

# THE PERIODIC TIMES

STUDENT NEWSLETTER - OCT 2024



CHEMISTRY AND  
FERMENTATION SCIENCES  
NEWSLETTER

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## WELCOME!

BY EDITOR-IN-CHIEF  
LEAH BOONE

Welcome to the October edition of the Periodic Times! Thank you for picking up a copy of this month's newsletter. This edition is focused on all things graduate school - tips and tricks, application processes and other insights from former App State students. We have also included an alumni spotlight and an introduction of our new chair, Dr. Cecile. Read on to learn about upcoming opportunities for jobs and internships, professional development, club news, student and faculty spotlights, and a fun chemistry activity! We hope you enjoy this edition of the newsletter, and happy Fall!

Leah Boone  
Editor-in-Chief

# JOBS AND INTERNSHIPS

BY JACOB RYE

## The time is now for fall recruitment!

Fall is peak season to search for jobs and internships on Handshake. Handshake is the only platform where employers are specifically looking for candidates at your school. Log in and manage your professional profile to connect with employers. Have work experience, club involvement, or specific skills? Include these on your profile! These are the top things employers search for. Handshake sends out weekly emails about job and internship opportunities that fit your interests. Also, be sure to keep an eye on the NSF site for Research Experiences for Undergraduates (REU) opportunities.



**Scan these QR codes to apply for summer research internship opportunities at Wake Forest. Students from diverse backgrounds are encouraged to apply. Deadlines are January/February.**

Enhancing Undergraduate Education  
and Research in Aging to Eliminate  
Health Disparities (ENGAGED) Summer  
Research Program



Excellence in Cardiovascular Sciences  
(EICS) Summer Research Program



Training in Research  
Affecting Child Health  
(TRAC)



# PROFESSIONAL DEVELOPMENT CORNER

BY DAYTON HAWELU-KIM

*Here are some way a student can standout on your application for graduate school or industry brought to you by the career and professional development center.*



## **Interpersonal skills and effective communication.**

These skills require a lot of hands on experience and exposure. The best way to practice these skills are to join a club, volunteer on campus or join a research group. Also if you are up for the task on a leadership role, these experiences will allow for you to develop as an effective communicator.

**Interviewing skills.** Interviewing can make or break your application to a graduate program or a job. The Career Center allows for you to improve this skill in a constructive manner. If you don't want to jump right in and interview in front of a person, there is an option to interview with AI. The AI will provide information on how you speak such as verbiage and filler words. It's always best to get some human feedback on how you convey yourself to others, and the Career Center has drop in hours for all your mock interview needs.

**Resume Building.** Building your resume may seem like a daunting task and a bit awkward in some instances, but it's an important skill to develop. It's another way to tell others why you are the best fit at any institution or job. A main tip for building a resume is looking at the skills you use everyday in the academic setting or where you work. Look for ways to draw attention to these skills, such as using power or descriptive words to describe these skills.

## Preparing for graduate school? Here are somethings to consider

As a student, the best place to begin this journey is determine if your interests require such degree path. Determine where your interest might lie; the Career Development Center provides a strong interest inventory, which is essentially a extensive questionnaire about your interests and will give you a list of what you may want to pursue or explore. If you are already set on the graduate path, an X-factor to be building while at App State would be getting hands on experience in the related field. While being academically successful is a big part, hands on experience tells admissions that you already have inclination of what your future at their institution will be like. Do your homework about these programs since some have different requirements. Another consideration is the social aspect since graduate programs are micro-environments within institutions. If the culture of the program isn't a great fit for you, it may cause stress, and graduate school is already stressful as is. It's advised to apply to graduate school in the summer after your junior year, but some institution have rolling admissions and later deadlines, so your junior year isn't a hard set time, but it's advised to narrow down the institutions you would like to attend.

