

Biomedical Science Undergraduate Major Annual Report 2017

**Greetings from the Biomedical Science Leadership Team,
John Gunn, PhD and Steven Mousetes, MEd, MLS**

We are extremely pleased to share the accomplishments of our Biomedical Science (BMS) students. This annual report features the entering freshman cohort, the graduating class of 2017, research achievements, and more. The BMS students are a highly industrious group. While excelling in the classroom and lab environments, they are involved in diverse co-curricular activities.

The first BMS freshman cohort was admitted in 2005; now, we have graduated nine cohorts (133 alumni). Thus far, 92% of the BMS alumni have pursued graduate/professional degrees. The breakdown of the 92% is as follows:

- MD: 55%
- MD-PhD: 10%
- PhD: 11%
- Other graduate/professional degrees: 24%
[This includes dentistry, nursing, optometry, physician assistant, public health, etc.]

Our students continue to succeed in the classroom. For the 2016-2017 academic year, BMS students had a combined average GPA of 3.716. We greatly appreciate the faculty who instruct the BMS courses and provide our students with a dynamic learning experience.

Research is one of the hallmarks of the BMS major, and our students continue to excel in their labs. Eight BMS students were awarded grants by the Office of Undergraduate Research and Creative Inquiry to support their research endeavors for summer 2017. In addition to presenting at on-campus research fora, four BMS students (Jacob Grimmer, Holden Kelley, Alex Lacey, and Clinton Stamper) were selected to present at the 2017 National Conference on Undergraduate Research held at the University of Memphis. Further, BMS senior, Mason Fisher, was one of eight Ohio State undergraduates selected to present his research at the University of São Paulo in Brazil. We sincerely appreciate the expert mentoring our students receive from their principal investigators.

Meaningful involvement in co-curricular activities is important to our students. Their activities range from volunteering at the Wexner Medical Center to being active members in fraternities and sororities. There were 14 BMS students inducted in Ohio State's class honoraries. The BMS BuckeyeThon Team (pictured at left) raised \$5,300 for Nationwide Children's Hospital. Matt Davis received the Outstanding Senior Award from the Office of Student Life, and Karan Naik was selected as a member of the 2017 Homecoming Court. These are just a few examples of our students' involvements.



We certainly derive great professional satisfaction from interacting with our students. In addition to leading the BMS major, we serve as the students' faculty advisor (Dr. John Gunn) and academic advisor (Mr. Steven Mousetes), and we teach in the major. Enjoy reviewing the excellence of our current students and alumni!

December 2017

Biomedical Science (BMS) Major

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The BMS annual report highlights and celebrates the accomplishments of BMS students and alumni. Previous annual reports are available on the BMS website.



THE OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE

Welcome, BMS Freshmen!

Kriti Agrawal Centerville, OH Centerville High School	Sabrina Amin Powell, OH Metro High School	Jerome Bey Versailles, OH Versailles High School
David Chesko Loveland, OH Archbishop Moeller High School	Abigail Foster Powell, OH Liberty High School	Bhageerathi Ganesan New Albany, OH New Albany High School
Adam Gerhardt Cincinnati, OH Elder High School	Austin Hare Delaware, OH Bishop Watterson High School	Nicole Hoeflinger Springboro, OH Archbishop Alter High School
Sanjana Kothari Louisville, KY duPont Manual Magnet High School	Rahul Kumar Plain City, OH Metro High School	Daniel Lesman Dublin, OH Dublin Coffman High School
William Ma Dublin, OH Dublin Jerome High School	Resham Mawalkar Westerville, OH Westerville Central High School	Dana Middendorf Cincinnati, OH Turpin High School
Evan Neczypor North Royalton, OH North Royalton High School	Devin O'Piela Dexter, MI Dexter High School	Lisa Poffenberger Cincinnati, OH Summit Country Day School
Nikhil Pramod New Albany, OH New Albany High School	Nathan Rodrigues Mason, OH William Mason High School	Matthew Seimer London, OH Jonathan Alder High School
Anand Shah Centerville, OH Centerville High School	Divya Shankar Dublin, OH Dublin Jerome High School	Shreya Shaw Centerville, OH Centerville High School
Maxwell Wilberding Liberty Township, OH Saint Xavier High School	Zachary Wilson Dover, OH Dover High School	

