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To begin with, lots of social distancing hugs to all of you BMB Pokes and your loved ones from all of us in the Department of Biochemistry and Molecular Biology! We are all in this together, everyone one of us, and I think with clear understanding, good science, active healthcare, and public health measures, we will get through this. I doubt I need to mention what I am speaking about. A great deal of exceptional science and history has prepared us for this event, and the disciplines of biochemistry and molecular biology have played a central role. The virus’s genome was completed lickety-split with next-generation sequencing technology, and with this information, scientists quickly determined how to detect the virus and have begun to understand the evolution of this replicative entity, and evolve it already has. Vaccine research is in overdrive and it is amazing to see how many different types of vaccine candidates are being investigated. Go academic, government, and industrial research! In the meantime, use those masks, you have to give a little by wearing them, yet in return you provide yourself and those around you with greater safety.

The Department of Biochemistry and Molecular Biology continues to draw interest from national and international students from all walks of life and our Department celebrates our diversity. A glimpse of the leaders of our Biochemistry and Molecular Biology Graduate Student Association in this newsletter reveals that these students come from all over the globe (e.g. Malaysia, India, and Guatemala) and Stillwater! Within the newly named “Ferguson College of Agriculture”, our undergraduate programs also proudly attract a great number of underrepresented minorities. Since I have the honor of getting to know a number of these students, I have the opportunity to learn about their experiences which in turn enhances my own life and teaches me so much more about who I am and how I can make things better for the Department and my community. On top of the gift of student diversity in our Department, I am so proud that Professor Earl Mitchell who worked in our Department was the first African American to get tenure at our beloved institution. We are also thrilled to see that one of our alumni Dr. Claude D. Evans, was inducted into the OSU Hall of fame. Our hats are off to you Dr. Evans! I would like to think that our Department teaches all to care a little more, practice empathy and find respect in ourselves by the act of supporting all of our departmental citizens.

This year our Department has witnessed a great deal of success, just like every year! Janet and Troy Weiss provided funding for the newly opened Professor Franklin R. Leach Undergraduate Laboratory and Undergraduate Meeting Room. Now our students have a lovely space to remember the contributions of one of our greatest faculty members, who always provided his students with words of inspiration! We all miss you, Professor Leach!
Our students remain, in my opinion, the smartest and most prepared students on campus and most come into our programs with a life-long plan. I enjoy discovering that many of our students get help on their plans to become successful from their parents and loved ones. Undergraduates Gabby Barber, Nicole Brinker, and Hunter Tollefer provide their stories in this newsletter and all are tuned into their futures and are completely engaged with campus life. Georgia Blackwell was such a positive traveler during our first departmental study abroad course that I still get a smile when I think of her inspiring antics that cheered up the whole group when we were exhausted! Georgia is such a leader, and I am thrilled she is almost across the finish line!

Our graduate student Dr. Udeshika Kariyawasam hails from Sri Lanka and she already had a Ph.D. before she started her M.S. research in our Department! Takes a great deal of effort and courage to complete her Ph.D. and then obtain her M.S. (Go Udeshika!!!). Juhi Chaturvedi, who hails from India, is an exceptional graduate student working in Professor Junpeng Deng’s protein structure laboratory. On top of conducting cutting edge research, Juhi is also a traditional Indian dancer who is a joy to watch! Dr. Lawrie Veale graduated with her Ph.D. from Regents Professor Mort’s laboratory and has moved on into an industry position where she applies the mass spectroscopy skills that she mastered while in our Department. My own former student, Dr. William Johnson, has moved on to a postdoctoral position at the University of Rochester. I am so excited for all of our graduates. I can tell you from experience, they all find success!!

On top of this incredibly good news, I was so thrilled to hear that Dr. Estela Arrese was promoted to Research Professor this last year! Not only is she recognized for her exceptional research projects, but her ability to train our research students in the laboratory is just fantastic! Keep it up Dr. Arrese! Dr. Ellie Nguyen is contributing a great deal to both our teaching and research missions and we are all so lucky she joined our Department in 2016. I should add that her classroom and research students are honestly pleased with both her teaching and research prowess.

In closing, should you visit our wonderful university, please come to my office with a mask of course, I would love to tell you more about our departmental success and the many achievements of our great faculty, staff and students! Best to all you BMB pokes out there, and once again, many social distancing hugs from all of us to you BMB Pokes and your loved ones during this “challenging” time. We will overcome!!!
• The 16th Annual BMBGSA research symposium hosted by BMBGSA and the Department in September.
• This year’s Keynote speech was delivered by Dr. Randall Davis.
• The symposium provides life sciences students from all over campus an opportunity to showcase the research and be challenged on their findings.
• The event was a huge success! BMBGSA was able to award $1,500 with funds provided by the Division of Agricultural Sciences and Natural Resources and our Department. We are proud of all the students who presented their research!
The Ferguson College of Agriculture (FCA) Roundup gives new students their first taste of the FCA cowboy pride. During the event, students mingle with alumni, faculty, and upper-class members to discover how to become involved on campus.

The Department’s Biochemistry Club Delta Nu Alpha (“DNA” of course...) and Students of Osteopathic Rural Medicine (StORM) had a great time as did Dr. Ruhl (students adore him) and Dr. G.!

All student organizations use this event as an opportunity to recruit members into their student clubs. The event is organized by the FCA Student Council with refreshments provided by our loving alumni.
Biochemistry and Molecular Biology students received scholarships at the 2019 Ferguson College of Agriculture New Student Scholarship Reception!