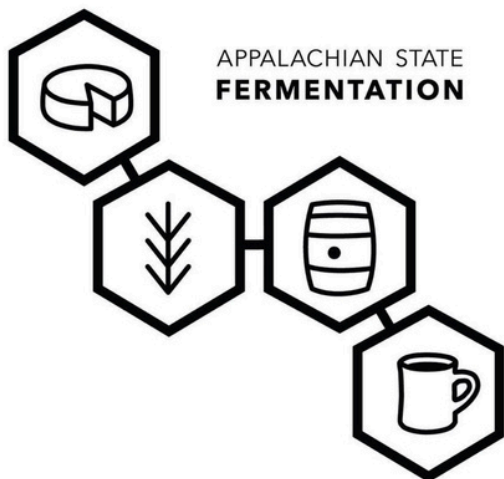
## Professional Activities Coming Soon!

### Careers with Impact

"App State's Career Development Center partners with the QEP's Pathways to Resilience initiative to offer Careers With Impact - an interactive career conference surrounding the topic of positive climate action. Careers With Impact gathers students, employers, and professionals from a diverse range of industries to connect around a shared interest in making a difference through positive climate action in their professional experiences. Join all or some of the sessions for opportunities for network and learn from industry experts, students, and alumni and their experiences with climate action in the workplace."

November 7, 2024

<https://careers.appstate.edu/events/>



APPALACHIAN STATE  
FERMENTATION

## CLUB NEWS

BY JACOB RYE

Join the fermentation science club on October 3rd for a fermented foods workshop! They will be making sourdough bread, chow chow, and crème fraîche. Engage Link:

<https://engage.appstate.edu/event/10499738>

The Appalachian Chemical Society has many exciting upcoming events. Join them on October 3rd at 6pm in GWH 112 for their first demo night and be sure to bring lab goggles and an empty 2-liter soda bottle!

There will also be a graduate school panel on October 10th and a celebration for national chemistry week on October 24th. Make sure to join them on Engage to stay up to date!

<https://engage.appstate.edu/organization/appalachian-chemical-society>



Interested in pursuing a career in fermentation science? Be sure to check the fermentation science industry open house hosted by the fermentation science club on October 4th! This is a great opportunity to meet industry representatives and learn about jobs in fermentation sciences! Free fermented snacks and drinks will be available.

Engage Link:

<https://engage.appstate.edu/event/10499737>



# OPEN HOUSE

*Held the day before  
campus Open House*



Oct. 4, 2024



2-4 pm

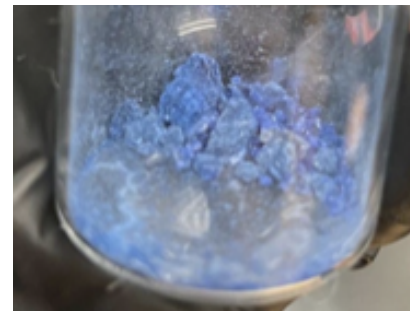


Mountain Laurel Hall

# STUDENT & FACULTY NEWS

BY GRACIE GIACOLETTO & LEAH BOONE

## Ever wonder what your classmates are up to?



Over the past year, Regan Tallett has been working in Dr. Wallen's inorganic research lab to synthesize improved catalysts for the capture and oxidation of atmospheric sulfur gas. Natural gases contain hydrogen sulfide, which is an acidic and toxic gas. Natural gas can't be converted into a viable energy source without the removal of H<sub>2</sub>S. Dr. Wallen's research group incorporates first-row metals such as Co, Cu, Ni, and Zn in the center of a complex to control the binding of hydrogen sulfide more selectively. Regan's focus is around a thiophene ligand that helps bind the metal to the ligand and influence the metal electronics. Her metalation products are colorful crystals that can be seen above! Their structures are confirmed with X-ray crystallography.

## FACULTY SPOTLIGHT: Dr. Megen Culpepper

Q: How did you choose chemistry?

A: Chemistry kind of chose me. I took it for fun in high school and in college where I was pre-law. I decided to get a chem minor and realized that law wasn't for me. It afforded me the opportunity to learn hands-on and grow as a scholar and not just as a student.

Q: What is your research?

