## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the Desk of...</td>
<td>1-2</td>
</tr>
<tr>
<td>BMB Takes Cowboys to Europe</td>
<td>3</td>
</tr>
<tr>
<td>Just having Fun: Departmental Socials</td>
<td>4</td>
</tr>
<tr>
<td>Remembering and Old Friends</td>
<td>5</td>
</tr>
<tr>
<td>Giving Back to the Community</td>
<td>6</td>
</tr>
<tr>
<td>Getting to Know the Citizens of Biochemistry and Molecular Biology</td>
<td>7-16</td>
</tr>
<tr>
<td>Meet Dr. Wilson</td>
<td>17-18</td>
</tr>
<tr>
<td>Student Organizations</td>
<td>19-22</td>
</tr>
<tr>
<td>Niblack Research Scholars</td>
<td>23-25</td>
</tr>
<tr>
<td>Celebrating Success</td>
<td>26-28</td>
</tr>
<tr>
<td>Cover - A lot to Celebrate: A Look at Dr. Deng’s Lab</td>
<td>28</td>
</tr>
</tbody>
</table>
Contents

Roger E. Koeppe Endowed Lecture 29

STEM 30

Annual Banquet - Scholarly success and a night of awards! 31-32

Fall 2018 and Spring 2019 Graduates 33

HISTORY: A look back at where we were in 1973. 34-36
Change is afoot in the Department of Biochemistry and Molecular Biology, and while change can be challenging, I believe change can be good! This summer we cleaned the Department from top to bottom and removed a variety of old equipment and chemicals that are no longer used. Since our faculty are incredibly thrifty when it comes to resources, this was a hard process for all of us to go through, but it was time. In conjunction with the OSU foundation and the DASNR administration, we are preparing plans to renovate much of our teaching and research space; which will prepare the Department for a bright future in the Noble Research Center D-wing. The funding for these renovations is something our Department will be working on in coming years.... Thanks to the OSU administration, we are also in the process of recruiting 4 new faculty members into our Department which will transform the research and teaching in our department. We have already hired Dr. Shelly Lei (a big shout out to Shelly!), and we are excited to see her produce challenging metabolism course content. She will also be conducting research on obesity and diabetes, two of the most prevalent diseases in both Oklahoma and our United States. If any of you are interested in joining her laboratory for graduate work, I would look her up. We continue to build a gallery around our Department that displays a broad sample of our beloved citizens. This year we will focus on some of our undergraduates who have successfully moved on into post-graduate education. One such undergraduate “all-star” this year will be Rachel Williams who absolutely conquered our degree and OSU writ-large, and is now a medical student at the University of Texas Southwestern Medical School – which was the exact school she dreamed of attending! Our programs consistently appeal to a collection of the finest undergraduates OSU produces and it is an honor and joy to get to know them individually. I have the best job in the world!

Some great news on the donor front! Thanks to the generosity of donors Janet and Troy Weiss, we are in the process of transforming what was once a messy storeroom, into a fully functional, modern laboratory classroom, which will be named in honor of our dearly departed Professor Franklin Leach. This laboratory classroom will be used by almost all of our future students and will provide our faculty with a modern laboratory teaching space with improved functionality. Janet is Franklin’s daughter, and during her time at OSU she was named the OSU Homecoming Queen, was an OSU Top Ten Senior, was married to Troy, and graduated with her degree in Chemical Engineering! What a beautiful OSU story!
I should also mention that it was Dr. Leach who guided the construction of our beloved D-wing where our Department is located in the first place. Therefore, this honor bestowed by Troy and Janet is especially fitting for their father, father-in-law and our friend Franklin. Janet and Troy did not stop there, they also donated funds to establish the Franklin Leach Research Scholars Endowment to support our students who are in need of funds for research consumables and small equipment, conference attendance and scholarships. Many thanks again to Janet and Troy, our collective departmental heart goes out to the both of you!

If our Department helped you on your way through your professional journey, we would greatly appreciate you giving to any one of our foundation accounts, or by creating and establishing one that you are passionate about. We are still working hard to get our “Recognition by Women of Biochemistry and Molecular Biology” account endowed. This award is designed to celebrate the contributions of our incredible female citizens past and present and provides an award that recognizes the graduate student (male or female) that produced the most impactful publication or demonstrated the greatest potential to succeed in science. After all, our graduate students that are a major part of the heart and soul of the research engine that keeps this Department at the edge of new discoveries! Lastly, I need to acknowledge our incredible office staff for their work on this newsletter. Another big shout out to Nelda Driggs, Benjamin Dunagan and Melissa Hatchett!

In closing, I wish all of our alumni and their loved ones’ peace and good fortune! Please come by and see me if you are in town. You can explore how the Department has changed, we can go for a coffee, and I can share with you the reason why every time I see a firefly, I think of Professor Franklin Leach.....
Over the course of 10 days some adventurous OSU undergraduate students explored aspects of European lifestyles that contribute to health and well-being. While there, they took in the humbling history of the Dachau Concentration Camp Memorial site near Munich and were in awe of the Neuschwanstein Castle. All in all, they all described the study abroad course as an experience of a lifetime.
Just having fun: Departmental Socials

BISCUITS AND GRAVY - WAFFLES AND SYRUP SOCIAL
You're invited for breakfast as we say "Farewell" to our graduating graduate students and visiting Polish exchange students - Jake Kline, Sikta Patnaik, Prabhat Pathak, Tori Tabb, Colin Robertson, Matt Greenlee (Summer 2019), Joanna Jurczak, and Klaudia Kiel. We also bid adieu to our wonderful laboratory assistant Theresa Ansley! We're going to miss you!

