Fruits of Their Labor
By Christian Pascual

A look into the accomplishments of our BME faculty

Monday through Friday: you bring yourself to your professor’s classes, submit your homework, and work through the labs prescribed to you. You attend their office hours and struggle through the concepts you did not get in class and hope to get an extra point or two on the midterm you just had. If you are one of the skilled few, you will come to their lab and work on a research project.

With this type of undergraduate schedule, it is easy to think that that is all our biomedical faculty does. But that could not be further from the truth. When our professors are not lecturing or researching, they’re winning prestigious awards that often go unnoticed by the very students they teach. This article aims to raise awareness of the accomplishments of our esteemed faculty.

Many of our biomedical engineering professors are fellows to various organizations. In academia, a fellow is a term for a member of a group of highly educated people that work together towards a mutual practice. To be elected as a fellow, one must be a pioneer in their field and make significant contributions with their research. Due to the sheer diversity of engineering disciplines in BME, our faculty has been elected as fellows to many different types of organizations. In 2012, both Dr. Athanasiou and Dr. Fyhrie were elected as fellows to the American Association for the Advancement of Science (AAAS). Dr. Savageau was also elected as a fellow to Institute of Electrical and Electronics Engineers (IEEE), a prestigious achievement in the field.

Our faculty are also the recipients of many grants. A grant is a monetary award usually funded by the government or another organization. Many of the machines and materials used in labs cost so much that outside funding is required to continue research. Furthermore, professors must prove that their research is worthy of being funded, making grant proposals incredibly competitive. Dr. Heinrich, Dr. Yokobayashi, and Dr. Badawi each earned grants offered by prominent organizations such as the National Health Institute (NIH) and National Cancer Institute (NCI).

The competitive nature of the university system does not stop at undergraduate or graduate levels. Every day, these same professors who test our mettle with difficult exams do everything they can to advance the diverse field of biomedical engineering. For their dedication to both their students and academia, our faculty certainly deserves every award, fellowship and grant that they receive.

To learn more about the recent awards our faculty have received, visit http://www.bme.ucdavis.edu/articles/category/news/awards/
The BME Alumni have gone on to do great things all over the world! Right outside our undergraduate advisor’s office, you can find a map showing the locations of companies and graduate schools our alumni have gone post-graduation. Since this map is easily accessible to students in Davis, rather than reprinting the map, here are highlights of some of the companies in California that our alumni have joined.

**Biomarin, Novato**
Biomarin is a pharmaceutical company specializing in making drugs for rare genetic diseases. These drugs can be found in more than forty countries.

**Volcano Corp. Rancho Cordova**
Volcano specializes on making imaging technologies to help visualize cardiovascular disease. Some of their products use Intravascular Ultrasound (IVUS), which is a catheter system that allows imaging of the arteries.

**Penumbra, Alameda**
Penumbra focuses on making devices for treating stroke and cardiovascular disease, such as devices for restoring normal blood flow after a stroke.

**Skeletal Kinetics, Cupertino**
Skeletal Kinetics designs and manufactures products that aid bone healing with bioactive cement. This bioactive cement allows for proper remodeling of the bone, which is crucial for recovering from fractures.

**MEA Forensic Scientists & Engineers, Laguna Hills**
MEA investigates causes and factors of accidents. What might be interesting to biomedical engineers is the Injury Biomechanics subdivision, which looks into issues such as helmet effectiveness and occupant kinematics.

**BioLegend, San Diego**
BioLegend makes a wide array of antibodies and reagents for research. Their products include immunology antibodies, cytokines, recombinant proteins, and flow cytometry buffers.
Interview with Leo Ai
By Jackie Lim

Leo Ai graduated from UC Davis in 2008 and now is at University of Iowa for his PhD, gives some insight about graduate school.

Did you specialize in a specific area? If so, what did you specialize in, and what made you choose this specialization?

I tried to gear my studies towards medical imaging. Medical imaging was of particular interest to me because at the time I was drawn to medical diagnosis. Imaging is an important tool in medical diagnosis, and furthering research in that field was of interest to me. It also probably helped that my interest in photography also pushed me towards medical imaging since I saw it as the same thing but through a different medium with different purposes.

Can you describe your experience applying for graduate school? Is it as stressful as people make out of it?

