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*What's going on in
the North Carolina
Academy of Science:*

- Reflections from CASCAS Fall Workshop
- Upcoming Annual Meeting
- Call for Moderators & Judges

*Inside this
issue:*

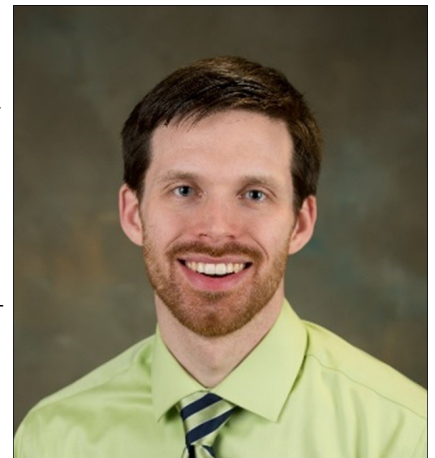
Letter from Local Arrangements Committee	1
CASCAS News	2
Meet Dr. Chekan—Keynote Speaker	3-4
Yarbrough & Bryden Call for Proposals	2 & 6-7

And more...

117th Annual Meeting Participant Reflection

By Dr. Jordan Womick, Campbell University

Greetings from the Local Arrangements Committee for the 118th NCAS Annual Meeting! This year, the committee has been working to create an annual meeting experience that is flexible for our members. To this end, members have the option to attend *and present* in-person on-site at Campbell University or virtually. While in-person attendees will have the greatest access to the events, virtual attendees will be able to view and give oral and poster presentations, participate in question-and-answer sessions, and view events such as the keynote address, panels, and award ceremony.



Dr. Jordan Womick, Local Arrangements Committee Co-Chair

Since the beginning of the recent global pandemic, scientists have been collaborating across disciplines to minimize its impact. Research necessarily shifted to focusing on a big question related to the pandemic: “How can science minimize the impact of COVID-19?” What followed were impressive examples of vaccines, tests, and exposure controls that have saved the lives of countless individuals. These approaches necessitated a multidisciplinary approach to research and problem solving. This year’s theme, *Multidisciplinary Research: Focusing on the Big Questions*, pays tribute to the recent achievements of scientists while looking forward to future investigations. This theme is explored through presentations, a keynote, and panels that emphasize the multidisciplinary approach.

The bulk of the meeting is composed of oral and poster presentations from members of the academy. Faculty, professionals, graduate students, and undergraduates are all encouraged to submit an abstract. The Academy is open to all sciences, and this year we are emphasizing the call for engineering abstracts. For many students, this will be their first presentation at a state-wide meeting and the culmination of semesters of research and college education.

The keynote address will be given by Dr. Jonathan Chekan, Assistant Professor of Chemistry and Biochemistry at the University of North Carolina Greensboro, whose multidisciplinary work discovers new enzymatic reactions and bioactive molecules from nature. His publications are often co-authored by scientists from a variety of research institutions with

continued on page 2

Annual Meeting Continued

By Dr. Jordan Womick, Campbell University

diverse interests including Biochemistry, Genomic Biology, Chemical Biology and Proteomics, Oceanography, Pharmacy and Pharmaceutical Sciences, and Nuclear Energy in Agriculture. His talk is entitled “Bioinformatic Guided Discovery of New Chemistry and Molecules from Human Pathogens”.

Practical panels and discussions will continue from last year with panels on “Research and teaching in the time of COVID” and “Being a student in the time of COVID”. The Graduate and Professional School panel is returning again this year with discussions and breakout sessions following. Informative panels this year will be on the topics of genetics and drug design. The panelists for these topics are chosen from multiple disciplines in accordance with the theme of the meeting.

The annual meeting provides a valuable opportunity for education and scientific communication. Please strongly consider contributing an abstract, attending, and supporting.

Jordan Womick, Co-chair of the Local Arrangements Committee

118th Annual Meeting of the North Carolina Academy of Science

Multidisciplinary Research: Focusing on the Big Questions
Campbell University, March 18-19, 2022

Abstract Submissions Open Feb. 1st
Oral and Poster Presentations
In-person and Virtual!
cas.campbell.edu/ncas



Call for Proposals—Yarbrough Research Grants 2022–2023

From Dr. David Cartrette, Pfeiffer University

The Yarbrough Research Grants program provides funding to undergraduates who are members of the Collegiate Academy to engage in research activities. Approximately four grants are awarded annually and typically range from \$100 to \$500. Top awards may receive as much as \$500 or more. The application deadline is April 15, 2022, and accepted proposals may be funded as early as June for undergraduates to begin their research. Details are found on the Academy website at www.ncacadsci.org.