A: There is lots of research going on in the Culpepper lab ranging from understanding enzymes involved in sulfur cycles to neurological diseases. Where our lab is strengthened is in interdisciplinary and inner lab collaborations, where we are able to lend expertise in molecular cloning, analytical method development, and structure determination. We use these techniques in x-ray crystallography and traditional biochemistry and analytical chemistry to determine how enzyme mechanism is dependent on the three-dimensional structure of enzymes.

Q: How did you choose App? What's your favorite part of App's chemistry department?

A: Students! When I came and interviewed at App, I knew that I would be able to help students become thinkers like my professors instilled in me. I love App because no student is the same; all of you learn and approach science in different ways. I love this because it allows us to learn from one another and grow not just as a scientist, but as people. My time in the lab with my students, whether it's my research lab or teaching lab is my favorite time and it's really where I am able to feel the most rewarded.

**Dr. Culpepper completed her undergraduate degree at UNCW, her Ph.D. at the University of Kansas in Bioanalytical Chemistry, and a post-doc at Northwestern University.**



# APPLYING TO GRADUATE SCHOOL: TIPS AND TRICKS

BY LEAH BOONE AND CARLI SAMUELSON

**With graduate school application season in full swing, many students are asking the same question: what do I do? Harper Bennett and Anderson Noonan, both App State Chemistry alumni and current graduate students, have answers to this question and many others.**

## HARPER BENNETT

**Q:** What was the application process like?

**A:** The application process was the hardest part as it can be very overwhelming. It is important to cater each application to a different school. Make sure to utilize your current PI when applying.

**Q:** How did you choose your school?

**A:** I chose UNC Chapel Hill because I could see myself in many of the different labs here. I also knew I wanted to stay on the East Coast. UNC was also close to home, very familiar, and a good fit for me.

**Q:** What is your research?

**A:** I am currently doing my lab rotations, my work in rotations involve a lot of computational and experimental elements such as coding and analyzing the thermodynamics of a transmembrane protein, it is very pharmaceutical based.

**Q:** Any tips, tricks, or advice?

**A:** Start early! Figuring out the schools you want to go to is the hardest part, really look into the labs at each school. If you can't find more than 2 faculties at each school, then it's not the right fit. Also reach out the faculty at those universities! Also don't be discouraged, each school is looking for something different so never sell yourself short.

## ANDERSON NOONAN



**Q:** How many schools did you apply to, and what was it like?

**A:** I applied to 8 or 9 schools, and it was a very diverse process. The schools asked for very different things, but there was some consistency – every school asked for a personal statement, a research statement, and a resume.

**Q:** How did you choose your school, and how do you recommend others choosing?

**A:** I used tours as a moment to learn what I could do and what kind of research groups each school had. You want to make sure the PI is going to facilitate a healthy research environment and match your learning style. You need to think about time you aren't spending in the lab and if the town is a good fit. I chose Colorado State because it ticked all my boxes, and it was a "when you know, you know" moment.

**Q:** What is your research, and what are your next steps?

**A:** The main thrusts are sustainable polymers – ones that are cyclic in nature. The goal is to polymerize a monomer and use chemical processes to break down the polymer chain back into a monomer, hypothetically going through this process indefinitely. We are also looking at ways to recycle polymers that already exist and biodegradable plastics, like PHAs and P3HB. After grad school, I am looking at industry and work in sustainable chemistry, hopefully within sustainable polymers.

# ALUMNI SPOTLIGHT

## TAN LIN

**Graduation Year:** 2024

**Degree:** BS in Chemistry,  
Certified Chemist

Tan is currently in the process of studying for the LSAT. He plans to attend law school for Intellectual Property.



### What are you up to? What led you here?

I am currently in the process of studying for my LSAT, I also just applied to an administrative position at Duke Law in order to better understand the workings of law school. I was drawn to law school because it involved a lot of logical reasoning and there was so much opportunity in this field. This career also allows me to keep my roots in science and support the scientific community.

### Anything advice?

A big takeaway from my experience is that you should never limit your options. Your degree will take you very far and will grant you many opportunities and experiences, so it is good to branch out.

