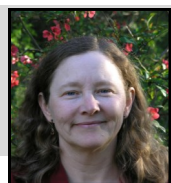


## FROM THE DEPARTMENT CHAIR



*Greetings to our biology family and friends! We are happy to present our second edition of *Evolutions*, our new*

*semi-annual*

newsletter.

This past summer the department was humming with research activity during the Mentored Undergraduate Summer Experience (MUSE). Twenty-two faculty mentors and students conducted collaborative research for eight weeks. The rest of the faculty also remained actively engaged in research and writing, and we initiated a re-thinking of our curriculum to align with a national report on biology education, known as “Vision and Change: A Call to Action.” Stay tuned for exciting changes starting next fall!

The semester is now drawing to a close, and it is a bittersweet, intense period of learning for our students and gratification for the faculty, as we see the fruit of a semesters’ worth of teaching. The seniors are now only one semester away from graduating, while the new freshman have grown from shiny new college students to experienced hands. We like the ebb and flow of the academic year, but it also means twice-yearly goodbyes to classes that – at TCNJ Biology – we have come to know so well.

- Janet Morrison, Department Chair

## SISTERHOOD OF SCIENTISTS SHARE INSIGHTS

Biology majors past, present and future gathered with other scientists at the TCNJ School of Science’s *Celebration of Women in Science*



program in October. The annual event seeks to encourage intelligent young women to consider career opportunities in science and math disciplines by gathering high school students, current science majors, and TCNJ science alumni to share their questions, experiences, joys, frustrations and accomplishments.

Event organizer and Assistant Professor in Biology **Dr. Tracy Kress** encouraged the women high school students, undergraduates and alumni to “find your passion! Whether it’s computer science, physics, or astronomy, decide what your passion is, and then pursue it. Along the way, identify people to serve as mentors on your journey to becoming excellent scientists.”

Dean of the School of Science **Dr. Jeffrey Osborn** highlighted the “very welcoming, collaborative and supportive environment” which exists at TCNJ, and the wealth of opportunities to engage in independent research and other activities as students explore their career paths. Nearly 80% of undergraduate science students at TCNJ engage in independent research.

Women alumni from the School of Science participated in a panel discussion on “The Personal Side of a Career in Science,” and shared their experiences and insights. Among the seven panelists was Biology/Psychology dual major **Heather McGowan '08**, who emphasized the importance of communication, especially for women, in minimizing the barriers in a career. “You must be communicative,” she said, “so that you know who’s in your corner.” Ms. McGowan is currently pursuing an MD/PhD at Rutgers’ Robert Wood Johnson Medical School.

Nineteen undergraduate women science majors currently involved in independent research presented posters of their work at the event, including Biology majors **Mackenzie Mosera** (mentored by Dr. KT Elliott), **Aparna Yarram** and **Shai Bejerano** (Dr. Gary Dickinson), **Alanna Cohen** (Dr. Wendy Clement), and **Natella Maglakelidze** (Dr. Marcia O’Connell).

## NEWS BRIEFS

### *Student Wins First Prize*

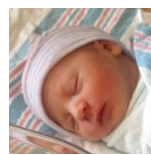
Junior **Luke Pasick, '16**, currently studying abroad “down under,” received First Place honors in a research paper competition at the University of New South Wales in Australia. The paper was based on his study of “The Land Birds of the Galapagos Islands,” originally submitted in completion of course requirements for Dr. Lovett’s *Natural History of the Galápagos Islands* course taken in Spring of 2013.

### *Two Professors Promoted*

Congratulations are extended to **Luke Butler, Ph.D.**, and **Matthew Wund, Ph.D. (TCNJ '99)**, who officially became Associate Professors in August, 2014. The promotions recognize experience as an assistant professor, service to the College, and continuing scholarly achievement. Their promotions bring the total of associate professors in the Department to nine.

