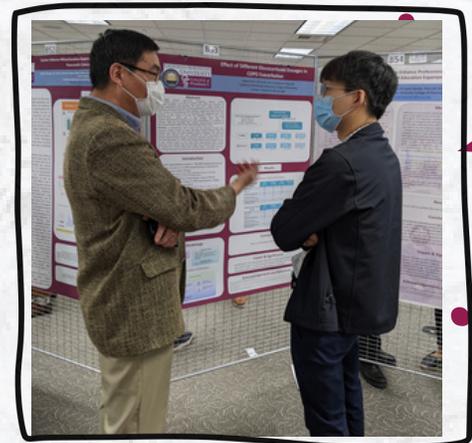
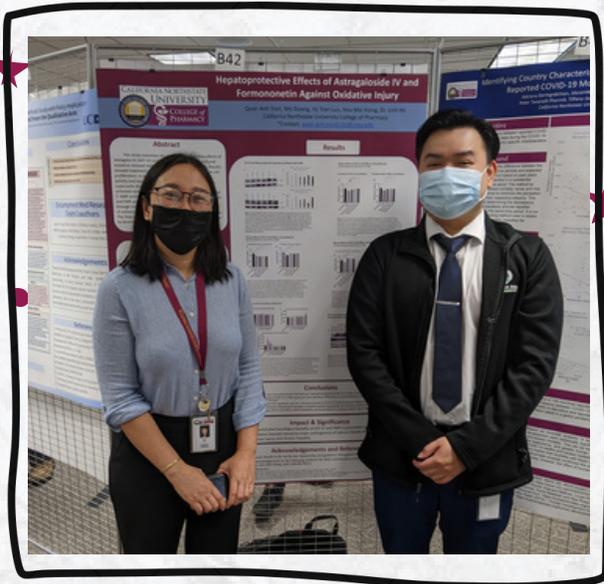
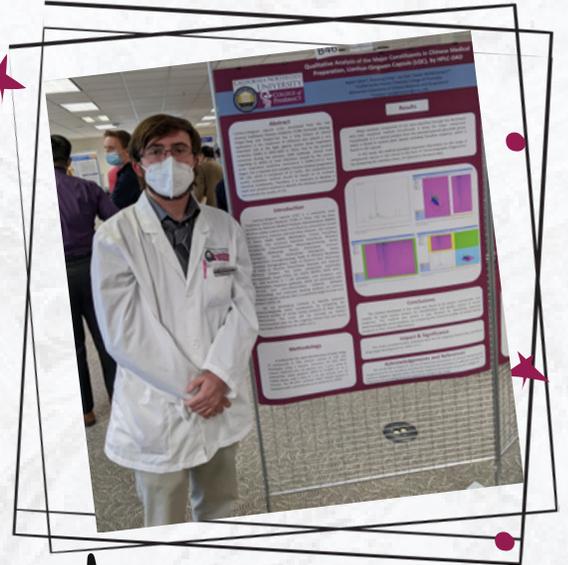
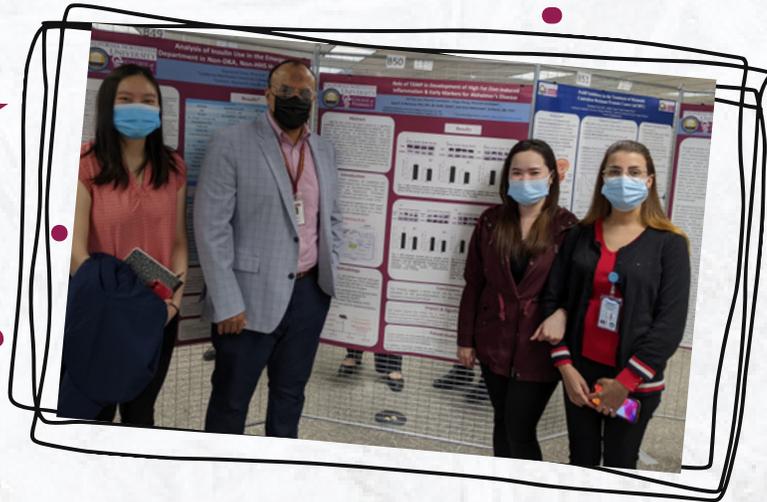


2023

# RESEARCH NEWSLETTER

CALIFORNIA NORTHSTATE UNIVERSITY  
COLLEGE OF PHARMACY (CNUCOP)



**California Northstate University College of Pharmacy is pleased to recognize the accomplishments of our faculty and student researchers.**



# A Message from Dr. Ruth Vinall, CNUCOP Assistant Dean of Research



Dear colleagues,

Our CNUCOP research program has continued to strengthen and grow over the past year as a result of the outstanding efforts of our faculty members, preceptors, staff, and students and the strong support provided by Dean Xiaodong Feng and CNU administrators. Thank you, everyone!

