Dr. Giorgio Elected to the BMES Board
IVY LEE

BMES 2015 Meeting
AMY HWANG

Making the Most of Your Summer
RYAN SPEARS

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Dr. Giorgio Elected to the BMES Board

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If you know what you’re going to do, make connections, go to the BMES meetings, put yourself out there, and think outside the box.

Congratulations are in order for Dr. Todd Giorgio on his recent election to the 2015-2018 Board of Directors of the Biomedical Engineering Society (BMES)! Dr. Giorgio is a Professor of Biomedical Engineering, Chemical Engineering, and Cancer Biology, as well as Chair of the Department of Biomedical Engineering here at Vanderbilt. He earned his Ph.D. in Chemical Engineering from Rice University and B.S. in Chemical Engineering from Lehigh University.

The BMES has over 6,500 members to date and is the leading society for the biomedical/bioengineering field. With only 12 members of the Board of Directors, the positions are very selective. The Board is split up into groups of four, and each group holds their position for three years. The process of becoming part of this select 12 starts with a nomination from a standing member. From there, the rest of the Board votes and selects the top four candidates out of the nominees to become the newest group of members. Being elected to the BMES Board is not only a great personal accomplishment, but Dr. Giorgio says “It also provides great visibility for the department at Vanderbilt.” Other members come from other prestigious institutions across the country, such as Duke, Cornell, and Northwestern to name a few.

The Board meets twice a year, once at the annual BMES meeting and once separately. One of their responsibilities includes planning that annual meeting. They determine most of the programming, how resources will be allocated, which scientific sessions will take place and where the meeting is located. The annual meetings draw in huge crowds every year and are a great opportunity to learn more about current research and network with other students and professors from across the country in the same field. Dr. Giorgio explains that “Currently, the meetings are mostly research based, as BMES is heavily devoted to supporting undergraduate research.” Next year’s meeting will be held in Minneapolis, Minnesota, also the home of Medtronic, so perhaps we will see this new initiative in action.

Dr. Giorgio and fellow board members are also in the process of working on a few higher level initiatives. They are currently thinking about how to incorporate more industry into BMES. How will this benefit students? Their goal is to support student-employer networking and ultimately student job placement. As a closing thought, “My advice to future BME graduates and undergraduate students at Vanderbilt is to start early. If you know what you’re going to do, make connections, go to the BMES meetings, put yourself out there and think outside the box.” –Dr. Giorgio
This year’s Biomedical Engineering Society annual meeting was held in the beautiful city of Tampa, Florida at the Tampa Convention Center. There was a record-breaking number of over 4,000 attendees, with nearly 2,400 scientific research presentations comprised of over 900 oral presentations and 1,500 poster presentations. The four day-long conference also held a potpourri of other events, from mentoring sessions to LGBT dessert socials to diversity-celebration events.

There were scores of great speakers, one of whom was Kevin Carroll. This prosthetist was made famous by the movie ‘Dolphin Tale,’ a movie about the prosthetic tail he made for the injured dolphin, Winter. His actual day job is working with patients who have lost limbs to diabetes, vascular disease, trauma, and other issues. Inspired by his patients’ indomitable spirit, he urged attendees to pursue their research relentlessly and “think about the individuals who are going to gain from the fruits of your labor.”

Conferences are fantastic for networking, even on the undergraduate level. Undergraduate poster presentations were attended by professors looking to recruit graduate students. Of the events involving Vanderbilt attendees, ten were undergraduate presentations, six were post-undergraduate presentations, and ten were platform talks. Areas of research included estimating metabolism with symbolic regression software, paper-based rheological flow assay for simplified sickle cell diagnosis, and bacterial sepsis therapeutic design guided by a nanoparticle-based model.
Many companies and schools held booths in the exhibit with the intention of advertising their products or recruiting faculty and graduate students, respectively. Vanderbilt’s own booth was among these exhibits, manned by Dr. Lowery along with other Vanderbilt attendees on their free time such as Poojitha Matta and Attyya Houston shown left and right, respectively, on the above left picture. Visitors spoke with Vanderbilt representatives while assembling free-form Lego constructions and received lots of freebies such as cones, pens, hats and candy.