### *Biology Babies Arrive*

Congratulations also to the three Biology faculty members who proudly welcomed new additions to their families this past summer. *Sylvie* was born to parents Wendy Clement and Michael Nordquist in early June; *Zola* was born to parents Nina Peel and Sam Bunting a week later; and *Tali* was born to parents Cindy and Gary Dickinson in July. All are healthy and regular visitors to the department!  
(News Briefs continued on back page.)



*Evolutions* is published twice yearly by the Department of Biology at The College of New Jersey.

**Helen Kull, Editor**  
biology@tcnj.edu

## Marine Eco-physiology Lab Receives Grant

**G**ary Dickinson, Ph.D., Assistant Professor of Biology, was recently awarded a three-year grant to assess the effects of the environment on barnacle settlement, adhesion and bio-mineralization.

The nearly \$300,000 grant comes from the Office of Naval Research (ONR), the US government’s “first permanent agency devoted to funding civilian scientific research during peacetime.” The ONR provides public support of basic and applied science, and advanced technology research and development, which benefits both the naval services and the world at large.

Dr. Dickinson’s Marine Eco-physiology and Biomaterials Lab at TCNJ studies biological adhesion,

bio-mineralization, and larval behavior in barnacles, crabs and bivalves. Of particular interest to the lab – as well as to the Navy – is to what degree environmental stressors, such as ocean acidification and global warming, will affect the mechanical, structural and biochemical properties of these invertebrate marine shells and glues.

To assist him in his work for the grant, Dr. Dickinson has engaged a part-time research associate, Conall McNicholl, a graduate of Temple University. Dr. Dickinson’s research also benefits from several undergraduate research students who are engaged in independent research with him.

Congratulations to Dr. Dickinson and his lab (students pictured below)!



## Alumni Contribute to FSP on Cancer

**C**ancer: *The Scientists, the Patients, and the Disease* is the title of a new FSP (Freshman Seminar Program) course offered this past semester by **Marcia O’Connell, Ph.D.**, Associate Professor of Biology. Since the course focused on the people involved in the history of cancer (the scientists, physicians, and patients), she invited several TCNJ alumni who are now practicing physicians to be a part of the course.

Four alumni-physicians agreed to be interviewed by small groups of students about their experiences as physicians, in particular in treating patients with cancer. Students interviewed **Dr. Michelle Cornacchia '09**, Combined Internal Medicine-Pediatrics Resident at Baylor College of Medicine; **Dr. Crystal S. Denlinger '98**, Assistant Professor of Medical Oncology at Fox Chase Cancer Center; **Dr. Daniel J. Egan '98**, Assistant (Clinical) Professor of Emergency Medicine at New York University School of Medicine; and **Dr. Christina M. Pasick '09**, Division of Plastics Resident at Mount Sinai Hospital. The response from the students after the interviews was uniformly very enthusiastic – the alumni-physicians were wonderful!

# SCHOLARSHIP

## Student

Two TCNJ Biology students presented research at the **Annual Meeting of the Animal Behavior Society** held in August at Princeton University, accompanied by their research mentor, **Matthew Wund, Ph.D.** Both participated in the poster competition, and both received awards for their presentations. The students and their research topics were:

- **Califano, Annette '14:** "Associative learning in threespine stickleback" (Semifinalist award)
- **Dominguez, Gabrielle '14:** "Does the intensity and duration of alarm cue exposure affect stickleback anti-predator behavior?" (Honorable mention award)

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Four TCNJ Biology students attended the **Annual Meeting of the Botanical Society of America**, held in July in Boise, Idaho. **Allison Ball, Danielle Leng, Cindy Timko, and Shane Wilkins** accompanied **Janet Morrison, Ph.D.** and presented three different posters:

- "Effects of invasive species and overabundant white-tailed deer on native tree seedlings in metropolitan forests"
- "Recruitment of invasive plant species in the herb layer of suburban forests"
- "Variation in the abundance of spring ephemeral wildflowers in deer-ridden suburban forests"



Students take a break from presenting research in Boise



Students in Dr. Clement's "Plant-Insect Interactions" (BIO 470) course pose for a class photo earlier this semester at Mercer Educational Gardens in Pennington.