Autumn 2017 Freshman Admission

Total Applicants: 163 (1.2% increase from 2016)

Interviewed: 51

Enrolled: 26

- Average Calculated ACT: 33.6
- Average High School Class Rank: 96.6 (top 3.4%)

Merit-based Scholarships

Biomedical Science (\$1,000 per year): 24

Distinction (full cost of education): 1

Eminence (full cost of education): 1

Excellence (full in-state tuition): 2

Maximus (\$5,000 per year): 15

National Buckeye (\$12,500 per year): 2

Provost (\$2,500 per year): 6

Based on their academic excellence in high school and ACT/SAT scores, all BMS freshmen were awarded at least one merit-based scholarship. For details about Ohio State's merit-based scholarships, go to meritawards.osu.edu.



Autumn 2017 Enrollment at The Ohio State University

Total Enrollment: 66,444
Columbus Campus: 59,837
Undergraduate (Columbus): 45,946
Freshmen (Columbus): 7,136
Average ACT: 29.2
Average SAT: 1340

For additional information on enrollment at Ohio State, go to enrollmentservices.osu.edu.

Congratulations, BMS Class of 2017!



**Members of the Class of 2017
(hometown and post-graduation pursuits)**

Alison Anderson <ul style="list-style-type: none"> • Reynoldsburg, OH • Employed: Chemical Abstracts Service and The Ohio State University 	Matthew Davis <ul style="list-style-type: none"> • Chatham, NJ • MD: Rutgers New Jersey Medical School
Emily Durbak <ul style="list-style-type: none"> • Sylvania, OH • MD: Cleveland Clinic Lerner College of Medicine 	Erin Glankler <ul style="list-style-type: none"> • Cleves, OH • Gap year: Cincinnati Children's; applying to MD programs
Margaret Grau <ul style="list-style-type: none"> • Chardon, OH • MD-PhD: Vanderbilt University 	Hannah Harris <ul style="list-style-type: none"> • Cheyenne, WY • MD: The Ohio State University
Ellie Lee <ul style="list-style-type: none"> • Dublin, OH • MSW: The Ohio State University 	Sohom Manna <ul style="list-style-type: none"> • Beavercreek, OH • MPH: The Ohio State University
Jennifer Maskarinec <ul style="list-style-type: none"> • Washington, PA • MD: The Ohio State University 	Elina Misicka <ul style="list-style-type: none"> • Hilliard, OH • PhD: Case Western Reserve University
Bryce Ringwald <ul style="list-style-type: none"> • Spencerville, OH • MD: The Ohio State University 	Lilianna Suarez <ul style="list-style-type: none"> • Dublin, OH • MD: Duke University

Degree Awarded: Bachelor of Science in Health and Rehabilitation Sciences

Latin Honors: 10

- Magna cum laude (3.700-3.899): 8
- Summa cum laude (3.900-4.000): 2

Honors in the School of Health and Rehabilitation Sciences (SHRS): 10

- With Honors (completed SHRS Honors Program): 7
 - With Honors Research Distinction (completed SHRS Honors Program and Thesis): 3
 - This is the highest honor bestowed upon an undergraduate student.
- Thank you to the thesis advisors: Ajit Chaudhari, PhD (Hannah Harris), Andrew Fischer, PhD (Lilianna Suarez), and Jill Heathcock, PhD (Emily Durbak)*

Minors: 8

- Chemistry, Economics, Global Public Health (3), Sexuality Studies, Spanish, and World Politics

Summer 2017 Experiences

During the summer, many BMS students remain on campus to work in their research labs and/or take courses. However, some BMS students take advantage of special opportunities to conduct research, provide service, or serve as interns, both domestically and abroad.

