

## FROM THE DEPARTMENT CHAIR

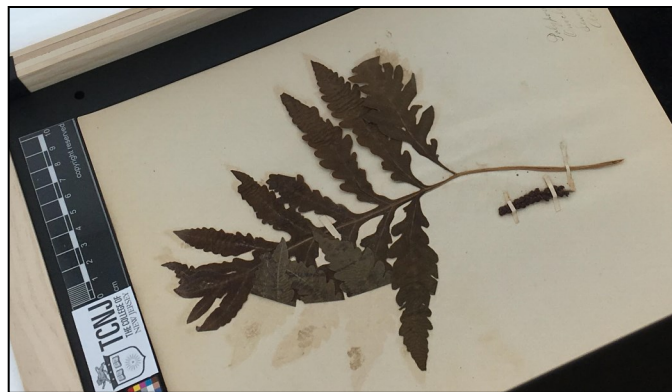


As I type this column in my home office with my dog, Huxley, my eyes red and itchy from pollen allergies, I am reminded of a quote from his namesake, T.H. Huxley, “To a person uninstructed in natural history, his country or seaside stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall.” This time of the year, those of us instructed in natural history see that those works of art are largely X-rated. Our glorious indicators of spring, from blooming dogwoods to calling frogs and from colorful songbirds to chirping crickets have one thing in common: Sex. The indicators are simply phenotypes that have been selected for because they resulted in more offspring than other phenotypes. This is basic evolutionary biology, but what is less appreciated is the trade-off associated with sex. As a reproductive mode, sexual reproduction is woefully less efficient than asexual reproduction in what matters most, *i.e.*, the amount of parental DNA in the next generation. An asexual organism passes 100% of its DNA to its offspring, whereas a sexual organism only passes 50% of its DNA to the next generation. The trade-off in favor of sex is that sexual reproduction involves genetic recombination, whereas asexual reproduction does not. Recombination allows populations to respond to changes in the biotic and abiotic environments in ways not available to asexual organisms. For this reason, groups of sexual organisms tend to persist longer than groups of asexual organisms across evolutionary or geological time. My allergies are simply a byproduct of a successful evolutionary strategy dating back to the dawn of sex. As beautiful as that sentiment is, I am not crying. It’s the pollen!

~ K.W. Pecor

## Renovations Reveal Botanical Bounty

**R**enovations to the Botany Lab storage room yielded a botanical bonanza recently when students in Professor Wendy Clement’s lab discovered pressed plant specimens from more than 120 years ago, preserved by student collectors at the college at the time.



Information about the specimens will be added to appropriate databases, and will provide publicly available data to researchers, as well as a glimpse as to how climate change and land use have affected the phenology of the plants.

In the late 1800s, students Margaret Todd, Nelson H. Pepper, and Sarah E. Kandle each attended the New Jersey State Normal School, an early iteration of what became TCNJ. Located in Trenton, the college prepared students to teach in the public schools. Among their many assignments, students were evidently encouraged/required to collect plant specimens, to identify and mount them in books for display and reference. Ms. Todd collected her specimens between 1883 and 1886; Mr. Pepper collected his between April and August of 1892; and Ms. Kandle collected hers between May 1893 and June 1894. They each must have been very proud of their collections, as eventually the families donated them back to Trenton State College. They were set aside for later reference, and years later, resurfaced recently in the back of a storage cabinet in the Botany lab as the room was being cleared for renovations.

Current TCNJ students Linda Zhang, Aaron Lee and Matthew Fertakos are carefully working with the specimens, from both a scientific and historic preservation perspective.

“Handling these specimens and recording the information found on the labels felt like fitting together loose pieces of a puzzle,” explained **Linda Zhang ’20**. “We would find labeled pages without an appended pressed plant, only to find it loose and atop another sheet. Species names were crossed out and rewritten, and collection dates were frequently omitted. It was our job to not only compile all the data in front of us, but also to attempt to complete the gaps.”

Added **Aaron Lee ’20**, “Over time, we found index cards with typewritten names and dates, as well as notes and letters that gave these collectors an identity and provided some clues regarding their historical contexts. Beyond the faded cursive writing and brittle, yellowed paper, we got a glimpse of the lives of the collectors and students that spent much time gathering, identifying, and preserving these records – never knowing they would be stumbled upon over a century later!”