FOURTH OF JULY POTLUCK

The BMB departmental picnic was at Lake Carl Blackwell in August, just before the fall semester began. We enjoyed ourselves even though it was pouring rain and a good time was had by all!
Franklin Leach or the “Bald Barron” as he was lovingly referred to, was remembered this past year at a reception in his honor. Many thanks to Dr. Stuart Jackson for providing funds to support this celebration of Franklin’s life. The event in Professor Leach’s honor was held at the Atherton to remember the great impact he had as an inspirational teacher, mentor and friend. The wonderful Leach family and Professor Arlan Richardson, for graduate student of Dr. Leach, were in attendance with department, faculty and staff. Franklin was also a pioneer in understanding the need for assessment of student learning outcomes. Our “Bald Barron” was a pilot with part ownership of an airplane that he would use to take Biochemistry and Molecular Biology faculty members to area colleges to recruit potential graduate students. When it was first decided that BMB would be housed within the Noble Research Center, Franklin energetically took the task of explaining the needs of our faculty and students to the architects. Today we all walk the halls of the building that Professor Leach designed and we all thank him for it! Here’s to you, our Bald Barron of the skies!
FUNdraising for United Way of Payne County

The Department of Biochemistry and Molecular Biology always enjoys getting together for a great cause. A few years ago we began the tradition of holding a Halloween costume contest in conjunction with our “Baked Potato Bar” event. There were many creative costumes, but Cruella de Ville, took the trophy! BMB has done an incredible job collecting over $1300.00 in 2018 for United Way. We have been supporting the United Way of Payne county for decades and we intend to continue in this important endeavor.

BMB joins our Fellow Ag representatives in the Relay for Life.

Relay For Life is the signature fundraiser cancer walk for the American Cancer Society. Relay is staffed and coordinated by volunteers in more than 5,200 communities and 20 countries who give of their time and effort because they believe it's time to take action against cancer. 

https://www.cancer.org/involved/fundraise/relay-for-life.html
Rachel Williams was a senior from Grapevine, TX pursued two degrees in Biochemistry and Molecular Biology as well as Microbiology. As an aspiring doctor, Rachel has taken advantage of every opportunity at OSU to strengthen her communication skills, professionalism, and empathy. Throughout her time at OSU, Rachel has received many awards including: Seniors of Significance, Outstanding Senior in the Department of Microbiology, Top Ten Senior in the College of Arts and Sciences, CASNR Senior of Distinction, CASNR Dean’s Academic Excellence Award, the V.G. Heller Award (Senior Biochemistry Academic and Research Excellence Award), the General Honors Award, the Webster Award (Freshman Biochemistry Academic Excellence Award), and multiple scholarships.

As a freshman, Rachel was part of the Life Science Freshman Research Scholars program and joined Dr. Donald Ruhl’s biochemistry laboratory where she was the leader of her own research project. There, she studied a protein called INI1 whose absence or mutation leads to a form of pediatric cancer and during her senior year she documented her findings in her Honors Thesis.

Over the past years, Rachel has served in leadership positions in the Biochemistry Club, Global Medical Brigades, Students of Osteopathic Rural Medicine, Life Science Freshman Research Scholars Ambassadors, Microbiology Department Ambassadors, Phi Mu sorority, and has also served as a chair for the Academic Integrity Panel. Rachel also worked at OSU’s LASSO Center as a student tutor for organic chemistry, biochemistry, microbiology, and biology. During this time, she loved helping students understand complex topics.
Rachel will be attending UT Southwestern Medical School in Dallas where she will pursue her dream of becoming a physician who works in women’s health. Rachel credits the Department of Biochemistry and Molecular Biology for our supportive professors and faculty that encouraged her to grow and become the best future doctor she could be.

AUSTIN HINDS

Throughout my four years at OSU, I could not appropriately reflect on my experience without taking the time to describe my amazing experiences within my Department at OSU. My name is Austin Hinds, and I graduated this May with my degree in Biochemistry and Molecular Biology, along with two minors in Microbiology and Spanish.

I was born and raised in Tulsa, Oklahoma where my parents reside now. I am happy to declare that I will be attending the University of Oklahoma College of Dentistry where I will study to receive my Doctorate of Dental Surgery in 2023. I hope to remain in Oklahoma to impact the communities that have given me so much, and change the face of oral hygiene in rural, underserved populations in Oklahoma.
While at OSU, I was extremely fortunate to serve the Department for three years as an officer in the Undergraduate Biochemistry and Molecular Biology club, also known as Delta Nu Alpha (i.e. DNA). I spent 2018 as the DNA President and it was amazing to impact the lives of other undergraduates and provide a community for students in my Department to get connected to one another. Along with Delta Nu Alpha, I also served as the President for the National Society of Collegiate Scholars as well as the President of a campus based Christian ministry.

In my time at OSU, I have been able to travel to Honduras to spend a week providing medical and dental care to over 500 people in rural communities. In addition, I served weekly at the local food resource center, Our Daily Bread and was provided the opportunity to conduct research under Dr. Patricia Canaan’s supervision. None of these opportunities, the stepping stones for my future, would have been possible without the support of the Department of Biochemistry and Microbiology!
Hi, my name is Jordan Cowger, from Kansas City, MO. Being a Wentz scholar I enjoyed my research project with Dr. Zhang in the Department of Animal and Food Sciences. I participated in a variety of other student organizations such as CASNR Ambassadors, Student Foundation, Alpha Zeta, and a sorority. I am still involved in my family’s cattle operation, so I enjoy going to livestock shows and just hanging out with my friends in my free time.

I am applying to law school, where I hope to use my undergraduate background in Biochemistry and Molecular Biology as a basis for pursuing a career in intellectual property or patent law. I am excited about the next steps in my career and education, especially to combine the two things I’m most passionate about!