**Joseph Fleming Memorial Freshman Scholarship**

Jacob Batterton  
Jonathon Chacko  
Nathan Mears  
Eleni Tsaras  
Elizabeth Schneider

Makenzie Adams  
Gabriel Barber  
Eric Messik  
Aidan Moore

**Martha Burger Endowed FFA Leadership Scholars**

Emily Kennedy

**Ag Centennial Scholarship**

Jaden Allen  
Gabrielle Byus  
Elizabeth Coody  
Harlee Newby

**Long’s FFA and 4H Achievement Scholarship**

Emily Cordell

**W.D. Bill Sasses Endowed Scholarship**

Kenzi Carmin
The Department of Biochemistry and Molecular Biology dedicated the Franklin R. Leach Classroom Laboratory and Undergraduate Meeting Room on November 15, 2019. This was all due to the wonderful generosity of Troy and Janet Weiss (hugs from us!). Almost the entire Leach family was there to join in the celebration.

Also in attendance were President Burns Hargis (always entertaining and inspirational!) and Dr. Thomas Coon (to keep Dr. G on track!), Vice President and Dean of the Division of Agricultural Sciences and Natural Resources. A big thank you to President Hargis and Vice President Coon for taking time out of their busy schedule to take part in this exciting dedication!
As you can imagine, the transformation of an old storage room took a lot of work and renovations began in the early summer of 2019. After tearing out the old floors, cabinets, and some walls, a new drop ceiling was added with new blade lighting that greatly brightens the classroom space. In the back of the room, a new laboratory preparation area was added so that instructors have space to prepare reagents/materials used by the students during their laboratory experimentation. A new multimedia system was included to enhance the student learning environment. Additionally, an adjoining office was removed to make the Franklin R. Leach Undergraduate Meeting Room, where student organizations such as the Biochemistry Club Delta Nu Alpha, Students of Osteopathic Rural Medicine (and the Biochemistry and Molecular Biology Graduate Student Association can meet.
Great Achievements

Congratulations to Dr. Patricia Canaan and Dr. Ramanjulu Sunkar!

Professor Canaan received the 2019 Regents Teaching Award and Professor Sunkar received the 2019 Regents Distinguished Research Award. Each award is given to only one Professor per college per year, so these are very prestigious awards!

Dr. Canaan currently teaches undergraduate courses, is an academic advisor, and is active in research. Her laboratory works on antibiotic resistance mechanisms in bacteria and she trains numerous undergraduate researchers with her research efforts.

Dr. Sunkar’s primary role is research and his laboratory is working on understanding the molecular basis of stress tolerance in plants with a focus on microRNA- and epigenetic-mediated regulation of gene expression. He makes every effort to invite, support and train international scientists who then take Dr. Sunkar’s “tricks of the trade” home with them which they can used to help support their own countries agricultural needs!
Congratulations to Dr. Junpeng Deng for receiving the Sarkey’s Distinguished Professor Award!

2019 Mass Spectrometry and Proteomics Workshop

Congratulations to Dr. Steve Hartson for another fantastic Mass Spectrometry and Proteomics Workshop in 2019. Look at all the happy faces!!!
Congratulations Prabhat Pathak!

Prabhat was a 2020 Doctoral Recipient of the Graduate Research Excellence award! The department is so proud of his achievement and can’t wait to see what he accomplishes in his future endeavors!

Annual Fundraiser

Our department came together again this year, for a great cause, a fundraiser for United Way of Payne County! Our Baked Potato Bar and Halloween Costume Contest has become an annual tradition during Halloween! We raised over $600 for United Way in 2019 and we thank everyone who participated!

Congratulations to our own staff leader Benjamin Dunagan for winning the best costume dressed as SNL's Sean Connery! What a hoot!

The Department of Animal and Food Sciences as Snow White and the 7 Dwarfs (take special notice of Department Head Clint Rusk as “Doc” above, he is such a character!)
NICOLE BRINKER

The Department of Biochemistry and Molecular Biology has truly been a place of academic and individual growth. After graduating in December 2019, I hope to enter a Physician Assistant program, which I think I am ready for due to the dynamic, rigorous courses this department provided!

Originally from Shawnee, Oklahoma, I transferred to Oklahoma State University my sophomore year. While at OSU, I served on the executive team for the Biochemistry Club and enjoyed participating in community events such as “Into the Streets.” I also served as the Treasurer for the Students of Osteopathic Rural Medicine (StORM) Club, where I collaborated with my team to expand the club’s mission. Both of these experiences provided me opportunities to interact with other like-minded individuals who valued both academics and demonstrated passion to better the community; furthermore, it provided opportunities to interact with individuals from various medical professions. In researching the Life Science Freshman Research Program with Dr. Yang, I studied the impact of the AFB1 and AFB5 genes on plant growth of the model plant Arabidopsis thaliana. In doing so, I gained an appreciation for research performed by dedicated and passionate individuals. I had a great time!