Excitingly, we are currently ranked #82 out of all US PharmD programs for external research funding. This funding supports a broad range of CNUCOP research activities including bench research, translational research, community outreach-related research, and educational research. Most recently, two of our faculty members, Drs. Tarek Kassem and Islam Mohamed, received a prestigious award from ASHP to develop and evaluate a service-learning program that will help improve healthcare outcomes for our local migrant community. Other grant awardees include: Dr. Fakhru Ahsan, who received funding from 2 research awards, including a Federal R01 award, to continue his pioneering work in the use of organ-on-a-chip to improve our understanding and treatment of pulmonary arterial hypertension; Dr. Dipongkor Saha, who received Department of Defense funding to support the development of oncolytic virotherapy for metastatic breast cancer; and Dr. Jennifer Courtney, who received 2 research awards - one, in collaboration with Dr. Ashim Malhotra, is supporting her student professional identity research and the other, in collaboration with Drs. Erika Titus-Lay, Tiffany Kreys, Eugene Kreys, and myself, is helping further improve a naloxone training program for our pharmacy students.



## A Message from Dr. Ruth Vinall, CNUCOP Assistant Dean of Research



In 2022, our faculty members, preceptors, staff, and students collectively published 43 peer-reviewed research papers and gave 53 research presentations. CNUCOP students served as co-authors on many of these. Our faculty members very much enjoy engaging students in their research and there are multiple ways for students to get involved. One of these is through the CNUCOP student summer research fellowship program (<https://pharmacy.cnsu.edu/dept/research/summer-research-fellowship-program.php>). This year will be the 7th year of the program! We are looking forward to hearing about the 2022 awardee research projects at our annual CNU Research Symposium on March 3rd, 2023.

Other exciting news includes the recent purchase of cutting-edge 3D printing equipment and other related equipment to support drug manufacture research. Internal research funding was provided to Drs. Tarek Kassem, Dipongkor Saha, and Fakhrul Ahsan to help support drug manufacture-based research projects. Dr. James Jin also received internal funding to help support his research relating to the role of S1P in cardiomyocyte function. CNUCOP disbursed approximately \$50,000 in 2022 to support these research projects. Lastly, the CNU vivarium is scheduled to open in the next few months. This will undoubtedly help accelerate and increase our translational research capabilities and thereby further support our mission to advance the science and art of healthcare.

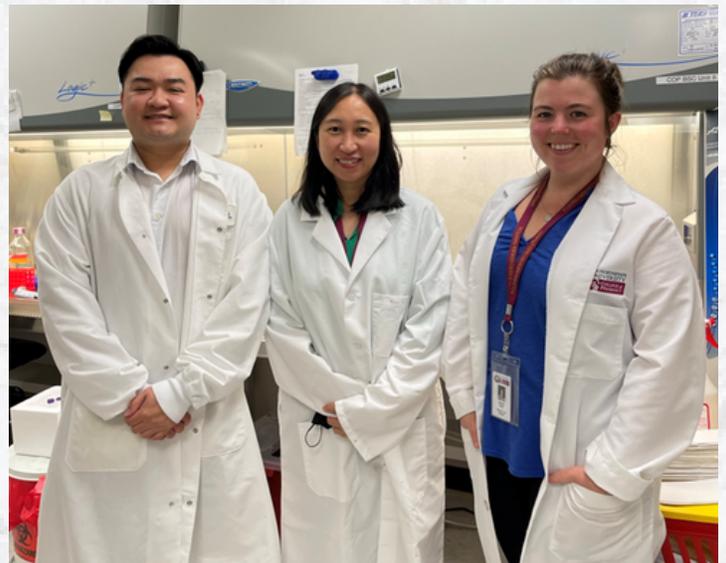
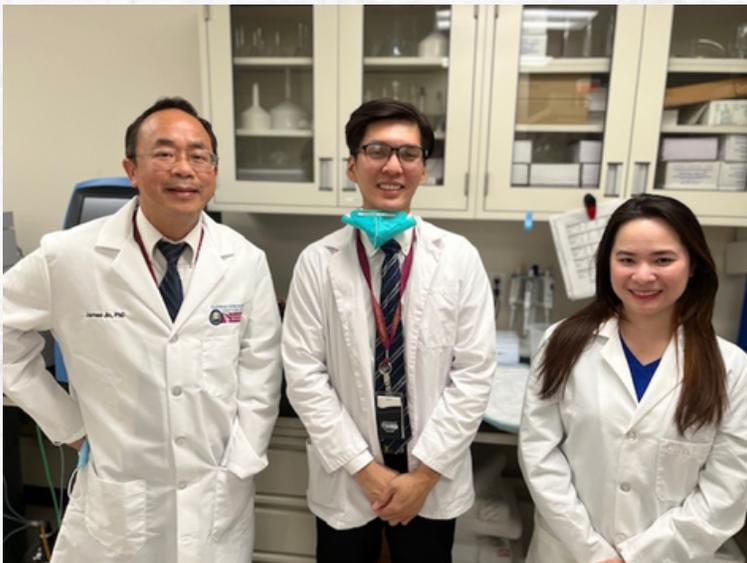
Thank you,