While I do realize that a majority of BMB students are pre-med or pre-vet, I think it is important to remember that those are not the only options one has in this degree program. I have loved my time as a BMB student and have made several friends in the department who are preparing to take the MCAT and apply for medical school. That being said, the support and desire for everyone to succeed in this department is very strong!

I think one of my favorite memories was at the beginning of my sophomore year after I had received the top 20 freshman nomination and Dr. Gustafson took the time to have lunch with me. I was humbled by the award, but more so by the willingness of the department to show their support for students pursuing their passions both within the department and their success within the university as a whole.

Additionally, being able to represent the Department in CASNR is something I will always cherish. I love being able to share with potential students the value of having this Department in the College of Agriculture. As someone who was raised in the Agriculture industry yet wanted the core science education in Biochemistry and Molecular Biology, the relationship between the College and Department was, and remains, very important to me!
Kami Hogan is a senior at Oklahoma State University from Lubbock, Texas. She was involved in the Life Science Freshman Research Scholars program where she conducted research on the wild grass, *Seteria viridis*, measuring the lengths of each leaf and comparing the measurements to those taken from a time lapsed camera. Kami presented and published a manuscript on her findings. Currently, Kami is studying *Drosophila* fruit flies infected by two strains of bacterium *Wolbachia*. The lab is establishing *Drosophila* embryo cell lines to determine the effects of these infections on the genome of the flies. Kami is responsible for anesthetizing the flies, separating them based on sex, dissecting the ovaries and testes, and transferring various flies to and fro.

Kami enjoys spending time volunteering at the Stillwater Medical Center, the annual Oklahoma Mission of Mercy, and at the Good Shepard Ministry Clinic in Oklahoma City. Kami also spends time shadowing and assisting in dental clinics, serving as the president of the National Society of Collegiate Scholars, and enjoys being part of a Panhellenic sorority.

Kami was selected to serve as an ambassador for the College of Agricultural Sciences and Natural Resources, a Camp Cowboy counselor, and a Panhellenic recruitment counselor to mentor incoming freshmen. She has attended a medical/dental Global Brigades Mission Trip to Honduras to provide care in an underserved community and will be attending the University of Minnesota’s School of Dentistry in August 2019. “Being a BMB student from the beginning of my undergraduate career, I have enjoyed making connections with the faculty and staff of the department, attending department award ceremonies and allowing myself to grow by taking on leadership positions. Some of my favorite memories include attending and presenting at poster symposiums, being honored for my academic successes, and being able to inform incoming freshman on the opportunities available to them through CASNR.”
I am a junior from Wyoming as a BMB major with a Spanish minor. I have an older brother and sister-in-law living in Nebraska. I love spending time outside running, hiking, camping, mountain biking, swimming, you name it. I also really enjoy intramural sports here at OSU including volleyball and basketball. Outside of day-to-day activities, I love to travel and I am studying abroad in Costa Rica in the fall of 2019 and will be traveling to Peru before I begin my semester.

I am preparing and applying to medical schools with the hopes of working as a physician. Wyoming has a unique medical program with the University of Washington, and I plan to complete medical school through this program and work in the state of Wyoming after completion of medical school. There is no telling what specialty I might end up in until I experience the specialties for myself during clinicals.

I chose OSU because of the “home-away-from-home” feeling I got while visiting. I chose CASNR because of the family-friendly atmosphere of the College and I have found a true niche within the Biochemistry and Molecular Biology Department. With the faculty and students alike, I have been guided and cared for by the unique unity represented within the Department. It has been such a rewarding adventure struggling and succeeding in my courses alongside my classmates. I have also received continuous guidance and encouragement from the students ahead of me and faculty members. I completed research under Dr. Patricia Rayas-Duarte, and my advisor Dr. Patricia Canaan has been amazing both as an advisor and as a professor. In Dr. Rayas-Duarte’s laboratory, while conducting research, I was able to work with Spanish speakers, and therefore, was able to work on my Spanish language skills in the same setting. Every encounter I have had with the Department Head Dr. John Gustafson has been meaningful and impactful and the department has truly pushed me towards success.
Many of the relationships I developed were so much stronger because I was able to integrate my foreign language while conducting science, something I think is a true foreshadow to my future work as a physician. Every semester seems like a little reunion waiting for either our next organic chemistry class or this year, our biochemistry class. The same faces are seen each semester but they are no longer just faces and names. My peers have struggled and worked with me through some of the most difficult and stressful classes of our college careers and I have developed a bond a unity with all of them.

I went sky diving in Longmont, Colorado with my dad, brother, sister-in-law, and parish priest. This was a graduation gift from my priest and 18th birthday gift from my parents. My brother, Lance, and I had talked about going sky-diving together for years but you have to be 18, so Lance waited for me. I asked my parish priest if he'd ever gone skydiving and asked sarcastically if he wanted to go with my brother and me (He was 65 at the time so I had no real intention of him saying yes). He said he'd love to go and ended up paying for my jump as a graduation gift. My brother had shoulder surgery several weeks before the jump and had to bend his release date to be able to jump.......and wife spontaneously decided to join us as well! And my dad, who is afraid of heights, had been fighting off our collective peer pressure all summer until his coworker jumped the week before and his ego got the best of him.

After the jump, we were all on cloud nine and we all wanted to go straight back up and do it again! My parents paid for my jump to be recorded so I can relive the day over and over and show friends how amazing the experience was. This will certainly not be the last time I jump out of a perfectly good airplane....
I am Pei Jia Ng from Penang, Malaysia and I completed my bachelor’s degree in Biochemistry and Molecular Biology. Before entering OSU for my undergraduate studies, I was a student in the American Transfer Degree Program at INTI International College in Malaysia.