While working as a TA for the Introduction to Biology course, I led a group of underclassmen in a lab setting where they designed and conducted an experiment, as well as constructed a manuscript to be sent to an undergraduate journal. During the summer of 2019, I worked in the Biochemistry and Molecular Biology Department where I assisted the faculty in Freshman enrollment and various office tasks. Over the summer, I got to meet many of the wonderful faculty and staff members. Learning about the rich history in the Department, I have come to value the impact that we have had on OSU over the decades! From taking intriguing Biochemistry courses to working closely with the faculty and staff, the Department of Biochemistry and Molecular Biology has truly made my experience at OSU one to cherish.
Happy 2020! My name is Gabby Barber, and I am a freshman in the Ferguson College of Agriculture. Despite the brief time I have lived as an OSU student, I have already fallen in love with biochemistry and molecular biology, both as a major and as a career path. I have added a minor in plant biology to my degree program. I am using disciplines to pave the way for my future ambitions to be a tree geneticist and researcher on behalf of my passion for nature and environmental sustainability and conservation. So far, I am preparing for that future by working with plant virologist and researcher Dr. Ochoa-Corona as a product of my previous semester in the Freshman Research Scholars program. I love my project since I learn new techniques — all while wearing my own bright pink lab coat! I love to stay involved with other organizations I discovered last semester, including Net Impact, a sustainability group, and Chi Alpha, a non-denominational Christian ministry. Both of these groups keep me fully immersed in the loving and caring culture of OSU, and I’m very fortunate to have found them. Then some organizations found me, which I’m just as excited to be a part of them as well. These include the Honors College and the Oklahoma State Scholar Society, as well as the value-driven President’s Leadership Council. As I hustle from one organization to the other, I stay busy, but I don’t feel that way. I am always having fun and being blown away by the incredible personalities of this campus, which makes the time fly by. I learn so much information so quickly each new day, it is like stepping into a brand-new world. That is very special, and to think, I almost didn’t even come here! If it weren’t for the opportunities made possible to me by the FFA Organization and Dr. Cynda Clary, my life would look very different right now. I love this university, and I’m very confident in my major because the classes are wonderful, and Dr. Gustafson is one of the most unique, relatable, and kind advisors I have ever met. He remembered me after one event and helped me nervously prepare an application for an internship through the National Science Foundation Research Experience for Undergraduates that, if I get it, will take place this summer. I am also applying to be a Wentz Scholar. Despite all the fun I have at OSU, I love being home with my incredible family in Lawton, Oklahoma.
Getting to know the Citizens of Biochemistry and Molecular Biology

GABBY BARBER cont’d

Living 30 minutes away from a mountainous national wildlife refuge, I love to go hiking and to take professional pictures. These opportunities to rest and do things for me provide me the perfect amount of rest to come back to Stillwater and be the best BMB student and scholar I can be.

UDESHIKI KARIYAWASAM

I am Udeshika Kariyawasam, a graduate of the University of Colombo, Sri Lanka. I obtained my bachelor’s degree with honors, majoring in Biochemistry and Molecular Biology. Soon after graduating, I joined the Department of Parasitology, Faculty of Medicine, University of Colombo, Sri Lanka, to commence my postgraduate studies and obtained my Ph.D. in Medical Parasitology in 2018. My postgraduate studies were focused on Leishmaniasis research, specifically on *Leishmania donovani*, the prevalent species of this pathogen in Sri Lanka.

My research efforts led to the detailed phenotypic and genetic characterization of *L. donovani* in Sri Lanka, that shed light on the pathogenesis of the disease caused by this organism that can be used to help in effective patient management. My long-standing interest has been in parasitology and host-parasite interactions that affect host cell signaling pathways.

After the completion of my Ph.D., I came to the USA with my 6-month old baby girl to reunite with my husband who is also a graduate student at OSU’s Department of Animal and Food Sciences. During my first few months in the US, I was looking to put my postgraduate studies to good use and noticed that the future parasitological research requires a strong biochemistry background. Therefore, I thought of pursuing a Masters in Biochemistry at the Department of Biochemistry and Molecular Biology.
While doing my best to split time between baby duties, research, and classwork, I try to help others, as much as I can, because I always believe that what goes around comes around. Even though it was not my first time on foreign soil, the transition from Colombo, Sri Lanka to Stillwater, Oklahoma was not easy, and the initial culture shock was somewhat difficult to adjust to. However, always having my family by my side and having compassionate friends like Dr. Udaya DeSilva and his wife, certainly softened up the acclimatization process.

I found Stillwater to be a very calm and nice place to live, with all the necessary facilities for a smooth, easy lifestyle and the community is very friendly and cordial as well. Currently, OSU boasts a Sri Lankan student community of about 30 members, and the Sri Lankan Student Association participates in many OSU festivities, functions and events.

The staff of the Department of Biochemistry and Molecular Biology have been very kind to me as well. They have helped me get initial paperwork completed and helped me adjust myself to the classroom environment. I also feel very privileged to be working under Dr. Jiang in his insect immunoparasitology lab, where I work on the functional analysis of peptidoglycan recognition proteins in *Manduca sexta* (tobacco hornworm). My fellow lab members: Yang, Miao, Joy, and Ethan, have also given me immense support in settling down in the lab and have done well in creating an inclusive and intellectual working environment.

Although I rarely find the time, my favorite past time has always been reading novels, science fiction, which allows me to refresh my mind and detach from all of the day-to-day chores for a moment. I intend to use the experience and knowledge I gain from my research in Dr. Jiang’s lab and the coursework I complete at BMB, to further the horizons of molecular/biochemical parasitology research.
Hi, my name is Hunter Tolliver. I am currently a senior at Oklahoma State, studying Biochemistry and Molecular Biology. I am also working to earn the Honors College Degree and minors in Microbiology and Chemistry. I graduated high school in Healdton, Oklahoma.

I have been conducting research with Dr. Patricia Canaan since my junior year. We are studying β-lactamases of the opportunistic bacterial pathogen *Elizabethkingia anophelis*. The skills and experience I have received during this time have been invaluable. I have learned so many techniques and protocols that can be applicable in many different research settings. I have enjoyed the mentorship I have found in Dr. Canaan as an advisor and professor.

This summer I was part of the Four Directions Summer Research Program. This program was partnered with Harvard Medical School and Brigham and Women's Hospital. I researched Group A Streptococcus in the Division of Infectious Diseases at Boston Children's under Dr. Michael Wessels and Dr. Meredith Finn. This is an incredible program for young Native Americans. I would not have been able to enter this lab without the research background I have received here in the Biochemistry and Molecular Biology Department.