*Ruth Vinall, Ph.D.*

Professor and Assistant Dean of Research, CNUCOP

### SUMMARY OF RESEARCH OUTPUT FOR 2022

- Peer reviewed publications – **TOTAL OF 43 PEER REVIEWED PUBLICATIONS**
  - o Current/former CNUCOP students = 10 publications (total of 26 student co-authors)
- Research presentations – **TOTAL OF 53 RESEARCH PRESENTATIONS** (poster and podium presentations)
  - o Current/former CNUCOP students = 20 presentations (total of 51 student co-authors)
- External grants, submitted – **TOTAL OF 8 EXTERNAL GRANT APPLICATIONS**
- Internal grants, submitted – **TOTAL OF 8 INTERNAL GRANT APPLICATIONS**
- External grants, funded – **TOTAL OF 4 EXTERNAL GRANTS RECEIVED FUNDING**
  - o Faculty members received close to \$1,000,000 in external funding
  - o Per AACP, CNUCOP is currently ranked #82 out of all US PharmD programs for external research funding
- Internal grants, funded – **TOTAL OF 4 INTERNAL GRANTS RECEIVED FUNDING**
  - o Total of \$50,000 in internal funding to support faculty member seed grants
- Student grants funded (internal) – **TOTAL OF 6 STUDENTS RECEIVED FUNDING**
  - o Total of \$14,400 in internal funding to support student stipends



# Research Accomplishments

## 2022

Publications, 2022; TOTAL OF 43 PUBLICATIONS (27 journal articles, 15 book chapters)

- 26 CNUCOP student co-authors

(Bolded = CNUCOP faculty member, underlined = CNUCOP student, italics = CNUCOP staff member)

1. Steven Sprenger, **Tibebe Woldemariam**, Simeon Kotchoni, Hatem A Elshabrawy, Lakshmi Shankar Chaturvedi. Lemongrass essential oil and its major constituent citral isomers modulate adipogenic gene expression in 3T3-L1 cells. *J Food Biochem*. 2022. doi: 10.1111/jfbc.14037. <https://pubmed.ncbi.nlm.nih.gov/34981531/>
2. **Linh Ho**, Nazir Hossen, **Trieu Nguyen**, An Vo, and **Fakhrul Ahsan**. Epigenetic Mechanisms as Emerging Therapeutic Targets and Microfluidic Chips Application in Pulmonary Arterial Hypertension. *Biomedicines*. 2022. doi: 10.3390/biomedicines10010170. <https://pubmed.ncbi.nlm.nih.gov/35052850/>
3. Hong EJ, Sumanasekera W, **Le UM**. Physical Stability and Release Profile of Compounded Gabapentin Containing Pluronic Lecithin Organogel for Neuropathic Pain Management. *Int J Pharm Compd*. 2022 Jan-Feb;26(1):65-71. PMID: 35081046. <https://pubmed.ncbi.nlm.nih.gov/35081046/>
4. **Vinall R**, Chen Q, *Talbott G*, Ramsamooj R, Dang A, Tepper CG, Borowsky A. Use of RNA-Seq and a Transgenic Mouse Model to Identify Genes Which May Contribute to Mutant p53-Driven Prostate Cancer Initiation. *Biology*. 2022. doi: 10.3390/biology11020218. <https://pubmed.ncbi.nlm.nih.gov/35205085/>
5. Vy Tran Luu, Sang Phan, **Zhu-Qiu Jin**. Dedifferentiation of Human Cardiac Myofibroblasts Is Independent of Activation of COX-2/PGE2 Pathway. *Int. J. Mol. Sci*. 2022; 23: 3023. <https://doi.org/10.3390/ijms23063023https://pubmed.ncbi.nlm.nih.gov/35328443/>
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8. Yubin Li, Xuyao Zhang, Xian Zeng, Shaofei Wang, **Hongbin Wang**. Tumor-Associated Macrophages: Therapeutic Targets of Cancer. Pages 279-315 in *Macrophage Targeted Delivery Systems*, Editors: Swati Gupta and Yashwant Pathak. Springer. 2022. <https://link.springer.com/book/10.1007/978-3-030-84164-5>
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10. **Ashim Malhotra**. Recent Trends in Clinical Studies on Macrophage-Targeting Delivery. Pages 517-527 in *Macrophage Targeted Delivery Systems*, Editors: Swati Gupta and Yashwant Pathak. Springer. 2022. <https://link.springer.com/book/10.1007/978-3-030-84164-5>
11. Alexandra Yatine Lee, Sabrina Marie Christensen, Nhi Duong, Quoc-Anh Tran, Hou Mai Xiong, Jennifer Huang, Sarah James, Dimple Vallabh, George Talbott, Melanie Rose, and **Linh Ho**. Sirt3 Pharmacologically Promotes Insulin Sensitivity through PI3/AKT/mTOR and their Downstream Pathway in Adipocytes, *IJMS*. 2022. <https://pubmed.ncbi.nlm.nih.gov/35409099/>
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36. Priya Manhas, Christiane How-Volkman, Olivia Wu, Satori Iwamoto, Caroline Goswami, Ahmed ElShamy. Vaccines as biologics in the era of pandemic. Biologics and Biosimilar. CRC Press. 2022.
37. Nazir Hossen, Tanvirul Hye, and Fakhru Ahsan. Biopharmaceutics, pharmacokinetics, and pharmacodynamics of biological products. Biologics and Biosimilar. CRC Press. 2022.
38. Tibebe Woldemariam and Janie Yu. Understanding variability, stability, and immunogenicity of biosimilars. Biologics and Biosimilar. CRC Press. 2022.
39. Amy Ferrarotti, James Alexander Lugtu, and Ashim Malhotra. Hydrogel-based delivery of biologics in cancer and cardiovascular diseases: proof-of-concept. Biologics and Biosimilar. CRC Press. 2022.
40. Mandeep Rajpal, Anitha Shenoy, and Ashim Malhotra. Rising from the ashes: the curious case of the development of biologics for the treatment of neuroblastoma. Biologics and Biosimilar. CRC Press. 2022.
41. Shaofei Wang, Yubin Li, Mengyao Liu, Hongbin Wang, and Jiajun Fan. Biologics and biosimilars: potential therapeutics for autoimmune renal diseases. Biologics and Biosimilar. CRC Press. 2022.
42. Yubin Li and Hongbin Wang. Complement as a new immunotherapy target: past, present, and future. Biologics and Biosimilar. CRC Press. 2022.
43. Celeste Nguyen, Xinge Zheng, Anmolpreet Kaur, Xinyi Zhou, Rami Almukhtar, Sally Jang, Mickey Sohal, and Jennifer Courtney. Pharmacy Times. 2022. <https://www.pharmacytimes.com/view/enhancing-patient-care-and-the-scope-of-practice-for-pharmacists-student-pharmacists-through-immunizations-during-the-monkeypox-outbreak>