During my undergraduate studies at OSU, I had the opportunity to work with Regents Professor Robert Matts on a research project that determined the effect of heat shock protein inhibitors on breast cancer cells. I came to find this research very rewarding and was enthralled by the complexity of the system I studied. This experience hooked me on research in Biochemistry and Molecular Biology, so I applied and was accepted into the graduate program of the OSU Department of Biochemistry and Molecular Biology.

I am currently a Ph.D. student and research assistant working under Professor Ramanjulu Sunkar. Dr. Sunkar’s laboratory conducts research that is totally different to the research I was involved with during my undergraduate years. One section of my research is to determine the effect of methylation on the expression of a microRNA in the laboratory model plant *Arabidopsis*. Thus far I have learned new experimental techniques such as chromatin immunoprecipitation, which is a technique used to identify specific interactions between DNA and proteins. I have also begun learning how to grow and manipulate crop plants such as wheat, tomato, peanut, and soybean.

I am extremely honored to have the chance to be involved in with research and my research experiences in the Department have really been a dream come true for me. I intend to take the experience that I gain from my graduate studies to prepare for a position as an academic scientist.
Perhaps the most important influence that has shaped the person I am today is my upbringing in a traditional Indian family. My family has been an important source of support in all of the decisions I have made, and my three basic tenets—good words, good deeds and good thoughts, have been my guiding principles in life. Not only do I try to do things for others, but I also always push myself to be the best that I can be in all aspects of my life.

I saw early on, the doors and opportunities that a good education can open up and thus, I tried very hard to do well in school. Another important experience that has influenced me was my university. Coming from India to a university in the U.S. was a significant change and a major cultural leap for me. I came from India after completing my Master’s degree and spending some time in the corporate world. I still remember my first day in the Biochemistry and Molecular Biology Department finding out that each and every student in my class was from a different country. This experience that OSU has provided me, has made me more tolerant of the differences people display. Furthermore, being exposed to a variety of faculty members teaching different classes via entirely different approaches, was amazing.

My very first encounter with the office staff in BMB was pleasant, as well as surprising, since I felt I was welcomed as a family member here. In my last 5 years, I developed a strong and friendly bond with all of them. It would be unfair if I did not mention their names. When I joined back in 2014, it was Chelsie Taylor who welcomed me and took care of all of my paperwork and I will never forget Nelda Drigg’s beautiful smile and how she is always there for us for any office-related issue.
PRABHAT PATHAK cont’d

Melissa, who is always on top of things and makes sure that no student is left alone, secretly helps everyone with their important tasks and always makes sure they feel cared for. Ben, when it comes to finances, who can be better than him? Trust me, you will never lose a penny with him!

Here in BMB, I also learned that there is a friendly person in each and every professor who wants to see you succeed. I remember attending parties at different professor's homes and I found them amazing. For a graduate student to succeed, there are professors who constantly work in the background to polish them and shape them. I found here at OSU that each and every professor guided me in some way or another and helped me shape my personality.

I feel fortunate enough to be working under my advisor, Dr. Junpeng Deng. His constant mentoring and guidance have provided me with a new dimension to think scientifically. I sincerely thank him for giving me the opportunity to work with him. Today, I am sure I have a very strong bond with him. My lab members: Shuxia, Juhi, Sikta, Olivia, Jeff and others, whom I came across in these 5 years, were a strong support system and were always ready to help. I thank them from the bottom of my heart.

Now, after spending 5 years at OSU and in BMB, it is time for me to graduate and take on a new role in life. These five years were one of the best and most amazing times in my life. Last but not least, my sincere thanks goes to OSU BMB, for providing me a friendly atmosphere that made me feel at home where I have made friends for life. BMB and OSU spiked COWBOY genes into me!

OSU, you will be missed. You have given me an identity of not just being Prabhat, but now Dr. Prabhat Kumar Pathak.
I have been a proud faculty member at Oklahoma State University since 2011. I am currently Associate Professor in Biochemistry and Molecular Biology, as well as Adjunct Professor in Microbiology and Molecular Genetics. I’ve had the privilege of teaching biochemistry to more than 2,500 undergraduate students. I’ve also served as an academic advisor to more than 200 students, many of whom are now in medical, veterinary and graduate schools across the U.S.

In addition, we are working in the laboratory on antibiotic resistance, which is a widespread and growing problem in both medicine and agriculture. I have been fortunate to guide the research projects of over 30 undergraduate students and 5 graduate students. At OSU, antibiotic research is a popular area, so we can collaborate which multiple labs across campus.
In my spare time, I enjoy traveling widely. Oklahoma is a beautiful and ecologically diverse state, strategically located near the center of North America. I’ve enjoyed trips in all directions from this central location, as well as four other continents, and yet I still have much of the world to see.

Recently, after a trip to southern Mexico, I’ve revived my boyhood interest in wild birds. With the Audubon society, I’ve become a passionate bird photographer. Stillwater, Oklahoma has been a wonderful home base for my diverse interests and our college town has some of the friendliest people that I have met anywhere.
The Students of Osteopathic Rural Medicine club is a up and coming club on campus. While attending chapter meetings, current undergraduate students have an opportunity to ask questions to current medical students concerning the admission process, medical school itself, and how to cope with daily life during medical school. Furthermore, members of the STORM club facilitate connections with faculty and develop mentoring relationships with current medical students.

The STORM club has participated in campus-wide events such as homecoming. Coming together for these activities, STORM club members are not only supporting Oklahoma State University, but they connect to like-minded and dedicated pre-medical students.