I did start the process very early, so a lot of the required pieces were taking shape even before fall quarter started. It also helped that I routinely took summer courses, so I believe my course load was lighter than what would be typically expected. As a result, I did not feel the application process was particularly stressful.

In what ways did Davis’s BME program prepare you? Any specific classes that were particularly helpful?

The reality (that I think a lot of people do not like to hear) is that it is unlikely your course work will be enough to truly prepare you for PhD studies. It is true that I am using information that has been taught to me during my time at Davis (e.g., medical imaging physics, signal processing, physiology), but in PhD studies, you are looking at very specific studies on a very specific topic in a very specific field of research. There will be a number of background topics that you need to be well versed in for the purpose of research, but you will likely have to teach yourself many of these topics. Many of the courses I took at Davis were taught at nowhere near a sufficient depth and I had to further pursue studies in many topics. A lot of the information you will need for your studies will not exist in text books, but only in research journals. If you think your course work will truly prepare you for graduate school, you will be disappointed. This is not to say classes are not important. Your course work will be the minimum of the required foundation that you will build on as you continue your graduate studies and research.

If there is one thing to take away from your time at Davis, it will be how you approach research. Many classes had big, open ended projects that forced me to examine how I approach problems. This was particularly true in the senior design project.
Can you briefly describe what you're currently working on in graduate school?

My research revolves around Functional Magnetic Resonance Imaging (fMRI). Most MRI that is done is structural imaging, but there are some MRI techniques that can image functions such as Blood Level Oxygen Dependent fMRI (aka BOLD) or Arterial Spin Label (ASL). Currently, I am examining the coupling relationship between cerebral hemodynamics and neuronal activity. Simply put, if there is neuronal activity, there will be a change in blood flow in that specific region of the brain. This change in blood flow can be detected by the MRI, and neuronal activity can be inferred. This coupling relationship is the foundation of all fMRI, but I have data showing that this is not always true.

How was the adjustment from undergraduate studies to graduate school? Can you elaborate on some major differences between the two?

You are certainly going to be placing most of your focus on your research instead of classes, but beyond that, I did not feel there was any sort of big adjustment.

Do you have any advice for students who are thinking about applying for graduate school?

I would say find some sort of research opportunity to get your feet wet outside of what you get in classes. I had the good fortune to be able to work with Dr. Jue, and with his guidance, I was able to gain a lot of insight on how to approach research. I feel this is very important, and all students who want to continue to graduate school should have some sort of research experience.

Undergraduate Research: Faculty Perspectives
By Munira Bootwala

Dr. Leach and Dr. Hull, who both offer undergraduates research positions in their labs, tell us what they look for in undergraduate students.

What factors do you consider when offering undergraduates research positions within your lab?

Leach: The most important factors are enthusiasm and a willingness to learn. When students come to me, I ask them what their long term goals are, what they’re interested in, and of course how much time they have. The students that tend to work in my lab say they have a passion for bringing engineering principles together and developing therapies for individuals. Also, they have some flexibility in their schedules to work in blocks of time, not just smatterings here and there.

Hull: We try to accommodate everyone that wants to work in the lab. That being said, there are multiple factors I consider. The two most important are class standing and GPA. If a student wants to do research, they need a certain skill set to contribute. If a student comes in and says “Hey, I am a second year in Biomedical Engineering...” I will tell them that “I really appreciate your interest, but it’s just too early. Let’s wait ‘till you get at least another year under your belt and then we’ll talk.” Another important factor is time. I ask students how many units they are carrying, because if someone is carrying 16-17 units, then they are not going to have enough time. Finally, they must have interest. Of course they are not talking to me unless they do, so that is a given.
On average, how many hours a week do they work? Is there a flexibility to work fewer hours during exams and longer hours during breaks and holidays?

**Leach:** I ask all my students to commit to at least 10-12 hours per week. And there is a lot of flexibility for them. Some students work 2 days a week at 6 hours each, while others work 4 days a week at 3 hours each. I’ve even had a student in the past that would come in on the weekends and work all day, both days. That doesn’t work as well though, because so much of what we do requires time for the cells to expand, or the cells to do something to the material. As far as timing goes, it is really driven by the project they are working on. And of course there is a lot of flexibility when they have other academic requirements, because that really is the most important thing that they can be working on right now.

**Hull:** Absolutely. There is always that flexibility, but we do like to see a minimum of 8 hours per week. That’s two full mornings, two full afternoons, or the weekend. It is better to work during the week, though, just because everybody is around and the facilities are all available.