**Anti-angiogenic treatment with a combination of antagonists**

X. Feng

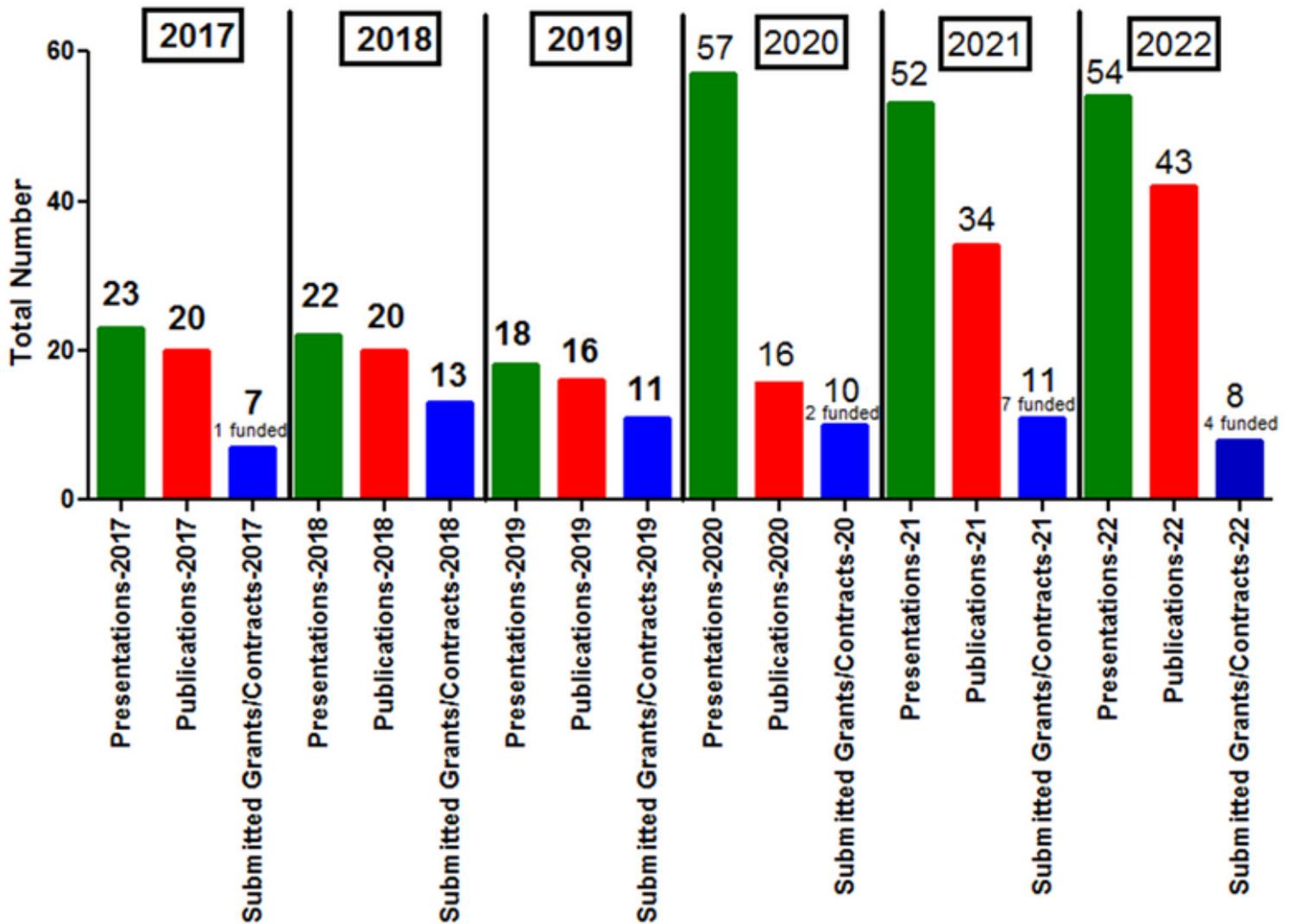
US Patent 11,318,184

**Anti-angiogenic treatment using v1o4 with a blocking peptide**

X. Feng

US Patent App. 17/704,522

# 6 Year Research Output Trends



CNUCOP research productivity has dramatically increased over the past 3 years. Importantly, we continue to see an increase in external funding to help support new and on-going research projects.

# New Faculty Spotlight: Dr. Dipongkor Saha



*Dr. Saha obtained his DVM and M.S. degrees in Veterinary Medicine from Bangladesh Agriculture University, and Ph.D. in Veterinary Medicine (Virology) from Ghent University, Belgium. He received his post-doctoral training in Cancer Immunology & Oncolytic Immunovirotherapy at the University of Helsinki, Finland and then five years at Harvard Medical School, Massachusetts. Prior to joining us, he was an Assistant Professor at Texas Tech University Health Sciences, Abilene. He has 37 peer-review publications from different journals. Currently, he has a DoD-PRCRP active grant (\$550,491) titled “Immunotherapeutic targeting of glioblastoma with oncolytic virus and listeria-based anti-cancer vaccine”.*

We are so glad to have Dr. Dipongkor Saha as part of our research team here at CNUCOP. He agreed to answer a few questions to give us a better look into his mind.

**Q: Can you tell us about your research interests?**

My research interest is revolving around cancer immunology and immunotherapy and application of oncolytic viruses for the treatment of cancers. I am also interested in applying the knowledge of cancer biology in the field of pulmonary arterial hypertension (PAH), which is a cancer-like disease.