In the future, the STORM club plans to focus on continuing to network with medical students, and also step into the rural community which is the club’s ultimate mission. For more information concerning meeting times and upcoming events, please contact Taylor Chapman, chapter president, at taylor.l.chapman@okstate.edu.
Delta Nu Alpha

Over the last year, the Biochemistry Club (AKA Delta Nu Alpha) has been active in many areas including career exploration, volunteer work, and the OSU homecoming celebration. During the majority of our club meetings, we invite professionals from a variety of health-related fields to discuss the day-to-day responsibilities of their career and to provide advice on applying to professional programs like medical school, veterinary school, and dental school. The guidance that these speakers provide is invaluable to our club as the majority of our club members have career goals in healthcare.

The Biochemistry Club also dedicates much of its resources toward helping people in the Stillwater community. Over the last 12 months, the Biochemistry Club has participated in four major volunteer projects that provided aid to lower-income Stillwater residents. During both semesters in 2018, our club participated in “Into The Streets”, a university-wide project aimed at giving back to the Stillwater community by helping residents with yard and gardening work. On the weekend before Thanksgiving, we volunteered at Our Daily Bread, a food bank in Stillwater. At this event, we filled shelves with food products and helped shoppers find and gather the products necessary for them to celebrate Thanksgiving with their families. In spring 2019, the club volunteered at Our Daily Bread again and we intend to participate in “Into the Streets” later in the semester as well. The Biochemistry Club is also always involved in OSU’s famed homecoming celebration. Every year, our club members come together to paint a design on one of the windows inside Agricultural Hall. We also paint our sign that we place on the library lawn during homecoming week.

Overall, the Biochemistry Club is committed to providing valuable service to its members and is more than willing to use its resources to give back to the Stillwater community and we will always participate in OSU traditions.
BMBGSA

In 2018 the Biochemistry and Molecular Biology Graduate Student Association (BMBGSA) organized a 2-day symposium highlighting graduate and undergraduate research performed at Oklahoma State University. This event provided a platform for students across multiple departments to share their passions, network with peers, practice presentation skills for prize money, and enjoy delicious meals.

For this meeting, we raised over $2,000 in prize money and hosted a vendor show to display sophisticated technologies with goodie bags included. Our keynote speaker was Dr. Amina Qutub, a bioengineer who shared her passion and progress on understanding cellular communication through biomarkers and innovative algorithms. Special thanks to the Entomology and Plant Pathology Graduate Student Association who catered breakfast and to CASNR who funded a social networking event the evening before the symposium. This networking event gave graduate students personal time with vendors and other employers on campus for the campus-wide career fair.

BMBGSA is very busy planning yet another symposium for the Fall semester in 2019! We are looking to emphasize more collaboration with many department’s graduate student associations as an effort to expand the sphere of influence and opportunity. Networking and collaboration sparks innovations to reduce troubleshooting time and make for a better college experience.

On April 27th, Biochemistry and Molecular Biology Department together with Entomology and Plant Pathology hosted a fun run and potluck event at Boomer Lake, just a mile away from campus. This event was organized by officers from both graduate student associations, with the participation of students, faculty, and staff. It was a beautiful spring day and more than 30 people from all ages showed up to participate in the event.
Some of them came to run and walk, and some just came to have a good time enjoying the company of their friends and OSU family. The race began at 11:00 am and finished one hour later. Bib numbers were assigned to all the runners and everyone was very excited to see how long it would take to complete a single lap around the lake, which is an approximate distance of 5 miles. The fastest runner finished at 28 minutes and the last person to cross the finish line took one hour. Our very own department head, Dr. Gustafson, clocked 41 minutes (in case anyone wants to aim to beat him next year).

Some refreshments and water were provided for the runners in the middle of the race, every participant received a prize after finishing, and then all enjoyed a delicious meal. Enough food was brought for everyone to feast. Both meat and vegetarian dishes were served, from home-made bread, salad and hummus to grilled burgers with all the fixings. It was a great time to hang out outside the academic environment and a very good opportunity to get a workout. Hopefully, we can do it again next year!
The Department of Biochemistry and Molecular Biology celebrate two Niblack Scholars for 2018, Alice Chibnall; back row center and Olivia Davis; front row second from left.
I was born in St. Louis Missouri but only lived there for a short time before my family moved to Frisco, Texas where I finished both elementary and high school. After graduating, I chose to study at OSU because I was drawn to the small college town of Stillwater, and I adore Cowboy football! I am currently in my junior year working on a Biochemistry and Molecular Biology major and a minor in Environmental Science. Following graduation from OSU, it is my dream to seek admission to a graduate school for Marine Biology.

I approached Dr. Estela Arrese and Dr. José Soulages about my interest in research and they allowed me to volunteer in their lab beginning in the spring of 2018. During this time, the two of them informed me of the Niblack Research Scholarship, and I got so excited about this opportunity, I rapidly put together a proposal and applied at the last minute. To my delight, I received the scholarship and am currently working in the laboratory studying the mechanism that female mosquitos use to transport blood to their ovaries after taking a blood meal. The purpose of this study is to provide new data that can be used to control the population of mosquitos in countries where they may act as vectors of the organisms that cause diseases such as malaria and zika.

I plan to enter a science graduate program and afterward, I look forward to entering a research position for my future career. In particular, I would love to work on ocean conservation research and determine the impact that humanity is having on the health of the world's marine ecosystems. I hope to be involved with creating innovations and regulations to repair these ecosystems and help ocean wildlife return to a healthy state and become part of the solution, that ensures humanity does not continue to damage these essential ecosystems.
Olivia Davis, a Biochemistry and Molecular Biology student from Fort Smith, Arkansas, was named a 2018-2019 Niblack Research Scholar at OSU. As one of fourteen students selected, she is grateful for the opportunity to represent the Biochemistry and Molecular Biology Department and further her education outside of the traditional classroom setting. Olivia’s interest in research began as a Freshman Research Scholar learning about protein structural studies in Dr. Junpeng Deng’s laboratory. She credits this first encounter with research as the spark that fueled an interest in clinical applications of research and the established a sense of community within CASNR. “Dr. Deng was extremely gracious to welcome me into his lab as a freshman student with little experience or knowledge of biochemistry,” Olivia states. “His commitment to my understanding of the ‘why’ behind the ‘how’ of research pursuits has helped me think more critically in other areas. The mentorship I’ve continued to receive from Dr. Deng and graduate students in his laboratory has fostered a sense of community that has been important to my experience as an out-of-state student”.