Call for Judges & Moderators for The 118th Annual Meeting March 18-19 2022

From Dr. Laura Reichenberg, Pfeiffer University

Judges are needed for both the Friday evening poster session and Saturday oral presentations. Many of the biological science disciplines are represented at the meeting and, ideally, judges will be paired with presentations that match their area of expertise. You will be asked to judge either the poster session or oral presentation session, followed by a collaborative selection of Derieux winners in your area. Volunteering your time as a judge is a great way to help encourage our undergraduate researchers, while participate in the Annual Meeting! If you are interested, please email Dr. Laura Reichenberg at laura.reichenberg@pfeiffer.edu or indicate your interest on your Annual Meeting registration form.

Moderators are needed to preside over oral presentations on Saturday at the Annual Meeting. Moderators can be graduate students, undergraduate students, or faculty from any content area. This is a great way to help facilitate smooth oral presentation sessions. If you are interested, please email Dr. Laura Reichenberg at laura.reichenberg@pfeiffer.edu or indicate your interest on your Annual Meeting registration form.

CANCAS Group Membership:

Campbell University
Pfeiffer University
Elon University
Lenoir-Rhyne University
UNC- Pembroke

Want to become a CANCAS Group Member?

Group memberships are currently discounted to \$50 and allow all students at the institution who are members of that group to attend the Annual Meeting at a discounted rate. CANCAS membership also gives students who are presenting poster or oral presentations at the annual meeting the opportunity to be judged for prestigious Derieux Awards. Sign your group up today at <https://www.joinit.org/o/north-carolina-academy-of-science/>

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of the
North Carolina
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Annual Workshop

Virtual CANCAS Undergraduate Research Workshop a Success!

The Virtual CANCAS Undergraduate Research Workshop successfully reached over 40 students spanning five institutions throughout the state. This workshop provided great opportunities to learn about, and speak with representatives from, various graduate programs including Occupational Therapy, Physician Assistant, Doctor of Osteopathic Medicine and MS and PhD research opportunities. The afternoon offered interactive workshops on resume preparation, preparation of oral and poster presentations, and how to effectively communicate science.

Interview with NCAS Annual Meeting Keynote Speaker Jonathan Chekan, PhD

Report By Ms. Emma Throneburg, Lenoir Rhyne University

Hello members of NCAS! My name is Emma Throneburg, student at Lenoir Rhyne University and president of the Collegiate Academy of the North Carolina Academy of Science (CANCAS). Recently, I had the pleasure of interviewing Dr. Jonathan Chekan, assistant professor at UNC Greensboro and keynote speaker at our upcoming NCAS meeting in March. The theme for our annual meeting this year is “Multidisciplinary Research: Focusing on the Big Questions.” The research that Dr. Chekan is working on greatly exemplifies this theme, through using interdisciplinary approaches in the discovery of new natural product biosynthetic pathways and learning about the enzymes that produce them.

Can you briefly describe your research interests?

My research is at the interface of biology and chemistry, as I take many different approaches to answering biological questions. My research is largely focused on the biosynthesis of natural products, which are small molecules that are made by bacteria, fungi, plants, and even animals. Many of them actually have really valuable bioactivities. If you think about where antibiotics come from, where anti-cancer drugs come from, it turns out in most cases they’re coming from nature in one way or another. For example, penicillin, one of

the most famous antibiotics, comes straight from a fungus.

So, my research is really focused on trying to discover new versions of these molecules, these natural products in nature. We take many different approaches to this, such as bioinformatics, which is taking advantage of computational techniques to look through genomes of bacteria, fungi, or plants to figure out if there could be a new type of molecule being produced by these organisms. Then, to validate our findings, we go into the lab and try to prove it by growing the organisms and seeing what is being made. We can isolate enzymes we think are important and study them to see how they’re catalyzing the chemistry.

Are there any current projects you’re excited to be working on?