In my time here, I have served as a judge for the Oklahoma State Science and Engineering Fair and volunteered in the National American Indian Science and Engineering Fair. I am a member of a National Panhellenic Sorority, Delta Nu Alpha, the National Society of Leadership and Success, the Pre-Dental Club, Order of Omega, and a few other campus organizations.

I am so thankful for all the opportunities I have had to learn and grow here. I am excited to see what the future holds! After graduation, I will be attending Columbia University College of Dental Medicine.
GEORGIA BLACKWELL

My name is Georgia Blackwell, and I’m a junior from Venus, Texas. While working towards an Honors Degree in Biochemistry Molecular Biology with a minor in General Business, I have had the opportunity not only to grow my science background, but my professionalism, communication, and time-management skills as well. Throughout my time at OSU, I have received over $130,000 worth of scholarships, the Top 20 Freshmen Women Award, Top Sophomore Greek Woman Finalist, the General Honors Award, and the James E. Webster Award (Freshmen Biochemistry Academic Excellence Award). I participated and served in multiple clubs and organizations such as Alpha Omicron Pi, McKnight Scholars, and the Pre-Dental club. I am a member of many honor societies, including Mortar Board, Phi Kappa Phi Honor Society, and Golden Key Honor Society. I also served as a 1is2Many Educator and Greek 100 Presenter, where I taught students about healthy relationships, sexual assault prevention, and alcohol and drug safety. The Biochemistry and Molecular Biology Department has given me so many opportunities to be a successful student. During my freshman year, I was a member of the Honors Freshmen Research Lab with Dr. Ellie Nguyen.

I presented my findings at the Biochemistry Molecular Biology Poster Symposium. I was also a participant in the department’s first study abroad trip to Italy and Switzerland with Dr. Gustafson. On this trip, I learned about how healthcare and agriculture intertwine on an international level. My time at OSU has molded me into the person I am today. The Biochemistry and Molecular Biology Department has helped guide me towards success and has pushed me to be my absolute best. After graduation, I plan on attending dental school to achieve my Doctorate of Dental Surgery. I hope to open a private practice to provide underserved rural populations high-quality dental care.
Graduate school is an exciting yet haphazard redirection from a class that emphasized learning content to research-driven exploration. All the tools derived from undergraduate classes and experiences stack up to uncover unknown frontiers in science. For me, this pushes the envelope of space dwelling and travel. My Ph.D. research revolves around protein modifications and interaction differences in simulated microgravity versus Earth gravity. The force of gravity is always been present for human development and thereby removing this force alters regulation of most biological systems. In order to circumvent ailments ranging from brain and bone morphological changes to immune response, it is necessary to understand the cellular mechanism. This mechanism creates a foundation for the application of instruments, nutrition, drug treatment, and necessary activities in altered gravity conditions. As with any research, one’s background drives unique insights which incorporate a personal passion for their project. Having worked as a machinist during high school and my undergrad, I have developed a joy for instruments and modifying existing protocols to fit any niche I need to conquer. These soft skills apply directly to research as does my efforts to eat well and exercise. Studying biochemistry and molecular biology and watching my health keeps me feeling great! For any interested in pursuing graduate school, don’t forget to make it fun!
Lawrie Veale

Lawrie is a recent Ph.D. graduate from our department. She said that she chose to further her education within the department because of two wonderful mentors: Dr. Andrew Mort and Dr. Steve Hartson. While Lawrie was an employee, Dr. Mort suggested that Lawrie go to the Core Facility’s mass spectrometry workshop that Dr. Hartson teaches. She said this is when she completely fell in love with mass spectrometry and knew that it’s what she wanted to do.

After looking into it, Lawrie found that most opportunities to work with mass spectrometry require a Ph.D. She said both Dr. Hartson and Dr. Mort were very supportive and gave her every opportunity to be the scientist she is today. Lawrie said that graduate school is challenging, but as the saying goes: “If it were easy, everyone would do it.” One main challenge she faced during graduate school was isolating the highly cross-linked and post-translationally modified nanoscaffold used to build and defend plant walls, called extensins. She said learning how to become a mass spectrometrist was by far the most fun and challenging experience in her graduate studies. She explained it was challenging learning how to run a mass spectrometer and design intelligent methods or experiments to obtain the data required for analysis. She said that there is so much thought that goes into being a mass spectrometrist. Dr. Hartson and Dr. Mort’s ongoing encouragement and help with making every opportunity to do this available to her allowed it to be possible for her to be successful. She said it was also challenging figuring out the data analysis to characterize the Extensin cross-linkages. Lawrie said the Extensin mass spectra are highly unusual and required a lot of manual interpretation. Working closely with a company called Protein Metrics made it possible. Finally, Lawrie said that sitting down and writing her dissertation was the hardest thing she has ever done.

Lawrie said going to graduate school changes your outlook on life. She said it makes you tend to think about things. Lawrie received two important points of advice that she carried with her through graduate school that were also applicable to life’s challenges.

She said at the beginning of her journey as a graduate student she asked Dr. Hartson if she was smart enough to go to graduate school, and to paraphrase his advice, he told her, “Graduate school is about being tough.” She said the second point of advice she received was from Dr. Mort during a challenging time of her graduate career, he told her, “Keep pressing on.” Lawrie said one of her favorite memories was organizing an outreach day with the Pawnee Nation while she was president of the BMBGSA.
While working with the Pawnee Nation, Lawrie learned that one major issue we face as a nation is the involvement of rural and minority students into the scientific community. She said along with BMB faculty, staff, and students she was able to participate in an outreach day for 60 elementary and middle school-aged kids at the Pawnee Culture Camp. Lawrie said presenting her research at the University of Cambridge with Dr. Mort was a wonderful experience where she had such a fun time. She said something she will hold dear forever is getting to meet Dr. Mort’s Ph.D. advisor, Dr. Derek Lamport, who discovered Extensins.