After the entries from all three specimen books were compiled into various databases, the students keyed out the genus and species names, and updated older

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## Excellence in Biology Awards Announced

Twelve senior biology majors earned recognition for their outstanding achievement in Biology as student recipients of the 2018 Biology Department “Excellence in Biology” Awards, presented at a dinner held Friday, April 27 at the Washington Crossing Inn with faculty, friends and family members in attendance. The awards fell among four award categories, and were shared among the dozen recipients, with two students being recognized at the top of each category, and a third student being recognized at the “honorable mention” level.

**Samantha Platt** and **Michael Wolek** received the Becton-Dickinson Award for Excellence in Biology, with **Archana Menon** receiving Honorable Mention; **Jackie Kaletski** and **Kanza Tahir** received the Joseph Vena Award, with **Audris Oh** receiving Honorable Mention; **Monal Elsayed** and **Steven John** received the Faculty Award, with **Sarthak Mohanty** receiving Honorable Mention; and **Nisha Sanghani** and **Thomas Gunning** received the Susan Lapetz Uyhazi Award, with **Dylon Patel** receiving Honorable Mention. Congratulations to all!

## Formal Food and Fun

A new tradition and annual social event may have begun this year in the Biology Department: A Biology Formal. On Saturday evening, April 14, 130 bio majors and minors left their papers and research aside and enjoyed an evening of catered food, dancing, music and fun. Held in the Decker Social Space, it was described as “an awesome social event” for students in the department.

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

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

## NEWS BRIEFS

Biology seniors **Samantha Platt** and **Logan Barnes** are not only outstanding students—they are equally outstanding athletes. Their accomplishments were recently recognized when they each received the Dr. Harold W. Eickhoff Outstanding Female and Male Scholar-Athlete Award, respectively.

Ms. Platt has been a pitcher on the College’s Varsity Softball Team, earning Academic All-District Honors, and qualifying for the All-American Honors. She has a 2.39 earned-run average on the pitching mound, and a 4.0 GPA off the mound. Enrolled in the College’s Honors program, she competently balances the mental demands of a pitching game with those of her academic responsibilities. Wherever she is—pitcher’s mound, classroom, lab or with friends, she is friendly, focused and an inspiring force. Ms. Platt has been accepted to Mount Sinai Medical School.

Mr. Logan Barnes is a star member of the TCNJ Men’s Swimming and Diving Team, in addition to being a Biology major and Chemistry minor. He was named to the All-NJAC first Team in the 400 Individual Medley, and to the All-NJAC Second Team in the 1650 Freestyle. He is also graduating *magna cum laude*.

Biology Department alumna **Laurie C. Delatour ’12** recently was listed as a co-author with Hermes and Pamela Yeh in an article published by Oxford University Press entitled “Ethanol Exposure *In Utero* Disrupts Radial Migration and Pyramidal Cell Development in the Somatosensory Cortex.” Ms. Delatour is currently earning an MD/PhD in the Experimental and Molecular Medicine Program at Dartmouth’s Geisel School of Medicine.

Biology Department alumna **Eric Goldwaser ’11** was recently awarded a PhD in neuroscience, and will be joining the Physician Scientist Training Program for his residency next year at the University of Maryland.

We congratulate all of our alumnae as they move along their chosen career paths and make positive differences in the world in so many ways!

## Renovations Reveal Botanical Bounty

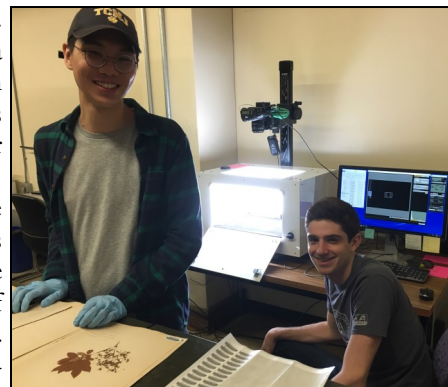
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names to more contemporary nomenclature. The first main objective is to make these data accessible to the public through digitization of the specimens and information, which is being done with the help of the Chrysler Herbarium of Rutgers University.

