joel Pepala, Nick Schwarz, Jacob Shetler
- ❧ Indiana Academy of Science: Christian Allebach, Perry Biddle, Jessica Davilla, James Garcia, Alejandro Genis, Matthew Glick, Josh Jantzi, Theo Kuchar, Smantha Weaver
- ❧ Midwest Conference for Undergraduate Women in Physics, University of Chicago: Maria Jantz

# Contests



- ❧ Consortium for Computing Sciences in Colleges Programming Contest: Seth Yoder, Michael Yoder, Jacob Shetler, and Maria Jantz
- ❧ Putnam Competition: Andrew Clemens, Peter Schrock, Bryan Yoder, and Daniel Fecher
- ❧ Indiana Colleges Mathematics Contest: Daniel Fecher, Joel Pepala, and Jacob Gerig

# Science Olympiad



- Over 100 students, faculty, and community members volunteered to run 23 events for 7 middle school and 12 high school teams on Saturday, February, 8, 2014.
- This year, the Goshen College Regional Tournament will be on Saturday, February 14, 2015.