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**Kristen Batko '14**, a research student of **Keith Pecor, Ph.D.**, attended the Society for Freshwater Science's **Joint Aquatic Sciences Annual Meeting** in Portland, Oregon, in May 2014. She presented a poster entitled, "Phenology of Stream Arthropods in Central NJ."

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Fourteen biology students participated in **MUSE** (Mentored Undergraduate Summer Experience) during the summer of 2014, working in eight different labs. The students and the faculty research mentors were:

**Shai Bejerano** and **Aparna Yarram**, with mentor **Dr. Gary Dickinson**

**Dylan McClung** and **Mackenzie Mosera**, with mentor: **Dr. KT Elliott**

**Nikita Paripati**, with mentor **Dr. Tracy Kress**

**Dale Oommen** and **Christine Weng**, with mentor **Dr. Donald Lovett**

**Shane Wilkins, Cynthia Timko, Danielle Leng** and **Priya Dalal**, with mentor **Dr. Janet Morrison**

**Surya Chinta**, with mentor **Dr. Sudhir Nayak**

**Kristen Randolph**, with mentor: **Dr. Amanda Norvell**

**Natella Maglakelidze**, with mentor **Dr. Marcia O'Connell**

## Faculty

Here are the titles of three articles recently published by our faculty. More can be found on our website at <http://biology.pages.tcnj.edu/research-opportunities/recently-published-research-by-biology-faculty/>

**Clement, W.L.**, M. Arakaki, P.W. Sweeney, E.J. Edwards, M.J. Donoghue. 2014. A chloroplast tree for Viburnum (Adoxaceae) and its implications for phylogenetic classification and character evolution. *American Journal of Botany*. 101(6): 1029-1049..

Inoue K., E.M. Monroe, **C.L. Elderkin**, and D.J. Berg. 2014. Phylogeographic and population genetic analyses reveal Pleistocene isolation followed by high gene flow in a wide ranging, but endangered, freshwater mussel. *Heredity* 112, 282–290

**O'Connell, M.L.**, Cavallo, W.C. Jr., and Firnberg, M. (2014) The Expression of CPEB Proteins is Sequentially Regulated During Zebrafish Oogenesis and Embryogenesis. *Molecular Reproduction and Development* Vol. 8:376-387



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## NEWS BRIEFS

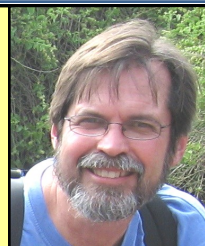
(continued from p 2)

### *Student Scholar PERSISTs*

Senior Biology major and PERSIST (Program to Enhance Retention of Students in Science Trajectories) Scholar **Dylan McClung** is doing just that, persisting in scholarly pursuits, and amassing an impressive amount of awards! The College Honor Program student was recently awarded the Fall 2014 “Outstanding Scholar Award” for sharing scholarly work beyond the bounds of TCNJ. Earlier this year, he received “Honorable Mention” from the Goldwater Scholarship Program, and two awards from the Microbiology Society of America to conduct research and to present it at conferences in 2014 and 2015. A first-generation college student, Dylan works in Dr. Elliott’s bacterial genetics lab. Congratulations, Dylan!

## FACULTY SKETCHES

### HOWARD REINERT Ecologist



21 years at TCNJ

B.S., Penn State University  
M.S., Clarion University of Pennsylvania  
Ph.D., Biology, Lehigh University

Favorite class as an Undergrad:  
Wildlife Ecology

Non-science hobby: Family and travel

Research interests: Behavioral and physiological ecology of snakes

### TRACY KRESS Molecular biologist



5 years at TCNJ

B.S. – Rochester Institute of Technology, Biotechnology  
Ph.D. – Biology, Brown University  
Post-doc work at Univ Cal at San Fran

Favorite class as an Undergrad:  
Genetics

Non-science hobby: Family, travel, yoga

Research interests: The regulation of gene expression, specifically during RNA splicing and transcription