Lawrie said working and being a student at the same time is not for the faint of heart, as graduate school is already two full-time jobs! As an employee for the Department, she did some research for Dr. Mort’s company Enzymatix. This research was used to produce biofuels from the leftover plant materials after harvesting sorghum. Lawrie said this experience lead to her pursuing her Ph.D. research, which is very meaningful to her.

Two personal achievements that Lawrie is extremely proud of are being honored as an OSU Foundation Distinguished Graduate Fellow and the opportunity she had to complete an internship as a CO-OP Scientist at Jansen Research and Development in Spring House, PA. During her internship, she developed mass spectrometry techniques and worked with Protein Metrics to automate data analysis methods used to characterize biologic based drugs.

Currently, Lawrie is employed as a Customer Process Success Scientist for Protein Metrics Inc. She said her role in this company is to help industry and academic scientists around the world use the software to analyze their data. She said it’s a rewarding experience because she gets to see data from a wide variety of molecules that have been analyzed with different types of mass spectrometers. Recently, Lawrie has been working with several talented groups studying COVID. Lawrie said every day is an exciting new challenge! Advice that Lawrie would give to current BMB undergraduate students is to keep your end goals in mind, don’t be afraid to try new things, and realize how crucial networking is for your future.

“I want to say thank you to the wonderful people in the BMB Department that I got to work with and know the last several years. Special shout out to the Mort lab, the Core Facility, and the friends I have made along the way – you all rock!”

–Lawrie Veale
Hi, my name is Juhi Chaturvedi. I was born and raised in India. After completing my master’s degree and working for a biopharmaceutical company in India, I decided to pursue higher studies. I was extremely fortunate to get admitted as a graduate student in the Department of Biochemistry and Molecular Biology.

I got the opportunity to work under the guidance of Dr. Junpeng Deng in a structural biology lab. My research focuses on the structural identification of the interaction between Myxoma virus proteins and a human protein. This research will help us in understanding the functions of the proteins that are involved in various biological pathways and their relation to human diseases.

In my time at OSU, I have been able to take advantage of every opportunity that has helped me to strengthen my presentation, communication, and writing skills by participating in various events. I won 3rd place in a 3-minute thesis competition held at OSU College of Agricultural Sciences and Natural Resources (CASNR), now newly named the Ferguson College of Agriculture. I am a recipient of the 2019 Family and Graduate Housing Research Award, the Greg and Ruth Schultz Research Travel Grant 2020 and the George R. & Hilda L. Waller Award, 2020. I am humbled by the awards I have received. I also spend my quality time practicing an Indian traditional dance, Kathak. In my time at OSU, I have been able to represent my country in the Mr. and Ms. International competition and was chosen as a runner up.

I also enjoy sports like table tennis and have participated in the International Olympics at OSU. Again, all these activities helped me to interact with people from different cultures and backgrounds. I have also participated in a variety of student organizations. I served as a cultural coordinator in the Indian Student Association and as a vice president and representative for BMBGSA. None of these opportunities would have been possible without the support of the Biochemistry and Molecular Biology Department. This Department has a family-friendly atmosphere and has given me a feeling of home away from home. I consider myself lucky that I am a part of this cowboy family.
The Biochemistry Club, Delta Nu Alpha (DNA), is an organization dedicated to connecting undergraduate students that have a like-minded interest in Biochemistry and Molecular Biology. When attending a meeting, students have the opportunity to build a relationship with faculty and other students, while exploring different career paths that are supported by a Biochemistry and Molecular Biology degree. Club members invite professionals from a variety of health and research related fields to discuss the day-to-day responsibilities of their career and to provide advice on applying to professional programs after undergraduate school. The guidance these speakers give is invaluable since the majority of our members have career goals in healthcare.

The Biochemistry Club has participated in two major campus-wide events, homecoming and the Ferguson College of Agriculture week, allowing members to get more involved with campus life and OSU traditions. In addition to these events, Biochemistry Club dedicates the majority of their time helping the Stillwater community. Members participate in a university-wide project called “Into the Streets,” while also being frequent volunteers at Our Daily Bread and the Stillwater Humane Society.

For more information concerning meeting times and upcoming events, please contact chapter president, Caitlyn Young. caitlyn.young@okstate.edu.
The Students of Osteopathic Rural Medicine (StORM) club is an up and coming student organization. Members of this group actually meet with current OSU osteopathic medical students and learn more about the medical school admissions process and the student experience in medical school. In a sense, this club supports the ultimate prehealth student mentoring program.

The StORM club has participated in many campus-wide events such as homecoming, Ferguson College of Agriculture week and “Into the Streets”. Coming together for these events, StORM club members are not only supporting the Stillwater community and OSU, but they all get to connect to like-minded and dedicated pre-medical students.

In the future, StORM plans on furthering the connection that undergraduates have with medical students, while also stepping up to help Oklahoma’s rural communities which is the club’s ultimate mission.