**Could you please describe typical work or projects students get to work on?**

**Leach:** Usually when undergraduates come in, I pair them with someone to work very closely with. So, undergraduates in the laboratory, at least in the beginning have worked under the immediate supervision of a graduate or postdoc. And in that case, they may be doing something as simple as growing cells for that graduate student, making scaffolds, or taking pictures of histology slides; tasks which are fairly straightforward. Once they have had a chance to demonstrate that they can do these tasks very well, are reliable, and a joy to have in the lab, then we try to transition them into something that is more their own, that they can have ownership of. I found it’s really important to get students to that level of autonomy as soon as possible, because it’s when students can have ownership of the project and are really excited about it, that you get the best work.

**Hull:** It really depends on the needs of the lab and graduate students. In my lab, we run experiments on cadaveric knees and legs. And so to run these experiments, we design specialized equipment. You can’t go out and buy a machine of the shelf that will allow you to run an experiment on a cadaveric knee. So we design and build that equipment from scratch. One of the tasks we get students to help out with is the manufacturing and fabrication of the equipment. Other projects that students help out with are dissection, computer simulations of knee surgery, and data analysis. Sometimes students do their own project. For example, right now we have a student who is doing a project which involves identifying landmarks that can be used to guide the surgeon in putting in an artificial knee during surgery. Doing your own project is possible, but it’s not the norm.

**Can you give me an example of something that’s stood out, positive and negative, to you in an undergraduate that you offered a research position to?**

**Leach:** Let’s see, there are lots of positives. I think the undergraduate student population, is a tremendous benefit to any lab, because often times they have so much enthusiasm for the project, and that enthusiasm is contagious. And so it’s great to have those students asking those questions, that we often times don’t think about. Thus, the most positive thing that comes out is enthusiasm and creativity, which is unabashed. It is invigorating to have that. As far as bad goes, it’s not really bad, but something that I caution students against is trying to avoid being overly ambitious. I think the disappointing part for me is to be mindful.
To an enthusiastic student that comes in and says “I am going to work 10-12 hrs per week and I am taking 5 classes and I do a volunteer internship at the medical center...” I know that’s not going to work. So I try to tell them in advance, that you need to be better with your time and I don’t think you will be able to do all of that. Usually in situations like that, the student gets disappointed when they are not able to contribute to the degree they want or, as so often happens in research, their contributions don’t work and they get discouraged. The last thing we ever want to happen is for a student to become discouraged and decide research is not for them.

Hull: Well, there is one undergraduate student I am very impressed with. I told one of my graduate students to put an undergrad on a project that I had. And so he did, and this undergrad has made creative contributions in his own right. Which is huge at that level. This student has really demonstrated that he has what it takes to succeed in research, which is initiative and the ability to work independently. Plus he’s made progress every week despite a full course load. It has been a great experience for him and it’s been a great contribution to the lab. I can’t think of where it hasn’t worked out well. However, the graduate students are more in touch with it than I am. I can’t remember when we got a complaint, other than when a student wasn’t showing up when they were supposed to.

Hull: Doing research is taking time away from you studying. Plain and simple. So if you come in and say you have a 2.3 GPA, I’ll say, “Well, look you need to study harder and get your GPA above a 3.0. Research is going to take time and you are already not doing well, and so now the concern would be that we are taking even more time away, and you are going to do worse.” I don’t want to take on a student and jeopardize their situation further; it doesn’t make sense. I would tell the student to go bring their GPA up and if they do, come talk to me again. Your first priority is mastering your course material. Research is just icing on the cake. The evidence of mastery in terms of GPA has to be there as a starting point. As far as prior lab experience goes, it is not important. I mean who is going to have prior lab experience? It would be nice, but I don’t even ask, honestly. I just assume nobody has it.

How important is GPA? What about having prior lab experience?