**Q: What do you love about research?**

Identifying new problems and finding their solutions.

**Q: Do you think there has been a defining moment for your career path?**

Joining at Harvard and studying cancer biology was a turning point in my research career, but the most defining moment is getting the opportunity to explore pathobiology of rare diseases such as pulmonary arterial hypertension at CNU.

**Q: What are you most proud of?**

Application of my research into patients.

**Q: What do you hope to accomplish in the future?**

We want to develop novel and groundbreaking therapeutics that will cure cancer and cancer-like diseases such as PAH

**Q: What do you enjoy about working at CNU?**

Warm and friendly environment at CNU. Staffs are extremely supportive to our research program, and we get help from CNU whenever needed.

# Meet your Lab Manager!

## MELANIE



*Hello! My name is Melanie Rose, and I am your ENCCP Research Laboratory Manager! Get to know me!*

### **Q: What do you do as the lab manager?**

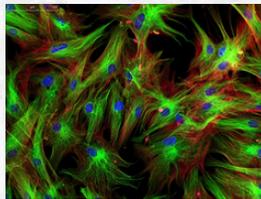
I assist our faculty members with their research projects by training student volunteers. I am always behind the scenes making sure the lab is clean, organized, and well-supplied to make your research easier!

### **Q: What is your educational background?**

I got my Bachelor's at SF State in Cell and Molecular Biology, and my Master's in Stem Cell Research at Sac State. I am not a doctor, so please call me Melanie when we meet!

### **Q: What is your favorite molecular biology technique?**

I really enjoy fluorescent microscopy/immunohistochemistry. You get a really well-rounded idea of cell expression, and it makes such a pretty picture!