Outside of the research lab, Olivia serves as treasurer of the Student Government Association, as treasurer of Blue Key Honor Society, and as a member of the OSU Student Foundation and Countryside Baptist Church. She also serves as a volunteer for Karman Legacy Hospice and the Stillwater Medical Center Emergency Department. In her spare time, Olivia enjoys stitching lap blankets for individuals receiving chemotherapy at the Integris Cancer Institute, working to connect the topic of her Niblack project to those that cancer research intends to impact.

Olivia has been named a 2017 Top Twenty Freshman Woman as well as a 2019 OSU Cambridge Scholar. She was also awarded a 2018 Inasmuch Foundation Summer Fellowship with the opportunity to work at Children’s Hospital Foundation in Oklahoma City. One of her favorite college memories continues to be studying abroad with the Biochemistry and Molecular Biology Department, recalling it as an incredible opportunity to learn and grow with fellow OSU students. After graduation, Olivia hopes to attend medical school and serve as a physician in Arkansas or Oklahoma.
Jordan Cowger was named the CASNR outstanding freshman for 2018. Charles and Magda Browning established the Outstanding Freshman award to recognize both the academic excellence and outstanding leadership activity during a student’s freshman year at OSU.

BRYAN NAIDENOV

Congratulations to our graduate student, Bryan Naidenov, for placing First in the third annual Health Data Shootout on March 29th, 2019. The competition included over 115 competitors stemming from over 20 diverse majors including analytics, health sciences and business/entrepreneurship.

LAWRIE GAINEY

Lawrie Gainey was awarded funding from Proteinmetrics to attend the ASMS Conference in Atlanta where she presented her research!
Established in 2003 by President Bush, the President’s Volunteer Award was created to distinguish those that put great emphasis into giving their time and effort to others. During the 2018 summer, our own Professor Patricia Rayas-Duarte was given this award for the more than 110 hours she spent internationally aiding the population of Senegal.

Dr. Rayas-Duarte works as a cereal chemistry in the Robert M. Kerr Food and Agricultural Products Center on the Stillwater campus. While in Senegal, Dr. Rayas-Duarte led a workshop that worked on helping women in the community gain career skills so that they would be more ready for employment. The workshop focused on Dr. Rayas-Duarte’s area of research by illustrating skills involving cereal technology and the handling of cereal products in the manufacturing process.

The President’s Volunteer Award was presented to Dr. Rayas-Duarte by Winrock International. Winrock International is a large collective that currently has over 100 projects being pursued in more than 40 countries. This group also advocates for the inclusion of volunteerism as an integral part of society that can improve lives around the world. Dr. Patricia Rayas-Duarte has been recognized for going above and beyond with her volunteer efforts.
Our own Professor Ramajulu Sunkar, who besides being one of the most highly cited life scientists in the history of Oklahoma State University, has been honored with the Neustadt-Sarkeys Distinguished Professorship!

“I joined the OSU Department of Biochemistry and Molecular Biology as an Assistant Professor in 2006. My laboratory works on understanding the molecular basis of stress tolerance in plants with a focus on microRNA- and epigenetic-mediated regulation of gene expression. This plant molecular biology research can help unravel complex plant regulatory networks that control stress tolerance.”

Flexing their scholarship muscles, the hard working students of Dr. Deng’s Lab are making waves! Dr. Deng’s graduate students, Sikta Patnaik and Prabhat Kumar Pathak both presented at the 2019 Experimental Biology meeting, which is associated with the American Society for Biochemistry and Molecular Biology. Sikta’s abstract was entitled, “Interaction of PKR and E3 protein present in vaccinia virus”, and Prabhat’s abstract was entitled, “Towards revealing the molecular mechanism of STF”.

Prabhat, Dr. Shuxia Peng and Professor Junpeng Deng also shared authorship on a publication in the prestigious *Proceedings of the National Academy of Sciences* entitled, “Structure of a lipid-bound viral membrane assembly protein reveals a modality for enclosing the lipid bilayer.” Additionally, Prabhat won “Best Graduate Paper of Academy” at the 107th Technical Meeting of the Oklahoma Academy of Science (2018) for his work entitled, “Structure of Poxvirus A6 Protein Reveals a Mechanism for Stabilizing Open-ended Crescent membrane.”

Building on this success, we can only wonder what is in store for Dr. Deng’s laboratory citizens in the future!
The Ruohola-Baker laboratory is dissecting the molecular mechanisms that control stem cell self-renewal and regeneration capacity, both in normal and pathological situations. Her laboratory has identified metabolic differences between pluripotent, pre- and post-implantation stem cells and is now dissecting how metabolites regulate the stem cell epigenetic state. Her laboratory works on three questions: 1) metabolic determinants of stem cells and regeneration 2) stem cell aging and 3) using stem cells to dissect the mechanism of disease states.
This year our student organizations were not the only ones who were able to reach out to the community. The Department of Biochemistry and Molecular Biology was able to work with students of all ages and expand horizons. Some examples are Will Rogers Elementary STEM Fair, the 98th 4-H Roundup, MDA summer camp and OSU/DASNR/PASS with their ANGRAU Intuitional Development Plan helping with 25 interns studying for a Bachelors from the finest agricultural college in India. It’s been a blast working with all these wonderful students!
Annual Banquet - Scholarly success and a night of awards!