Leach: For me prior lab experience is not important. I tell undergraduates and graduates students the same thing: I will teach you everything you need to know. And if you don’t know it and I don’t know how to teach you, then we will find somebody else who can. And that mantra has worked really well. But for undergraduate students, GPA is important. GPA is the key that opens all the other doors. And so I don’t usually invite students who don’t have at least a junior standing in my lab, because I want them to make sure they have a really good foundation. The reality is if a student is looking to go to graduate school, it doesn’t pay them good dividends to do research if their GPA is below a 3.3, because they are not going to be competitive. I think the best students are those who have a GPA between 3.5-3.8, because it shows they are not always about excellence in the classroom, and have other stuff going on as well, which is terrific. I would emphasize that in undergraduate research, every faculty member is different and they are looking for different things. So students really have to seek out the faculty that suit their needs.
Grad Life with Adrienne Cheung

BMES hosted another Grad Life success story with alumni Adrienne Cheung, who presented her professional journey at BioMarin Pharmaceutical, Inc. After she received a B.S. degree in Biomedical Engineering at UC Davis, she decided to hunt down jobs in industry. Adrienne showed BMES members important steps she took to landing her first job. She emphasized the “one page resume” as an essential document to always have on hand when applicants begin searching for jobs. She also gave tips on how to handle interviews, the importance of building a network, and how to grow from your career. She admitted that her career path seemed to be bumpy road for her until she took a detour, leading to her current occupation as a Senior Specialist in Quality Assurance. Special thanks to Adrienne for sharing her story!

Winter Lab Tours at the GBSF

Every quarter BMES hosts lab tours of featured laboratories in the Genome and Biomedical Sciences Facility (GBSF). This quarter, students were privileged to walk with and talk to the people behind the scenes in the Cherry, Ferrara, Marcu, and Heinrich labs. Participants of the tours also got to visit the Center for Molecular and Genomic Imaging (CMGI) to view the different equipment used in imaging. Here is a bit of what students got to learn about each lab:

**Cherry Lab:** Merges the modalities of PET and SPECT, incorporating both imaging techniques to invasively observe cancers features in-vivo.

**Ferrara Lab:** Investigates drug distribution of therapeutics using nanoparticle-based tools

**Marcu Lab:** Works on using imaging techniques to identify and evaluate the disease of atherosclerosis or plaque buildup in the blood vessels.

**Heinrich Lab:** Works on evaluating the biomechanics of cells from a biophysical perspective.

**CMGI (Center for Molecular and Genomic Imaging):** Supports positron emission tomography (MicroPET), MicroCT, ultrasound, and optical (bioluminescent and fluorescent) scanning procedures for non-invasive imaging.

BME students, especially those looking for a laboratory position, are highly encouraged to participate in these quarterly lab tours to gain a better understanding of the research each lab performs. When a specific lab sparks your interests, send them an email to see if you can be of their assistance. Happy lab-searching!
How to Tackle Technical Questions

By Rose Truong
How to be prepared for your engineering interview.

Everyone goes through job interviews, and most people know the usual rules: dress professionally, make eye contact, be on time, and bring extra copies of your resume. What might be unexpected are the technical questions.

What are technical questions and why do they come up?
Do not confuse these with personal questions such as “Why should we hire you?”, “What are your weaknesses?”, and “What do you know about our company?” Technical questions are fundamental engineering questions that will be specific towards the job position, and they will require reasoning. The interviewer asks these types of questions because this is a good way to test how quickly your mind works, how resourceful you are, and how you rise to a challenge. Most importantly, when a technical question catches you off guard, do not immediately give up. Your response will show your work ethic, as well as show how you will handle situations that arise in the workplace. The interviewer will be paying close attention to your approach and perspective on a problem rather than the “correct” answer.

Technical questions ranging from all engineering majors (courtesy of the ICC):

- M is a cell array of strings. Reverse the words in M without reversing the characters.
- How should a voltmeter be attached in a circuit vs. an ammeter?
- How could you remove caffeine from coffee beans?
- How would you measure the blood flowing through a vein?
- What is the difference between static and fatigue failure and how can you start to resolve them?
- Without loops, create a method to count the number of ones in a 32-bit number.

How can you prepare for technical questions?
Know the job. What does the company do? What is their research focus? What do they expect from you? For example, if a company is working on designing smaller, sustainable heat engines, it would be a good idea to review thermodynamics.

Also, be mindful of what is on your resume. If the company is looking for someone that can use specific programs such as MATLAB or AutoCAD, and you listed it under “skills” in your resume, you should be able to undertake that problem.