### **Q: Do you have two dogs that you will take any opportunity to talk about?**

I am so glad you asked. I have a 9 year old Australian Shepherd named Hannah (Banana, Nanners, etc.) and a 2 year old Dachshund mix named Monday (Monderoo, Munderfoot). They are my joy, and I love them so much. Please come talk to me about them.



# Student Researchers of the Year 2022



**P1 Robert Moir**



**P2 Xinge Zheng**



**P3 Quoc Anh Tran**



**P4 Vy Tran Luu**

# An interview with Xinge



*Xinge Zheng is our 2022 P2 Student Researcher of the Year. She has been an active lab member for her whole time at CNU, so we wanted to talk to her about her experience, and what being able to participate in research means to her.*

*Here is what we found out!*

## **Q: What first made you interested in doing research?**

At the beginning, I wanted to discover the different fields in pharmacy during the first year of pharmacy school, so I decided to apply for the Summer Research Fellowship Program. On top of that, I also wanted to gain some experience in research as well. I went through all the faculty's research interests, and I chose my research mentor based on my own interest of study. I was so lucky to be chosen as a recipient, and that's how I started my research journey. After that Summer Fellowship, I continued doing more research because I really enjoyed my time working in the lab.

## **Q: What do you like about research?**

If I ever have a question that crosses my mind or a theory that I want to test out, I can find the answers in research. It consistently makes me wonder why things happen the way they do. It amazes me that by integrating lectures, literature, and analytical investigations, I can answer my own questions. Because of research, I was able to work closely with my mentor, Dr. Islam Mohamed. Because of my mentor, I was able to learn more about the cardiovascular system beyond the classroom setting.

## **Q: What are you most proud of?**

I am proud of getting accomplishments as well as being able to pass the knowledge on to the next individual who is also interested in research. To day, I still cannot believe that I presented my research project in the AACP's conference that took place in Texas in the Summer of 2022, but that was certainly a great experience, and I was able to network with a lot of great people who also work in the research field. Overall, I am pretty proud of the small achievement in a short period of time in research.

# An interview with Xinge

**Q: Do you think that your research at CNU will help your future career path?**

Definitely. Doing research is a huge commitment on top of all the coursework that I am responsible for. Over the years, I have learned to better manage my time, fulfill all my tasks, discipline myself, and have better communication with others. The process of research facilitates learning, motivates me to solve problems, and apply concepts from lectures to real life experiences. I believe that my interest in research surely opens an extra door for me in my career, and now I stand considering it as a part of my future job.

**Q: What do you hope to accomplish in the future?**

I simply just want to maximize the potentials of being a pharmacist in the future. In a shorter-term, I hope to finish the project I started with or at least being able to train someone to continue my project after I graduate. In a longer-term goal, with the appreciation in research, I will now critically evaluate each study and use those results to help my patients to achieve better outcomes in the future.

**Q: Would you recommend the CNU research program to other students?**

100%, CNU faculty has a variety of interests on different topics. I recommend looking those up on CNU's websites, find out what you really like, and reach out to the specific faculty to start your research journey as well. Even if you don't choose research as your career, it is definitely a great experience to have. Especially to the students who never had experiences in the past, Summer Research Fellowship Program is a great program to start stepping your feet in. CNU provides great resources to help students succeed in research, and as students, we just need to learn how to utilize them.