Graduation and Awards Banquet 2018

The Gregory and Ruth Schultz Endowed Graduate Student Award

The graduate student scholarship recipient for this award was:
Prabhat Pathak

The graduate student grant recipient for this award was:
Lawrie Gainey

The Undergraduate and Graduate Research Scholars Endowment in Biochemistry and Molecular Biology Scholarship and Grant

The graduate student scholarship recipient for this award was:
William Johnson

The graduate student grant recipient for this award was:
Matthew Greenlee

The George R. and Hilda L. Waller Endowed Scholarship

Awarded to BMB Graduate Students:
Prabhat Pathak, Lawrie Gainey and Jeremy Sabo
Annual Banquet - Scholarly success and a night of awards!

Graduation and Awards Banquet 2018

Roger E. and Norma L. Koeppe Endowed Scholarship
Awarded to undergraduate student: Braden Lanier

Paul F. Kruse Jr. Scholarship
Awarded to BMB undergraduate students: Tyler Jolley, Aaron Veenis, Sydney Creager, Matt Ferrell and Conner Mayes.

Linda C. Schultz Endowed Scholarship
Awarded to BMB undergraduate students: Ryan McIntire and Kayla Stromsodt.

James E. Webster Award in Biochemistry

Grace A. Knox Award
Awarded to BMB undergraduate student: Kristy Johnson

V. G. Heller Award
Awarded to BMB undergraduate student: Rachel Williams
Fall 2018 and Spring 2019 Graduates

Department of Biochemistry and Molecular Biology Undergraduates

- Abo Basha, Angie
- Beevers, Delanie
- Cowger, Jordan
- Creager, Sydney
- Crockett-Beck, James
- Cunningham, Dalton
- Ellwanger, Brandon
- Endsley, Connor
- Ferrell, Matthew
- Gabriel, Mary
- Garner, Billy
- Harland, Kevin
- Haro, Esmeralda
- Hinds, Austin
- Hogan, Kami
- Jacobitz, Breanna
- Johnson, Kristy
- Jolley, Tyler
- Journey, Saibra
- Kerr, Dillon
- Lanier, Braden
- Lawson, Destiny
- Lemons, Reed
- Lowrie, Matthew
- Martin, Elizabeth
- Mayes, Connor
- McBrain, Brittany
- McIntire, Ryan
- Nunan, Emily
- Oliver, Lauren
- Roper, Samantha
- Rosencrans, Timothy
- Soulages Arrese, Magdalena
- Stoll, Sarah
- Stromsodt, Kayla
- Tucker, Kirk
- Veenis, Aaron
- Whisnant, Samantha
- Williams, Rachel
- Wood, Kolt
- Woodruff, Jeffrey
- Yang, Jennifer
- Zhang, Yixin

Pride and tradition start with our Alumni here at Oklahoma State University. That’s why we want to know all about you.

E-mail us at biochemistry@okstate.edu or “Like” us on Facebook at https://www.facebook.com/BioChemOState or “Follow us” on Twitter @BioChemOState

Giving TOWARD the Department of Biochemistry & Molecular Biology

The Department of Biochemistry and Molecular Biology encourages all students to reach their full potential in every aspect of their education. The Department recognizes the importance of alumni and values their contributions toward the success of our students. Financial contributions make it possible for the Department to provide a top-quality research seminar series, educational and research opportunities for students, and a variety of scholarships and scholar awards.

- Dr. Gregory & Ruth Schultz Endowed Grad Student Fellowship
- Dr. Franklin R. Leach Research Scholars Endowment Fund
- Roger E. Koeppe Lectureship in Biochemistry
- Department of Biochemistry and Molecular Biology Fund
- Paul F. Kruse, Jr. Scholarship
- Biochemistry and Molecular Biology Student Scholarship and Award Fund
- Roger E. and Norma L. Koeppe Endowed Scholarship
- The Finn Wold Family Biochemistry Endowed Fund
- Recognition by Women of Biochemistry & Molecular Biology
- George R. & Hilda L. Waller End. Schol. in Biochemistry
- Endowed Scholarship in Honor of Linda C. Schultz
- Undergraduate & Graduate Research Scholars End/Bio & Molec

Contributions can be made online at https://secure.osugiving.com/admin/bbnc-parts-pages/donation-form---dasnr---biochemistry-and-molecular-biology. Or checks payable to OSU Foundation and designate your desired area of support in the BCMB Department. For further information on giving toward or endowing funds for recognition of a specific individual, please contact the Department.

Department of Biochemistry and Molecular Biology
246 Noble Research Center
Stillwater, Oklahoma 74078

33
Greetings:

Be
As a page that aches for a word which speaks on a theme that is timeless.

The end of 1973 ushered in shortages and limits on gasoline, fuel oil, electricity, and other forms of energy which will be reflected in shorter letters. In each day there is the same quantity of time which may be used to greater advantage if the slower pace gives rise to deeper reflections in the search for truth.

In last year’s letter there was a statement about being chicken about ice. Now I know the meaning of the statement after three doses of ice. During the first experience I went to OKC to pick up serum that Frontier could not deliver to Stillwater (SWO) because of mechanical difficulties. It took less than 10 minutes during approach to SWO to get a ½ inch coating of ice in spite of having sprayed everything with an anti-icing aerosol. I was very thankful about being alone so that the sweaty palms didn’t show and there was no extra weight.

Kermit Carraway had a seminar to give at Trinity University in San Antonio (SAT) with George Odell scheduled for several talks at Sul Ross in Alpine so we left SWO on a clear February day. It became cloudy near Ardmore and three hours were spent in the clouds going to SAT. The people in Alpine said that they could see blue sky, but since that was the only sucker hole in western Texas and a snow storm was covering western Texas we didn’t continue.