Using the bioinformatic approach that I mentioned, we have looked through human pathogens. We are really interested in *Streptococcus pneumoniae*, an important bacterium that causes the majority of bacterial pneumonia in humans. It causes thousands of deaths in the United States alone. Even though there is a vaccine available for it, it is still a major problem, so we’re interested in trying to



Ms. Emma Throneburg,
Lenoir Rhyne University



Dr. Jonathan Chekan,
UNC Greensboro

Interview with Dr. Chekan, continued

figure out what sort of metabolites these bacteria are producing. Could they be virulence factors that are important for pathogenesis? We're trying to figure out what molecules are being produced by this bacteria and understand the chemistry behind that. We also want to understand the enzymes involved in producing them and how they do it.

How did you become interested in this subject during your undergraduate education?

My undergraduate degree is actually in microbiology. I became more interested in chemistry through my undergraduate research experience. I worked in a mechanistic enzymology lab where I got a lot of experience purifying enzymes and studying the mechanisms behind them. I became curious about how we can use

that knowledge to apply it to biological problems. When I went to graduate school at the University of Illinois, I joined a lab that did protein crystallography. I continued studying enzymes, but we worked on systems that were related to natural products, molecules that have valuable biological activity. So that started merging my interest in both the biology and chemistry of how enzymes work and applying them to biological systems and problems.

Call for Proposals—Robert R. Bryden Graduate Research Award

Report by Prof. Helen Caldwell, Lenoir-Rhyne University

1. One \$1,000 grant is in the NCAS 2021-22 budget for research equipment and/or expenses related to attending scientific conferences. Past recipients are not eligible.
2. Both the applicant and the research advisor must be at a college or university in North Carolina and members of the NCAS in good standing (membership forms may be obtained from the address listed below or at the web site: <http://www.ncacadsci.org>). *Please note that this grant program is funded through dues paid by NCAS members. In order to continue this and other valuable NCAS programs, research advisors are encouraged to request their institutions to contribute through an institutional membership.*
3. Applications for the grant must include one copy of the following:
 - NCAS proposal cover sheet form with one page budget summary. Itemize as specifically as possible.
 - Extended abstract of research no longer than 2 pages with three sections.
 - Introduction: Background, significance and clear statement of purpose.
 - Results: Brief summary of experimental results to date.
 - Planned Research: Brief description of work planned over the next year.
4. Send applications electronically to:
Prof. Helen Caldwell, Email: Helen.Caldwell@LR.edu
and
Dr. Mark McCallum, Email: mark.mccallum@pfeiffer.edu
5. **Deadline** for applications is **March 1, 2022**.
6. Award will be announced by **March 31, 2022** at the NCAS annual business meeting.
7. Award recipient is strongly encouraged to present their work at the **NCAS 2023** annual meeting.



The North Carolina Academy of Science
Meredith College Department of Biological Sciences, 3800 Hillsborough St., Raleigh, NC 27606-5298

Phone: 919-760-8189
Fax: 919-788-0956
ncacadsci@email.meredith.edu

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The **objective** of the North Carolina Academy of Science is to “encourage the advancement of science within the state of North Carolina by promotion of scientific research and by the fostering of education in the sciences”. The North Carolina Academy of Science meets these objectives by...

- Publishing a peer reviewed scholarly journal, the *Journal of the North Carolina Academy of Science*.
- Fostering and encouraging student involvement in the sciences through support of the Collegiate (CANCAS) and Student Academies (NCSAS).
- Promoting interactions among scientists and students throughout North Carolina.
- Providing a forum for exchange of ideas for solving issues important to North Carolina.

The Academy members include individuals from academia, industry, government, and all others who support the objectives and goals of the Academy.

Con-

North Carolina Academy of Science

Our Mission

The North Carolina Academy of Science promotes public appreciation of science, science education, scientific research and a meaningful role for science in public policy.

Our Goals:

Promote public appreciation of science

- Partnership with Science Centers
- Public Lecture Series
- Newsletter

Promote science education

- NCAS Webpage
- Academic Lecture Series
- NCAS Publications: Journal, Educational Publications
- Student Academy - Middle & High School

Promote scientific research

- Yarbrough and Bryden Research Grants
- CASCAS Undergraduate Research Workshop
- Presentation Opportunities at Annual Meetings
- Journal of the North Carolina Academy of Science

Promote science in public policy

- Symposia
- News Releases
- Position Statements
- Interactions with Public Officials