What do you do when you simply do not know?
Draw a diagram. List related formulas or theories. List your givens. Ask the interviewer for clarification. If your mind is still drawing a blank, then be honest. Saying, "I do not know at this moment, but I am willing to find out and get back to you," shows good character.
Recent Developments in Biomedical Engineering

By Kenneth Chang

Medical Devices

Traditionally, diagnostics and testing have been done in laboratories with expensive equipment. While this is possible in the developed world, developing countries are frequently without the resources to run such facilities. While there are mobile testing solutions, they are also typically expensive, and suffer from decreased accuracy in the field. However, there may be a solution.

A professor at Columbia University, Dr. Samuel Sia, has created a mobile device that is capable of diagnosing HIV with lab-level accuracy in about 15 minutes. It is a mobile microfluidic chip for immunoassay of protein markers, and is capable of quickly analyzing blood samples. The data is then transmitted to medical record databases using satellite and cell phone networks. Tests cost as little as $0.10 per screening, increasing its accessibility. Along with its cheap cost and mobile nature, it also possesses very high accuracy. Tests on Rwandan patients reported diagnostic sensitivity and specificity of 100% and 99%, respectively. Accuracy increases to a full 100% in both categories when testing on whole blood sample collected from hospitals. Currently, the device is also capable of testing for other STDs, such as syphilis.

Cell and Tissue Engineering

Scientists at the Washington University School of Medicine in St. Louis have developed a potential method that one day may allow doctors to treat certain forms of blindness by altering the genetic program of light sensing cells in the eye. Their research succeeded in reprogramming the cells in the eye that enable night vision by changing them into cells similar to those that allow sight in well-lighted conditions. Scientists were also able to prevent degeneration of the retina. The process may be a significantly easier way to preserve vision than by introducing new stem cells. The scientists also hope to develop therapies that will allow corrections of various forms of visual impairment. Further studies are underway, focusing on certain proteins that influence the development of photoreceptors. Alteration in the genetic code may allow scientists to influence how the retina develops, allowing them to treat certain conditions where the rod and cone photoreceptors die separately from each other.

Systems & Synthetic Biology

Scientists from the Imperial College London have developed a new method of construction that allows them to shorten the time it takes to create new parts for microscopic biological factories. Currently, the parts must be individual tested and built from scratch; lengthening the time it takes to mass produce. To build parts using the current method, scientists must re-engineer DNA in the cell and then observe the effects. If all goes according to plan, the scientists store the part’s specification in a catalog.

Now, scientists have demonstrated that they are capable of doing the same process in a test tube, by extracting the cell machinery that produces mRNA and proteins, and providing them with the appropriate proteins and energy molecules. The re-programmed DNA is then added to the solution and the scientists observe the in-vitro. With testing no longer limited to being in cell, scientists can now mass produce the cell like environment, and test multiple strands of re-programmed DNA. Further research is going into constructing a wider range of parts and devices using this method, and the automation of the process. Eventually, they hope that this leads to an “industrial revolution” of sorts, where these parts can be mass produced.
Imaging

New developments in CT scanning technologies and imaging reconstruction techniques allow doctors to reduce the radiation doses that patients receive. This new modeling approach is known as model-based iterative reconstruction, or MBIR. Traditionally, imaging sensors and software are designed to detect and measure a certain property. MBIR does the inverse, collecting huge quantities of data, and then getting rid of extraneous information using specialized algorithms and models. This results in a new CT scanning technology that allows physicians to obtain high-clarity images at previously unattainable low radiation doses. Trials have shown to reduce radiation exposure by 78%. Current CT scanners are restricted in their use due to high the radiation dosages. Eventually, scientists and researchers hope that with MBIR, 3-D CT images would only require the same amount of radiation as conventional x-rays, allowing widespread use.

Biomechanics

The U.S. Food and Drug Administration, approved a new retinal prosthesis, the first ever implanted device to treat adults with advanced retinitis pigmentosa. Retinitis pigmentosa, or RP, is a genetic disease that causes damage to the light sensitive cells that line the retina. As the cells degenerate, patients lose sight and night vision. Further damage results in the loss of central vision, eventually leading to blindness.

The entire device has many components, including a small video camera, a transmitter mounted on eyeglasses, video processing unit, and implantable artificial retina. All are designed to perform the function of degenerated cells in the retina. The prosthesis, called the Argus II Retinal Prosthesis System, is designed for use in adults with severe RP who have little to no light perception, and certain other preconditions necessary for the prosthesis to work, such as an intact inner layer retina function. This surgically implanted prosthesis will help them perceive images and movement.
Jumble: Biomedical Edition
By Alexander Summers

Using the hints, unscramble the letters to form a word related to BME. Then unscramble the circled letters to form a word at the bottom. The first person to send the successfully completed jumble to UCDBMES@gmail.com will win a $5.00 gift card. Only current UCD students, staff, and faculty may enter.