### How did your undergrad experience prepare you for what you do now?

My major in chemistry taught me valuable skills such as time management, research skills, designing projects, creating timelines, and staying organized. Another really useful element it taught me was searching through literature. After reviewing countless publications, you learn how to digest the information and pick out and interpret the main ideas. This has directly translated into helping me study for the LSAT.

### Advice to incoming chemistry majors?

Find a community within your classes, it is very good for studying, as well as having that support throughout your time in college. I recommend participating in clubs or physical activity, it is very important to prioritize physical and mental health while in a rigorous major like chemistry, balance is key!

## DEAR LABBY

Are you in need of advice or an answer to your chemistry questions? Dear Labby provides a space for you to anonymously ask whatever you may need, and allows current students to answer to the best of their ability!

[https://docs.google.com/forms/d/e/1FAIpQLSfa526nmn6y8EQe716cSPIfe9\\_QY7LVefWs7EPiUWXkoWWDA/viewform](https://docs.google.com/forms/d/e/1FAIpQLSfa526nmn6y8EQe716cSPIfe9_QY7LVefWs7EPiUWXkoWWDA/viewform)

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## Meet the Chair of the Department of Chemistry and Fermentation Sciences

**By: Dayton Hawelu-Kim**



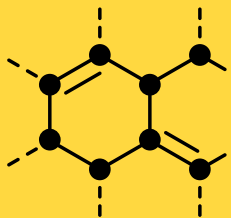
I had a talk with Dr. Cecile about many topics that are pertinent to students and about her. Let's begin with Dr. Cecile's pursuit into chemistry. Dr. Cecile, like many students in their undergraduate degree pursuits, didn't have her plans set in stone. Originally, her major was mass communication and English, but she took many advanced math courses. She then decided to swap to chemistry in her sophomore year. The reason for this swap to one of the hardest degrees to earn was because she found the material interesting and challenging compared to her previous major. She then went for the long haul and even got a Ph.D. in Biophysical Chemistry at Duke University.

After getting a little academic background on one of the many sages in the chemistry department we discussed some of the tips and wisdom Dr. Cecile had. Not all degrees are equal, and we cannot speak for what's right for every student but if you enjoy challenging material that will prepare you for graduate school or industry, then maybe the pursuit of a chemistry degree is right for you. In a way, you can carve out your niche in the world with this degree. Some of Dr. Cecile's biggest tips to excel in your course work at Appalachian State University would be to find a mentor and get into research lab. Dr. Cecile runs an undergraduate research lab, and one of her projects is implementing a nematode model system to study xenobiotic transport by OATs. There are other professors running research labs and they can be found at the Appalachian State University Chemistry department website under Faculty & Staff. Exposure to applied chemistry through working in a research lab has shown to increase academic performance, and Appalachian State is a great place for prospective or current undergraduate chemists to thrive in!

While being a mentor to students, head of a department, researcher and a mother to four girls, one must wonder how she is able to juggle all these responsibilities. The all-powerful planner, like Google Calendar for instance, allows for Dr. Cecile to excel at being on time and efficient. To any students reading this: if a professor swears by using a planner, then you should too! If you are a prospective freshman and on the fence about majoring in chemistry and it seems like a daunting task or not worth the headache, come speak with Dr. Cecile or any of the professors in the department and hopefully they will dispel some of the rumors that chemistry is only for those who are academically gifted.

Even once you graduate and go to work or graduate school, Dr. Cecile will still be willing to help guide you through your career and even life choices. She had a mentor who became a lifelong mentor from when she was an undergraduate, and this mentorship helped her through many struggles and questions that only those who chose similar paths may answer. She felt the impact of such mentorship on her life and now wants to pay it forward for the up-and-coming new generation of chemists that walk through Appalachian State University's doors.





# Chemistry Jumble

By: Leah Boone



1. EBRKEA
2. DSCEITRCOA
3. EEMERENYLR
4. WESLI CDAI
5. OAPUCOSL
6. ULLOEEMC
7. INIRLTFTOA
8. UCMOHRMI

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\*Answers on Page 6