*Thank  
you!*

# CNU COLLEGE OF PHARMACY SUMMER RESEARCH FELLOWSHIP 2022



**Karim Pajzetovic**  
**Dr. Ashim Malhotra**



**Mickey Sohal**  
**Dr. Ruth Vinall**



**Robert Moir**  
**Dr. Tibebe Woldemariam**



**Chrislyn Lawrence**  
**Dr. Eugene Kreys**

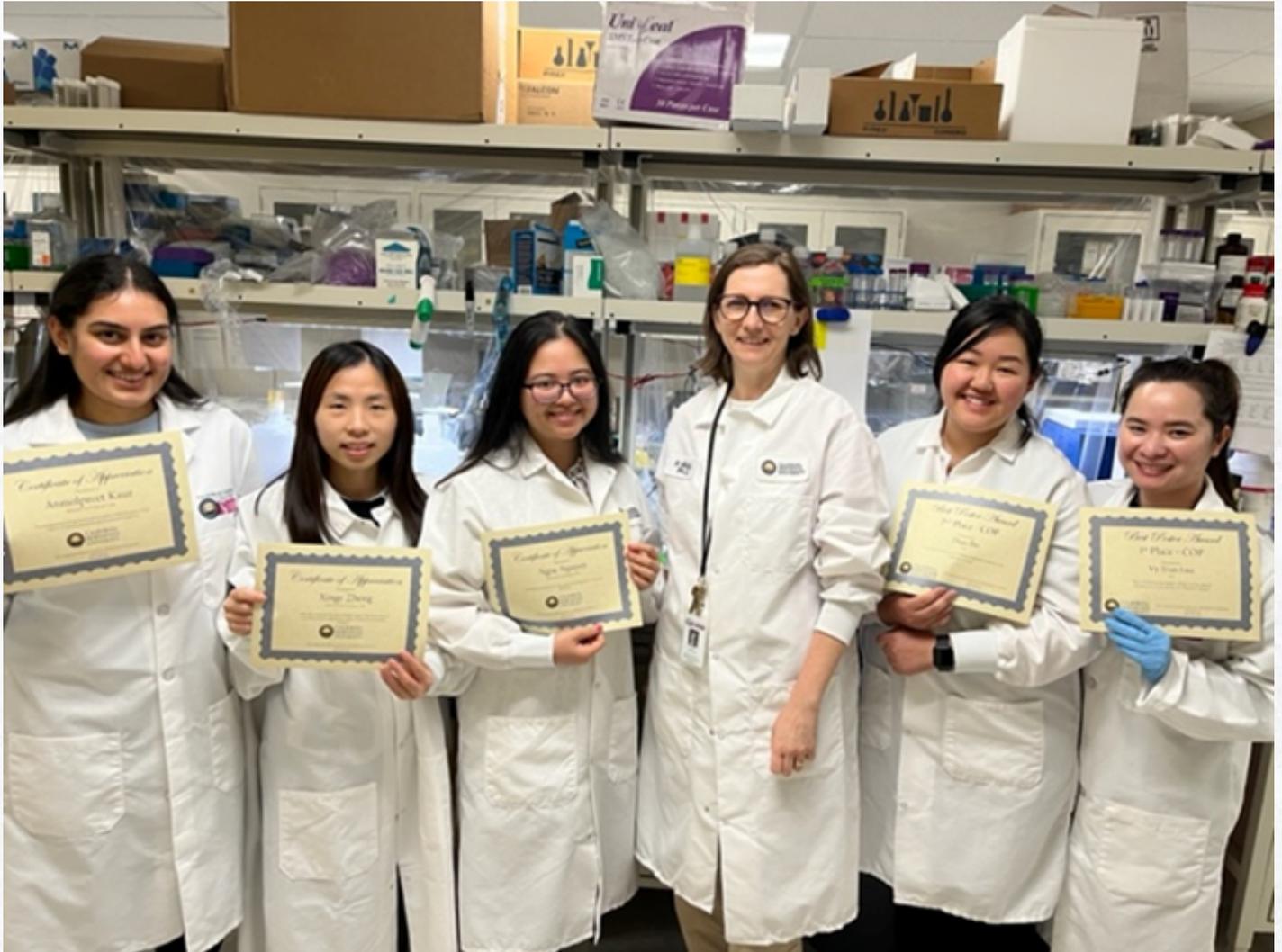


**Rami Almukhtar**  
**Dr. Tuan Tran**



**Anh Doan**  
**Dr. James Jin**

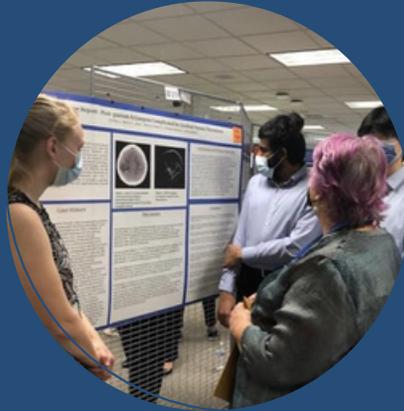




The 2022 CNU Research Symposium was a huge success! Special recognition goes to our students who gave podium presentations: Anmolpreet Kaur (faculty mentor: Dr. Justin Lenhard), Xinge Zheng (faculty mentor: Dr. Islam Mohamed), and Ngoc Nguyen (faculty mentor: Dr. Uyen Le). Congratulations also to our COP poster prize winners: Vy Tran Luu (1st prize, faculty mentor: Dr. Islam Mohamed) and Thao Do (2nd prize, faculty mentor: Dr. Eugene Kreys)



CALIFORNIA  
NORTHSTATE  
UNIVERSITY



**Friday**  
**MARCH**  
**3RD**  
**08:00 am to**  
**04:30 pm**

CALIFORNIA NORTHSTATE UNIVERSITY

# 2023 RESEARCH DAY



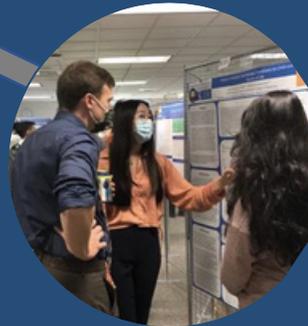
**Keynote Speaker** \_\_\_\_\_



**Lethal Cardiomyopathy in  
Friedreich's Ataxia: is there a  
hope?**

Elena N. Dedkova DVM, PhD  
Associate Professor of Physiology  
California Northstate University,  
College of Medicine