GGNOISSEANE  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Making new paths for blood to go)

RCGCRDORAAELMTO  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Related to Einthoven's Triangle)

DCRMHANOIITO  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: These guys make you ATP)

TEMTHOCIRA  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Related to red blood cells)

RTIPNUOYPLCE  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Stem cell with much potential)

LUNSRODTUA  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Sonograms make use of this)

PIDALSAM  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Use these when cloning)

ABMTLA  _ _ _ _ _ _ _ _
(Hint: A programming language you should get familiar with)

NDOHTEROCCY  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Osteocyte : Bone:: _____ : Cartilage)

Advice:  _ _ _ _ _ _ _ _ _ _ _ _
(Hint: Advice on how to survive the undergraduate curriculum at UC Davis)
Interview With an Undergraduate Researcher
By Alexander Summers

Courtney Gegg is a third-year BME specializing in biomechanics. She works in Dr. Athanasiou's tissue engineering lab and is mentored by graduate student Jeni Lee.

What does your research focus on?

The goal of our lab is to create neocartilage with mechanical, histological, and biochemical properties that mimic those of native cartilage. We do this by altering the chemical and mechanical stimuli of articular chondrocytes during the cell culture process. I like to tell people that the Athanasiou lab has already created a successful recipe for making neocartilage and now we just make small modifications to the recipe to perfect it.

What are the clinical applications of your research?

Arthritis is the leading cause of disability in the United States. While surgical treatments for arthritis have proven somewhat successful, there are often many limitations to the surgery. Because of this, the goal of cartilage tissue engineering is to provide a permanent solution to restore tissue function.

Did any skills from your course work help you with your lab position?

Most of the techniques I use in lab were acquired in the Athanasiou lab. However, as I start taking upper division courses, it's exciting because I can see the correlation between the topics we learn in class the applications in lab.

How often do you interact with the people in your lab?

I work closely with Jeni and interact with her almost every day as she mentors me. I don't get much mentoring from other graduate students, but they are always willing to help me if I get stuck. One of the ways our lab stays connected and informed is through our weekly lab meetings. The lab meetings are great ways to keep all members in the lab up to date on all the projects being done. Every week, 3 or 4 lab members present their latest data and other members critique and offer suggestions.

How did you hear about the lab position?

During my second year at UC Davis I wanted to join a research lab because my school work was mostly theoretical and I wanted some hands-on experience. I went to the UC Davis biomedical engineering website and read the biographies of the faculty members and looked at their recent research advancements. I saw Dr. Athanasiou's lab website, was interested in the work his lab was doing, and skimmed over a few of their most recently published papers.
How did you apply to the position?

I emailed Dr. Athanasiou briefly saying who I was, what interested me about his lab in particular, my qualifications, and asked to meet with him to discuss possible undergraduate research opportunities. He sent the email to Jerry Hu, our lab manager, who I met with for an interview.

What are your plans after graduating?

After graduation, I would like to attend graduate school to obtain a PhD in biomechanics. Then I plan to work in industry for a biomedical company to design prosthetics.

How will this research help you with your goal of graduate school?

One of the main reasons I joined a research lab was to see if research was something I enjoyed and wanted to pursue. Now that I know I enjoy research, I am using the opportunity to learn about the field. I get to talk to Jeni about her experiences as an undergraduate, her application process to graduate school, and basically the “inside scoop” on graduate school.

It’s super helpful and comforting to be mentored by someone that has experienced all that I am experiencing and will experience in the future.

What advice do you have for other undergraduates as they look for research positions?

I think focusing on your course work and getting a solid academic foundation before you add on lab work, which can be around 12 hours per week, is essential.

I also would encourage undergraduates who are looking for a research position to take a chance and put themselves out there. I remember emailing professors and being super nervous because I didn’t know if they would email me back or even read my email. But what’s the worst that could happen? They don’t get back to you or tell you they don’t have any openings, and you move on. I know BMES also provides a lot of great opportunities to interact with professors and get a chance to hear about their research. If you have any questions, feel free to ask me or any other undergraduate researchers...we would love to talk with you! Good luck!