After the daytime events, attendees explored the Tampa scene or relaxed at after-hours BMES-hosted events. SyBBURE attendees, for example, went kayaking on the waterfront to watch the sunset. BMES Bash, a conference-wide celebration, had a few engineers and BMES members perform in a band along the River Terrace of the Tampa Convention Center. Vanderbilt attendees held their own cocktail reception and served appetizers and drinks. Faculty, students, and alumni were all invited. Many people came to the reception, among which were Dr. Giorgio, Dr. Lowery, Dr. Sung, Dr. Marasco, undergraduate students, graduate students, and post-doctoral researchers.
Summer is the time to distinguish yourself. Everyone at Vanderbilt, especially those in our major, knows that they have to do all they can to prepare themselves to compete with similarly qualified individuals at our peer institutions. However, a well-rounded background can be difficult to achieve because often extramural work experiences can be incompatible with the being a full-time student. Research is a viable option, but finding that right match is a difficult balance during the academic year. That said, if you do find something you are passionate about, summer will give you the chance to prioritize this work without the whirlwind of obligations that comes with an engineering course load during the academic year.

Just as important as what it contains is what your resume lacks. Ultimately you are here at Vanderbilt to prepare yourself for your future. A core part of that is determining which field you want to develop a career. As you learn and become more acquainted with the multitudes of fields available to you, you will get a sense of what does and does not interest you. Still, a good bit of that process comes down to trial and error and you will be far happier if you explore your interests on this side of graduation rather than the other.

It is also easy to overlook the non-academic proficiencies you require, both professional and general life skills. Working environments inevitably vary from one to the next, but the level of professionalism and the expectations can be quite different from what you find in your day-to-day college life. Understanding the difference between balancing five courses versus managing one full-time job will provide a head start on acclimating to a given role. Even when it comes to what you wear, summer experiences can help you learn about different environments and are sure to reduce anxiety in ‘fitting’ into your future career.
The summer is also a time to develop life skills that we are at times entirely isolated from on Vanderbilt campus. There isn’t a meal plan at the grocery store. If you take a position that is away from home, you will learn how to make a housing search that is more than filling out a ballot ... and that gas, electricity, furniture, and Wi-Fi aren’t included in the package. The summer can be a time to expose yourself to the realities of the next stage of life which campus life insulates us somewhat. While you may not worry about over typical breaks, it’s a massive part of becoming and independent, self-sustaining adult.

So back to biomedical engineering: What do we do during the summer?

One common path is research. Many of the faculty in Biomedical Engineering at Vanderbilt are doing incredible things in their research fields. Having their laboratories on campus gives us powerful opportunities to not only be exposed to their work but also to join it. Operating at the edge of human understanding is an attractive prospect that many of your classmates will be or have already been drawn to and will continue to pursue in graduate school. The summer can give you a taste of what graduate life in biomedical engineering is like.

Vanderbilt offers several programs specific to summer research experiences. Two of the most well known are Vanderbilt University School of Engineering Summer Research Program (VUSESRP) and the Vanderbilt Summer Science Academy. Additionally, year-long programs such as the Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE) also present opportunities for the summer. Many other schools offer similar experiences; for example, Emory University has an analogous program called SURE (the Summer Undergraduate Research Experience). Other institutions such as the Mayo Clinic and government agencies also host similar undergraduate research programs. Two Vanderbilt seniors in BME, Lauren Severance and Kevin Humphrey, participated this past summer in the Biomedical Engineering Summer Internship Program (BESIP) offered by the National Institutes of Health. Most of these programs operate in a similar fashion offering focused group activities to learn more about research with a substantial amount of time devoted to conducting research under the supervision of the lab. Deadlines for these summer research programs are typically early in the spring semester, approximately first two weeks of February.

Also, if you are part of a lab, be sure to ask your preceptor about the summer. Turning academic year research involvement into a paid full time summer research experience is not unusual. The reverse is true too; summer can often serve to start something that continues into the school year.
Industry is somewhat more variable, as companies offer internships independently, and with a range of required commitments and expectations. Positions are typically advertised on official websites, but many companies, especially the smaller ones, don’t have defined internships. They will simply consider you for a temporary position if you contact them. Such a task of identifying and then pursuing positions can be daunting, but thankfully Vanderbilt offers a number of resources to facilitate the process.