For more information concerning meeting times and upcoming events, please contact the StORM president, Taylor Chapman.
taylor.l.chapman@okstate.edu

StORM Officers of 2020:
From left to right:
Baileigh Brewer - Treasurer
Taylor Chapman - President
Caitlyn Young - Secretary
Alexa Powell - Public Relations
Carson Wright
Chase Calkins
Staff Representative - Nelda Driggs
Every month, the Biochemistry and Molecular Biology Graduate Student Association (BMBGSA) invites all graduate students in the department out for lunch, and we all walk to “the strip” together. Over lunch, we talk about our projects, complain about our problems (and mentors...), and offer each other advice. These lunches always leave everyone in a better mood, and frequently results in the sharing of some great ideas. The BMBGSA looks forward to going out to lunch again once the COVID-19 pandemic ends!

Some of the older graduate students go out to “Stonewall” after work on Friday for a beer or two. They also try to find students left in the building in order to drag them out of the lab, something a lot of us need. Creating and maintaining social relationships is one of the most important things we as graduate students can do, especially during these trying times. To this end, the BMBGSA hopes to organize many more social events in the future and encourage everyone to participate.

Unfortunately, the COVID-19 pandemic has put a hold on many of the plans we made earlier in the year. Many of us hoped to carpool to Tulsa to solve an escape room together, followed by enjoying downtown. We also discussed holding a monthly potluck dinner for the graduate students where each student would be required to bring a dish to share. This will be especially fun, given the diversity of cultures and cuisines represented by the students of our department.

While we hope we can all see each other again soon, we also hope that everyone is safe and healthy. These are indeed challenging times, but it is important to remember that we all are going through this together. All of us are experiencing new and strange problems, so we encourage everyone to be understanding kind, and sympathetic. Stay safe, stay healthy and most importantly, stay positive.
Dr. Claud D. Evans of Okemah, Oklahoma was one of four Oklahoma State University graduates inducted into the OSU Hall of Fame on Friday, Feb. 7, 2020, at the Conoco Phillips OSU Alumni Center. Dr. Evans graduated from OSU in 1966 with a bachelor's degree in Agricultural Biochemistry. He earned his Doctorate in Veterinary Medicine from Tuskegee Institute Alabama in 1970 and he interned at the University of California-Davis. After graduating he went on to work for Ralston Purina Company's Veterinary Services, Consumer Products, and Chicken of the Sea Divisions. In 1983, he opened his veterinary practice in Okemah, Oklahoma. Dr. Evans served on the OSU/A&M Board of Regents for 16 years, serving two terms at the board's chairman. He is also a past member of the OSU Alumni Association's Board of Directors. Dr. Evans has been inducted into the Okemah Chamber of Commerce Hall of Fame and the OSU Diversity Hall of Fame and he received the OSU Division of Agricultural Sciences and Natural Resources Distinguished Alumni Award. We are so proud he is a BMB Poke!!! Go Dr. Evans!!!
Congratulations 2019-2020 Wentz Scholars!

Lyndee Branen
Faculty Mentor: Dr. Madhan Subramanian
Project: “Cellular Senescence in the Brainstem: Implications for Cardiovascular Disease Risk in Aging”

Omid Darbandi
Faculty Mentor: Dr. Erika Lutter
Project: “Antibiotic Resistance of Pseudomonas aeruginosa from Cystic Fibrosis Patients”

Ashley Gin
Faculty Mentor: Dr. Glenn Zhang
I joined the BMB family as an Assistant Professor and Academic Advisor in fall 2016. I am focused on teaching biochemistry, advising students, and mentoring students who conduct research exploring the molecular interactions between plants and insects to understand how plants improve their resistance to insect grazing. My lab often welcomes eager undergraduate students who want to acquire laboratory experience in molecular biology techniques. I teach different undergraduate and graduate classes in biochemistry and molecular biology, and one of them is an online undergraduate Survey of Biochemistry and Molecular Biology course. Besides my expertise in molecular biology, I’ve also trained to approach teaching with a scientific method, during my postdoctoral training in college science education. Therefore, the inter-connected experience of science and education has strengthened my teaching philosophy, simultaneously advancing my teaching approach and strategies.

I have a teaching philosophy that aims to produce students that are inspired. My inspiration comes from the following quote “The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.”—William Arthur Ward. It motivates me to develop an approach to teaching that inspires students to become eager for learning to reach their best potential. My hobbies are reading my favorite books and traveling with family and friends, especially to Vietnam where I am originally from. Recently, we have officially become an OSU family as my husband has also joined the Computer Science Department as an Assistant Professor in 2019. I am also very excited that my 7-year-old son wishes that someday he will take science classes at OSU like many of you do!
Dr. Nguyen’s laboratory is focused on the novel gene SRFR1 that is identified as a negative regulator of effector-triggered immunity against the bacterial pathogen *Pseudomonas syringae* pv. tomato.

SRFR1 encodes a novel tetratricopeptide repeat-containing protein that is conserved between plants and animals but has an unknown function. Her lab has found that a SRFR1 mutant *Arabidopsis* plant also shows enhanced resistance to both the cyst nematode *Heterodera schachtii* and the chewing insect *Spodoptera exigua*.

Compared to wild type *Arabidopsis*, the SRFR1 mutant demonstrated a reduction in female cysts on roots after nematode infection and a decrease in mean larval weight and leaf damage, after insect feeding. In *Arabidopsis*, resistance to nematodes and grazing insects is often regulated by the plant hormones salicylic acid, jasmonic acid, and ethylene. Her lab focuses on analyzing candidate genes of the phytohormone-regulated defense pathway to further understand the enhanced resistance observed in mutant SRFR1 plants.
At Oklahoma State University, Dr. Chen currently leads an interdisciplinary translational genomics laboratory, which explores and exploits functional genomic components together with molecular geneticists, statisticians, computer scientists and engineers. The translational genomics laboratory is a research group capitalizing on the wealth of molecular genetic knowledge to create exciting opportunities for studying complex trait variations. His research primarily focuses on understanding the dynamic interplays of genetic, environmental, and evolutionary forces, which shape the beautiful complexity of biological diversity. With the advancement in genomics and computational technologies, they prioritize discovery, and translational and convergent research, to move knowledge forward and to provide a promising application in agriculture and natural resource conservation.
Dr. Celia Schiffer

“Combatting Drug Resistance: From Base-Editing to Machine Learning in Drug Design”

Dr. Schiffer is a Professor in the Department of Biochemistry and Molecular Pharmacology, Gladys Smith Chair in Oncology and Director of the Institute for Drug Resistance at University of Massachusetts Medical School. Research within Dr. Schiffer’s lab is centered around understanding and combatting drug resistance.