“The second objective is to investigate how climate change and land use changes over the past 120-plus years has affected the phenology, or the seasonal life cycle events of these plants,” said **Matthew Fertakos ’19**. “Two time periods of 1880-1895 and 2000-2015 have been chosen, and we have begun using historical herbarium specimens to look at the phenology of the plants from both time periods. Preliminary data look promising, and we are looking forward to collecting more data to advance this project next semester!”

Little did those future teachers from the 19<sup>th</sup> century know that their work would be here to teach 21<sup>st</sup> century students!

*Many thanks to Linda Zhang, Aaron Lee, and Matthew Fertakos who contributed significantly to the content of this article.*





# SCHOLARSHIP

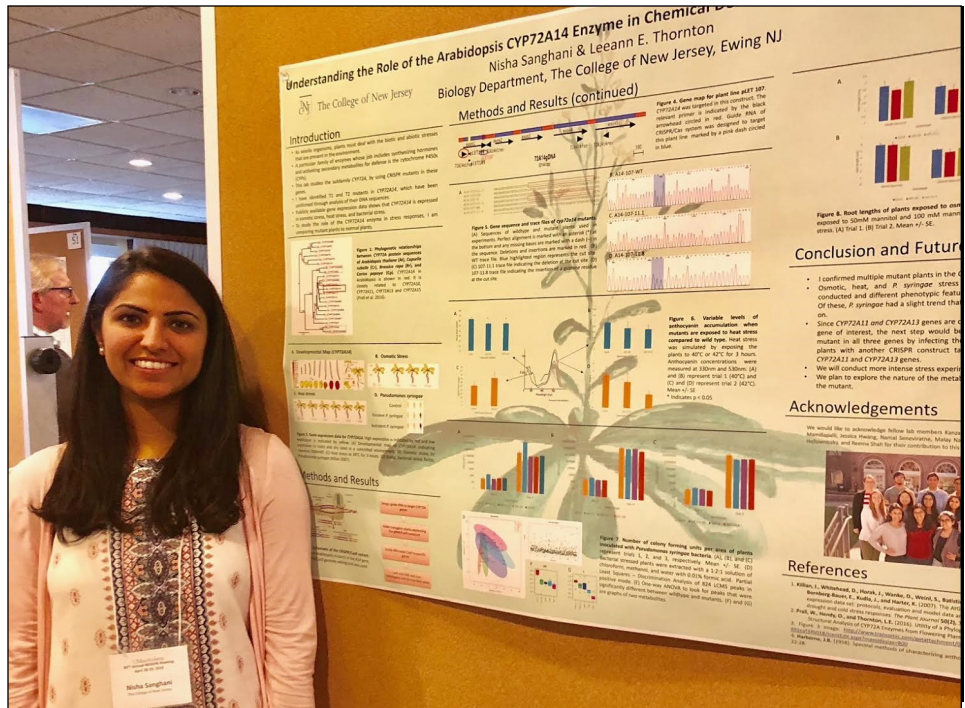
## TriBeta Convention 2018

In March, Drew University hosted the annual Tri Beta District Convention, at which student members of local Tri Beta chapters present research. TCNJ did well at the event: our *Chi Upsilon* chapter of the national biology honor society won the award for the most attendees from an institution, with eight students from TCNJ. Students **Jessica Kopew** and **Adriana Mendizabal** (Kress Lab) won 3<sup>rd</sup> place for their poster, “*Elucidating the function of histone H4 acetylation in RNA splicing in Saccharomyces cerevisiae*”; and **Kanza Tahir** (Thornton Lab) won an honorable mention for her research talk, “*Using Arabidopsis Mutants to Examine the Role of CYP72A Enzymes in Defense Against Environmental Stresses.*” Congratulations to all!

## Ecology Society of America

Four students of Dr. Wendy Clement attended and presented research at the Mid-Atlantic Section of the Ecology Society of America Meeting in Newark in April. One of her students, **Evelyn Kulesza '19**, received second place for “Best Undergraduate Poster Presentation” for her poster, “Examining the evolutionary rainbow of fruits in honeysuckles (*Lonicera*).” Clement lab students **Matthew Fertakos**, **Aaron Lee**, and **Linda Zhang** also presented their poster, “Insights from 120 years in the past: Using historical specimens to study plant phenology in Mercer County, NJ.” Dr. Clement was an additional contributor to both posters.