**Student-Led Research**  
**Poster &  
Podium Presentations**  
**All are welcome!**

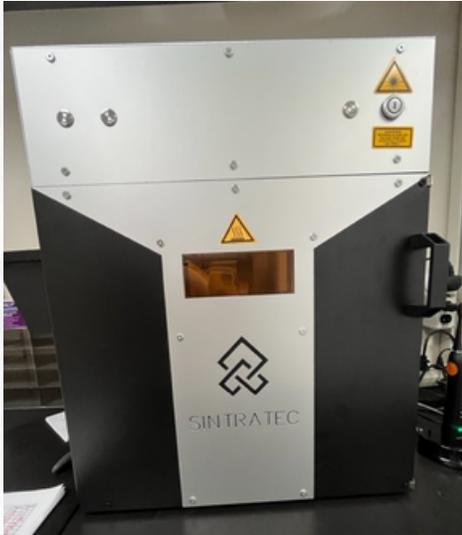


Program  
Booklet QR code



# Mighty Machines

We have a lot going on in the lab these days, so we wanted to show you some of our newest machines and what they can be used for!



**The Sintratec SLS printer (Selective Laser Sintering)**  
This machine uses a laser to turn a drug polymer into printed 3D tablets. This method can make multilayer tablets containing many types of drug!

## **Noztek Xcalibur Desktop Extruder**

Makes filament comprised of a drug and a dissolvable polymer, This large-scale machine can produce 1kg of filament in just 2 hours!

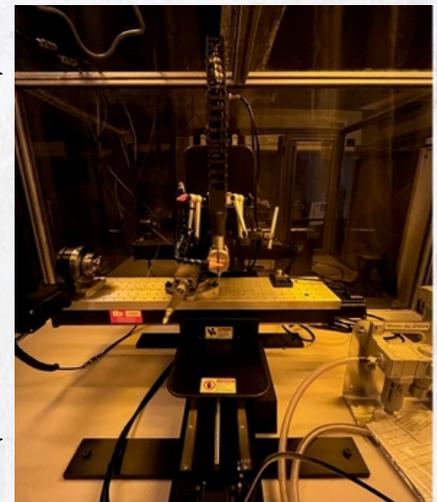


## **MakerBot 3D printer**

Uses the drug filament from the Noztek and creates a tablet. This can use filament to make tablets from two different drugs at once.

## **MicroMill CNC Machine**

Used for the production of photolithographic chips. This machine can make 30 chips at a time, and will be used for large scale manufacturing projects in the future!



# PBS Faculty Researcher and Scholar of the Year Award, 2022



**Dr. Zhuqiu (James) Jin, PhD**

**Associate Professor, Pharmaceutical and Biomedical Sciences  
Department**

Congratulations to Dr. Zhuqiu (James) Jin on receiving the CNUCOP Researcher of Year award for 2022! Dr. Jin's research is focused on understanding the role of sphingosine-1-phosphate (S1P) in cardiac fibrosis and he has published multiple papers in this area including one recently published in IJMS. Two of our CNUCOP students, Vy Tran Luu and Sang Phan, are listed as co-authors on this publication and have been active members of Dr. Jin's lab over the past few years. Last year, Dr. Jin received a competitive internal research grant to help further support his research. Excitingly, he is working with another CNUCOP faculty member, Dr. Fakhrul Ahsan, as well as one of our 2022 CNUCOP student summer research fellowship awardee, Anh Doan, to establish an organ-on-a-chip model. We very much encourage and support collaborative research which engages our students. Thank you, Dr. Jin, for all of your hard work and mentorship to our CNUCOP students!



# COMING SOON!



## Ph.D. in Pharmaceutical & Biomedical Sciences

*"To advance healthcare through the training and mentorship of future leaders in Pharmaceutical & biomedical science research. "*

**4 Years : 82 Credits**

### Admission Requirements:

- All applicants must have completed a bachelor's degree with a GPA of 3.0 or higher from an accredited four-year college or university and have completed coursework in math and either biology, physiology, chemistry, or computer science/engineering.
- Applicants who are non-native English speakers are required to demonstrate English language proficiency (minimum score of 80 on TOEFL(iBT) or 6.5 on IELTS).

**CONTACT US FOR MORE INFO**

[CGSadmissions@chnsu.edu](mailto:CGSadmissions@chnsu.edu)



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**PENDING WSCUC  
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THANK YOU FOR YOUR CONTINUED  
CONTRIBUTION TO THE CNU MISSION TO  
ADVANCE THE SCIENCE AND ART OF  
HEALTHCARE!