March brought a George Odell seminar in Canyon at West Texas State University while I gave one at Panhandle State. We had a bouncy time crossing a front going to Amarillo with rain that sounded like hail and brought elevator accents and decents. The object is to keep the wings level and let the devil have most of the altitude. The wind was gusting past 60 mph and the tumbleweeds were IFR (instrument flying) in New Mexico dust. After the wind calmed a little (to 30 mph) we rode it back to SWO at 190 knots ground speed. When we got back there was parts of New Mexico and Texas several thousand feet above SWO that required finding the airport by instruments. George is getting a stock of adventure stories to go with his navy story.

Another seminar was given at Cape Girardeau. However, Anna and I had considerable difficulty in locating the town because as we were cruising above a layer of clouds, with frost coming and going from the brake lines (they are black and the frost shows up), the VOR (radio station) went off the air. There was no way I could locate CGI and we were over Kentucky before the transmitter was repaired to lead us to the airport.
For a belated birthday present in April I got a familiarization round trip to LIT in a Piper Aztec (a twin) as a group went to visit the National Toxicological Center at Pine Bluff. Rollin Thayer was kind to philosophize that two pilots were better than just one as he squirmed and prayed.

I gave papers at the Central States Tissue Culture meeting in Ardmore during May and at the Transformation meeting in Tapoco, North Carolina during June. Both of which brought uneventful flying trips except for a slight 20 mile detour around a grand daddy thunderstorm sitting on the airway in Tennessee. I talked about Bill Weppner’s work on the initial attachment reactions of DNA to Bacillus subtilis cells. There is more than one class of binding sites and we have not established with certainty which if either is an obligatory intermediate in transformation.

The West Central States Biochemistry Conference was held in Columbia, Mo. With Ebner, Hudson, and Mitchell as passengers 28 Fox took us there and plucked all of my pridy tail feathers as I used all of the short runway and 10 feet of a clover overrun to stop on landing. We left in time to return to Lewis Field to cheer the Cowboys to a tie with the Corn Huskers. Arlan Richardson had several of his students giving papers at the meeting which made me feel older and older.

Tom Griffith accepted a position at Northwestern State University of Louisiana in Natchitoches. Duane Pierson is running Roy Jensen’s lab at Baylor Med. while Roy is with AEC. Semih Erhan and Yong Oh are continuing their work at the University of Pennsylvania and NIH, respectively.

With the return of daylight savings time I miss Sunny Carraway. She moved to Physiology for a postdoctoral position and left her desk by the east window where the sun used to come up. She is finishing the last bit of thesis writing. Bill Weppner decided that two can conserve energy as cheaply as one and took Margaret Ann for his wife. His driving expertise was required to negotiate the icy roads to St. Louis for the wedding, but the Colorado State Police had the roads into Colorado blocked so they had to alter their honey-moon plans.

Two new faces have been added to the laboratory — Phillip Clark and Stanley Stadnicki. Louise Higgins enjoyed the Alumni Association trip to South America where she snapped her camera over 1000 times. I don’t understand how Marliese Hall keeps looking younger while I get older but she does.

Terry Shaw returned to Stillwater in the summer to work on an Ed.D. and I immediately enticed him into the laboratory to look at the flexings of cell membranes under the influence of addicting drugs. They slow down. His return to
Stillwater was occasioned by the untimely death of his wife, Karen, who was riding her bicycle back to a school carnival when struck by a drunken driver. He has spent several evenings with Anna and me while we contemplate the why's of the taking of a life's partner.

Jonathan Livingston Seagull has flown into a movie with beautiful photography but made by a producer who did not get the message. Neil Diamond composed the musical score and achieved great beauty since he understood the meaning of the book.

Through a comment on the book’s jacket I met The Little Prince written by Antoine de Saint Exupery who was the greatest of all aviation writers.

The author’s plane was forced down in the middle of the Sahara and he met the Little Prince. The Little Prince was visiting the earth from his own small planet where he owned a rose of great beauty and three volcanoes. He visited many different people on the earth making character observations. Finally he meets a fox who told him “One only understands the things that one tames. Men have no more time to understand anything. They buy things all ready made at the shops. But there is no shop anywhere where one can buy friendship, and so men have no friends any more. If you want a friend, tame me...” Tame means to establish ties.

The fox gave the Little Prince the secret of what is really important in life. ‘It is only with the heart that one can see rightly; what is essential is invisible to the eye. It is the time that you have wasted for your rose that makes your rose so important’. That is the gift we have for investing — time. The quality of our lives is determined by how we spent our time.

The Bald Baron
Franklin Leach
Professor
**DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY**

Undergraduate Program and Degree Tracks

The Biochemistry and Molecular Biology degree program comprehensively prepares students for a number of postgraduate health professional programs (e.g., medical and dental programs) as well as veterinary programs.

Up to 45% of our graduates are accepted into medical school and our department is devoted to producing graduates that want to become Oklahoma health professionals. As a family of research scientists, we also encourage students to seek more training to become future research professionals.

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As a major in our Department you will build a strong foundation in chemistry, physics, mathematics, biology, biochemistry, and molecular biology.

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Graduate students in Biochemistry and Molecular Biology have the opportunity to work with exceptional faculty mentors and staff at the latest technology and instrumentation.

The Department is proud to provide services such as next generation sequencing and state-of-the-art equipment for our students. We can train you in everything from building proteins to determine their function and structure, to analyzing large datasets using computational tools, to investigating the inner mechanisms that allow a cell to carry out many different functions in molecular detail.

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**Define Your Graduate Experience**
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The Department of Biochemistry and Molecular Biology is committed to providing career development to all of our graduate students.

The Biochemistry and Molecular Biology Graduate Student Association actively participates in departmental activities and the Graduate and Professional Student Government Association.