While her research is focused on the molecular basis of antiviral resistance, she is passionate about discovering the parallels that can be drawn between organisms treated with antibacterials – with the goal of devising rational antibacterial design strategies to limit occurrence of resistance. Due to COVID-19 faculty, staff, students and guests joined in on the celebration via Zoom, my how things have changed....
Annual Banquet - Scholarly Success and a Night of Awards

**Graduation and Awards Banquet 2020**

**Grace A. Knox Award**
*Henke, Kurt J.*

**V. G. Heller Award**
*Keen, Brockton J.*

**The Gregory and Ruth Schultz Endowed Scholarship and Grant**
*Chaturvedi, Juhi - St. Clair, Michael J. - Villalobos, Areli M.*

**The Undergraduate and Graduate Research Scholars Endowment in Biochemistry and Molecular Biology Scholarship and Grant**
*Fritch, Bradley R. - Sabo, Jeremy - Veale, Lawrie*

**The George R. and Hilda L. Waller Endowed Scholarship**
*Chaturvedi, Juhi - Galvez-Sagastume, Claudio - Sabo, Jeremy*
Graduation and Awards
Banquet 2020

Roger E. and Norma L. Koepe Endowed Scholarship
Marquart, Hadassah R.

Paul F. Kruse Jr. Scholarship
Bokern, Haley A. - Davis, Olivia C. - Lucas, Audrey G. - Smith, Caleb A.

Linda C. Schultz Endowed Scholarship
Herndon, Nathan P. - Tolliver, Hunter J.

James E. Webster Award in Biochemistry
We miss you all!!!

- Adams, Makenzy
- Beckford, Alisha
- Bokern, Haley
- Braga, Pedro
- Brinker, Nicole
- Cannon, Brinley
- Castaneda, Mark
- Chibnall, Alice
- Darbandi, Omid
- Davis, Olivia
- Dubuc, Emily
- Filfield, Dylan
- Fletcher, Sarah
- Forson, Alyssa
- Gariss, Kylie
- Gooden, Abigail
- Gore, Jessica
- Green, Jarrett
- Greenlee, Danielle
- Hallett, Felicia
- Hargove, Garrett
- Helton, Kennedie
- Henke, Kurt
- Herndon, Nathan
- Hester, Erin
- Hughes, Ethan
- Huss, Megan
- Irwin, Russell
- Jones, Jonathan
- Keen, Brockton
- Lucas, Audrey
- Marquart, Hadassah
- Maxson, Tegan
- Mitchell, Greyson
- Montgomery, Ty
- Pagett, Creighton
- Parrott, Olivia
- Platt, Anna
- Pollard, Alexis
- Riddle, Vanessa
- Riley, Haley
- Robertson, Amanda
- Smith, Caleb
- Smith, Kalli
- Tolliver, Hunter
- Watkins, Caleb
- Wheeler, Kyle
- White, Sage
- Wood, Alexandra
- Zielinski, Austin
- Zucconi, Joseph

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.

BCMB Student Scholarship Fund  Biochemistry Department Fund  Roger E. Koeppe Endowed Lectureship  Kruse Scholarship
George R. and Hilda Waller Endowed Scholarship in Biochemistry
Recognition by Women of Biochemistry and Molecular Biology
TCC to OSU Biochemistry and Molecular Biology Scholarship
Roger E. and Norma L. Koeppe Endowed Scholarship Fund
The Finn Wold Family Biochemistry Endowed Fund
Endowed Scholarship in Honor of Linda C. Schultz
Undergraduate and Graduate Research Fund

Contributions can be made online at https://http://www.osugiving.com/search?query=bcmb
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.