First, the Center for Student Professional Development (CSPD) offers a wealth of services, from resume critiques to mock interviews. There are a number of coaches at the CSPD who can help you organize your job search and set you in the right direction. The CSPD also offers Doreways, an online job search tool with a variety of features. One of the most attractive aspects of Doreways is its extensive database of internships that employers advertise directly to Vanderbilt students. With many, you need not even leave the Doreways page to apply.

OneSource and First Research, both of which can be accessed through the VU libraries page, are fantastic tools for identifying companies offering internships that interest you. You can even find key information on companies, providing you a platform to educate yourself on potential employers.
VUconnect, run by the Alumni Association, puts you one click away from Vanderbilt alumni who are willing to be contacted by students. Once you have identified a position in which you are interested, check VUconnect. You might just find somebody willing to talk to you about the position. You can also contact Vanderbilt alumni through other means, such as LinkedIn or email. You might be surprised how many people are willing to help you if you show initiative.

Research and industry might be the two main directions for biomedical engineers, but don’t feel trapped. The field is anything but limited. Clinical or social work, for example through Engineers Without Borders, will give you intimate exposure to the point of care that, if nothing else, can help you understand where your skills fit in those settings. Working with nonprofits such as Project C.U.R.E. can also be a viable option, especially if you are interested in addressing needs in low-resource communities. In addition, policy and advocacy related to biomedical engineering on both the federal and state level are options that are rarely discussed but of critical importance. Want to work at the White House on science and technology policy? There are programs for that. Want to work toward renovating the way introductory science courses are taught? Check out the Association of American Universities or the American Society for Engineering Education. If there is something you are passionate about, whether science-based or not, there are policy-based opportunities around it. The CSPD offers a STEM Policy and Advocacy fall break program that can give you an idea of what working in that field is like, but if it sounds like something that might interest you, start looking. The opportunities are there.

Well-defined programs tend to have due dates a few months in advance of summer, but if you find yourself at the end of spring semester with nothing lined up, keep in mind that Vanderbilt operates on an early schedule compared to other organizations. There are still opportunities to be had. Many policy-related jobs, for example, won’t be listed until a few weeks before they need to be filled. Also, do not be shy with the faculty. Talk with professors—ask them if they know of anything available, if they’ll update you if they hear about something, or if they know somebody better to talk to on the matter. Investigate where to look and then make an effort to search and apply.

If you know what you want to do, the summer is your chance to start early; if you only think you know what you want to do, it is the time to test that out; and if you no idea what you want to do, it is your chance to explore. It is also important to keep in mind that you do not have to tailor your summers directly to biomedical engineering. While it might be optimal to do so, if there is a working experience you are absolutely passionate to do, then go do it. Find something that will excite you because talking about it at your first interviews on the other side could make all the difference. Again, the summer is your chance to distinguish yourself, to establish what you offer that is unique. It does not have to be BME-centric. Maybe you’ll discover something about yourself. Maybe you’ll find something that interests you more than a job in industry. Who knows? Maybe this summer will change your life.
WHAT IS SyBBURE?

- A community of researchers at and above the undergraduate level focused on immersive, year-round conducting and presenting of research
- Students work in a variety of labs on Vanderbilt campus in fields of their choosing
- Students collaborate in ThinkTank projects ranging from healthcare-based software to rapid diagnostic tests
- Weekly meetings for updates, outreach events, and group bonding activities
- Students are provided stipends
- Headquarters located on the 8th floor of Stevenson Center 5

HOW TO APPLY

- Apply online at sybbure.org
- Admissions are rolling, but are generally made prior to the Summer, Fall and Spring terms.
- Qualified applicants will be contacted by the SyBBURE admissions team for an interview
- Questions? Contact Director Chrissy Marasco at chrissy.marasco@vanderbilt.edu
The Biomedical Engineering Program at Vanderbilt is continually striving to be the very best biomedical engineering program in the country. Your support will help us achieve that objective. Please consider donating to the program—this will directly impact the resources for our undergraduates, the quality of the cutting-edge research taking place here in our laboratories, and ultimately the visibility of this very unique program.

Todd D. Giorgio, Ph.D., Chair of Biomedical Engineering

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