Research students of Dr. Janet Morrison also attended and presented research at the meeting of the Mid-Atlantic Section of the Ecological Society of America in Newark in April. Morrison lab students at the meeting included **Kiara Proano**, **Andrew DiBenedetto**, **Devayani Mishra**, **Nicole Potter**, **Elizabeth Nemec**, **Elena Nattes**, **Anna Zauner**, **Rachel Scalese**, and **Daniela Nattes**.



Nisha Sanghani with her research poster at the annual meeting of the Northeastern Section of the American Society of Plant Biologists in Massachusetts.

## Amer. Society of Plant Biologists

Senior lab students **Nisha Sanghani**, **Kanza Tahir**, and **Parika Chauhan**, together with their research mentor Dr. Leeann Thornton, attended the annual meeting of the Northeastern Section of the American Society of Plant Biologists, held this year at the University of Massachusetts at Amherst. Each student presented original research from the Thornton Lab, and was able to attend other presentations by plant researchers in the northeast.

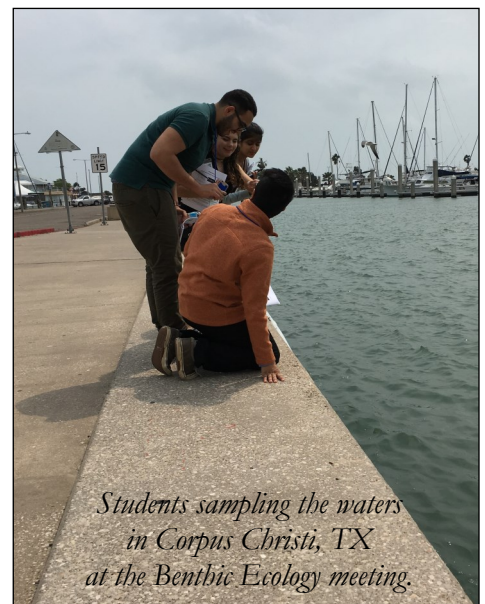
## Drosophiladelphia!

Dr. Amanda Norvell and student researcher **Krista Budinich** attended the annual “fruit fly conference” of the Genetics Society of America, held this year in Philadelphia. Dr. Norvell presented a refereed presentation of research, and Ms. Budinich presented a poster of her research related to the genetics and developmental processes of the fruit fly, *Drosophila melanogaster*, in the Norvell Lab.



## Benthic Ecology Meeting

Dr. Gary Dickinson and four of his research students attended the 47th Annual Benthic Ecology Meeting, held this year in Corpus Christi, Texas. Students **Kerstin Baran**, **Shrey Patel**, **Ahmed Mahmoud**, and **Sanjana Saksena** presented research from the Dickinson Lab related to assessing the effects of ocean acidification on shell formation and the exoskeletons of certain crabs, barnacles, and other salt-water organisms



Students sampling the waters in Corpus Christi, TX at the Benthic Ecology meeting.

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THE COLLEGE OF NEW JERSEY

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## Upcoming EVENTS

### COMMENCEMENT 2018!

#### Biology Department Ceremony

Friday, May 18, 9 am in Kendall Hall

#### Main (College-Wide) Ceremony

Thursday, May 17 at 3 pm in Lions  
Stadium (or indoor venues if necessary)

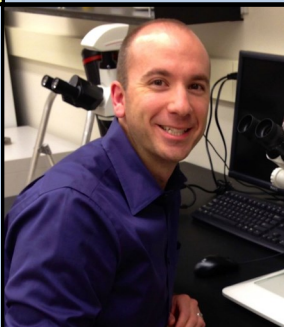
More information at

<http://commencement.tcnj.edu/>

### MUSE!

The 2018 Mentored Undergraduate  
Summer Experience (MUSE) runs campus-  
wide June 4 -July 27. This year, 8 of our  
labs will be filled with research students  
gaining critical research skills, and  
contributing to work at TCNJ.

## FACULTY SKETCH



### Gary Dickinson, Ph.D

Associate Professor

6 Years at TCNJ

BS, Biological Sciences, Binghamton University  
PhD, Ecology, Duke University

*Favorite science course as an undergraduate:* Tropical Ecology and Conservation

*Favorite non-science course as an undergrad:* Pop, Rock and Soul Music

*Research interests:* Adhesion and biomineralization in marine invertebrates, and  
biological responses to ocean acidification and climate change.

*Other interests:* Biking, running, spending time with family, and traveling