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Georgia Blackwell

Georgia Blackwell is from Venus, Texas and will graduate with an Honors Degree in Biochemistry and Molecular Biology with a minor in General Business. Georgia’s favorite memory with the Biochemistry and Molecular Biology department is studying abroad in Italy and Switzerland with Dr. Gustafson. After graduation, Georgia plans on attending dental school so she can give underserved rural populations high-quality dental care.
Caleb Smith is involved in Biochemistry Club Delta, HOSA-Future Health Professionals, OSU men’s soccer club, Global Medical Brigades, Life Sciences Freshman Research Scholar ambassador, LASSO center tutor and is an independent researcher under Dr. Kevin Wilson. He was a Barry Goldwater Scholarship nominee, a Life Science Freshman Research Scholar, a Russel Medical Cowboy Scholar and is on the President’s honor roll. Following his undergraduate education, he will pursue medical school. He strives to attend OSU’s College of Osteopathic Medicine. He is interested in emergency medicine and he would like to conduct clinical trial research. His interests and hobbies include soccer, snowboarding, hiking, and camping.
Many of you have heard of the magazine “Changing Times” which gives hints on how to make or save money and adjust to present living conditions. Anyway, this is “changing times” for Biochemistry with two new staff members added last year and two more projected for the coming year. My part in this is that I have reached retirement age and my future part in the Department will be, at best, a small one. After 41 years of service here at OSU my feelings are mixed and right now I do not know what the future holds for me. Certainly the years have been pleasant ones and I have enjoyed my work and association with many of you over this period. I hope to at least keep in contact with our former students; I shall always be happy to hear from you. During Christmas vacation I had visits from Wayne Fish (Ph.D. 1967), Claude Evans (1966) and Bud Skye (1964); perhaps more stopped by and I did not meet them. The Dick Georges (1958) write that they have a new daughter, Erin Louise, born August 29, 1967. They are in San Antonio, Texas. Pat Thomas, who worked for me the last two years left to live in Beaumont where they have just purchased a new home. Dane Lacey (1958) is now located in Waco, Texas. Charles Harms (1964) writes from Crete, Greece where he is in the Peace Corps and having many fine experiences. Leroy Grimsley (1960) writes that they will have a new baby, April Nicole. Claude Evans is in the Veterinary School at Tuskegee.
Carol Cunningham (1961) wrote from Illinois that he has a son in West Point and a high school senior that is a National Merit semi-finalist. Donna Mobley (Taylor) (1957) says that her family is now located in Phoenix, Arizona where her husband is practicing medicine after some postdoctoral training. Bennie Lewis and Robert Turley (1967) are now working for Dow Chemical Company at Freeport, Texas. Franklin Strickland and Bernard Gipson graduated in January. Gipson will work for Swift in Omaha and Strickland is looking for a teaching position. Three more will graduate in May. (Other friends added notes with their cards but the information did not represent major changes for them.)

As you probably know, we now offer undergraduate degrees in both the College of Agriculture and Arts & Science, and as a result our undergraduate enrollment has grown to nearly 50—it changes every month. Remember I am always pleased to hear from you and will pass pertinent information on in the letter.

-James E. Webster

A young (I hope) 65!
Final thoughts from the desk of...

DR. JOHN GUSTAFSON - PROFESSOR AND HEAD

Every department citizen wants to give our students every chance possible to succeed. I owe all of our students and alumni for the success and honor they bring to our department. I truly believe that our students are the greatest students on campus, and we are very fortunate to be in the Ferguson College of Agriculture. I feel the Cowboy family ethos in our college remains strong, and our students are indeed an extension of our own families. Unfortunately, the costs of being educated or trained in research laboratories continue to rise and while we do all we can with what we have, we strive to be able to do more. Recently, due to his continued support of our Department, we have named the Undergraduate and Graduate Research Award, after our great alumnus, Professor Arlan Richardson. His continued financial support of our Department continues to impact our students and now will do so in perpetuity. I am hoping we can get more of you to donate to the Department and I would be happy to talk with any of you should you want to learn more about how you can help our students and Department. I have been working to get the Recognition by Woman of Biochemistry and Molecular Biology fund endowed, but to date, I have not been successful! This fund is designed to celebrate the contributions of our incredible female citizens past and present and provides an award that recognizes the student (male or female) that produced the most impactful publication or demonstrated the greatest potential to succeed in science. We still need ~ $21,000 to get this account endowed. So if you have been fortunate in life and if our department helped you reach your goals, I hope you can donate to one of our many accounts (see page 32) and that you donate often! Many thanks to those of you who already donate. Honestly, I think that our donors are helping some of the kindest and smartest students in the world, who I have the joy of working for!!! Stay well all, and again, social distancing hugs from all of us to you and your loved ones. We will indeed overcome, and the discipline of Biochemistry and Molecular Biology will help lead the way.
DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY
Undergraduate Program and Degree Tracks

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

Did you know graduate education in the Department of Biochemistry and Molecular Biology can almost be free? You can even be paid as a graduate student! Stop by our Department Head office and see our professional staff if you have any questions.

Graduate students are taught to become lifelong learners with critical thinking skills through the application of scientific techniques in the laboratory and acquisition of Biochemistry and Molecular Biology knowledge in the classroom and laboratory.

MAKING CURIOSITY A CAREER

Preparing Yourself
As a major in our Department, you will build a strong foundation in chemistry, physics, mathematics, biology, biochemistry, and molecular biology. The disciplines in this field have contributed to a number of biomedical and agricultural breakthroughs and set the stage for biotechnology's industrial revolution. Knowledge gained by Biochemistry and Molecular Biology research has even redefined our understanding of life on Earth.

A Brighter Future
A strong background in Biochemistry and Molecular Biology can lead to improved healthcare and the quality of life by:

- Producing novel and improved pharmaceuticals;
- Increasing agricultural yields;
- Developing technology to reduce the production of pollution.

Stay on Track
Our two Biochemistry and Molecular Biology undergraduate major tracks are designed to give you the flexibility and variety to pursue your career goals.

- The first degree track provides a strong foundation that supports students' entry into health care professions.
- The second degree track prepares you for study in medical or veterinary school.

Expert Faculty and Modern Facilities
Graduate students in Biochemistry and Molecular Biology have the opportunity to work with exceptional faculty mentors and state-of-the-art technology and equipment. The Department is proud to provide services such as next generation sequencing and structural proteomics for our students. We can teach you everything from building proteins to determining 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 at a molecular level.

Developing Future Scientists

Program Pathways
The Department offers a program of graduate study leading to M.S. and Ph.D. degrees, and all of our graduates are successfully employed.

Our degrees lay the foundation for our graduates to follow a number of paths in academia, industry, science education, and government.

Define Your Graduate Experience
Our main goal is to develop scientists capable of applying rational thought and scientific tools to produce new knowledge geared to enhance our understanding of the natural world.

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 participates in departmental activities and the Graduate and Professional Student Government Association.

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