Alicia Bao: National Institutes of Health (NIH)



"I participated in the NIH Summer Internship Program, a 10-week research internship at the NIH's main campus in Bethesda, MD. During my time there, I worked in Dr. Frederic Barr's lab at the National Cancer Institute. I studied fusion-positive rhabdomyosarcoma, an aggressive pediatric cancer that is associated with the translocation of the PAX3-FOXO1 genes, which are transcription factors that promote myogenesis and bone formation. My project tested inhibitors to determine if they are able to target this translocation. The coolest part of this experience was seeing the bench-to bedside principle in action. My lab was in the NIH Clinical Center, the same building where clinical trials and inpatient care take place. I worked in the Department of Pathology, right down the hall from the autopsy and biopsy rooms, which I was fortunate to tour. It was reaffirming to be in an environment where the connection between research and medical care is not only valued but also applied - in one of the world's leading research facilities! I was living very close to Washington D.C., so I spent most of my free time hanging out in the city with fellow interns. We watched the national fireworks from the steps of the Lincoln Memorial and were actually so close to the Reflecting Pool that the debris rained down on us the entire time."

Traci Blue: England, France, Germany, and Poland

"I participated in the 'U.S., Europe, and the Second World War: Intersections in 20th Century History' education abroad program with 22 other Ohio State students. This program focused mainly on the roles and contributions of France, England, Germany, and Poland throughout the war. During the month abroad, I was able to learn about the war from perspectives I had never previously been conscious of and truly immerse myself in the happenings of World War II. One of the main components of the program is an individual research project for each student that is studied throughout the spring semester and reported on while in Europe. I chose to combine my interests in history and medicine by focusing my research on military medicine, more specifically on the rise of blood transfusions and mental evaluations during the war. Participating in this program has been the most enriching experience I've had since attending Ohio State. Seeing and standing in places (e.g., Churchill's bunker, Omaha Beach, Auschwitz, etc.) that I read about in textbooks gave a whole new understanding to the war that can't be explained without being present at those sites. I made wonderful friends with whom I was able to sightsee and share experiences. This program was unforgettable and left me with memories to last a lifetime."



Austin Keller: Spain



"I had the opportunity to participate in the 'ISA Salamanca, Spain: Spanish Language and Culture' education abroad program in the small town of Salamanca, Spain (which is west of Madrid). During this seven-week program, I completed three Spanish courses focused on grammar, composition, and culture for a total of eight credit hours, with two courses counting towards my minor in Spanish. On the weekends, I was able to travel to several different regions of Spain and Portugal with ISA, while also taking an independent excursion to Amsterdam in the Netherlands with a few other Ohio State students who were participating in the program. While in Spain, I stayed with a host family who greatly contributed to my learning of the language, culture, history, and customs of Spain. Studying abroad in Spain allowed me to gain experience traveling internationally and develop my Spanish speaking abilities. Further, it provided me a chance to partake in a culture that is vastly different from my own."

Summer 2017 Experiences (cont'd.)

Alex Lacey: Facebook



"I completed an internship at Facebook in Menlo Park, California. I worked on the Community Operations team, which deals with all of the user-submitted abuse reports and inappropriate content on Facebook and Instagram. I was able to apply much of my data analytics knowledge learned from my research experiences within the BMS major. I learned how data is used to make decisions in industry (as opposed to academia). More importantly, I was also able to learn about the variety of different roles in the tech industry and find the role best suited for me: product management. Although my career interests have strayed away from the direct subject matter of the BMS major, the soft skills I've learned through the BMS courses - writing, presenting, teamwork, and critical thinking - have provided me a strong foundation. I have already been offered and accepted a position at Microsoft that I'll begin after graduating in May 2018."

Molly McNamara: The Painted Turtle

"I worked as a program counselor at The Painted Turtle in Lake Hughes, California. The Painted Turtle is a medical specialty camp for children ages 6-17 who have serious medical conditions. As a member of the Adventure Team, I worked closely with five other program counselors to facilitate the high ropes course, archery, and team building activities for the campers. Most of the kids at The Painted Turtle would not otherwise be able to attend a camp due to the complex nature of their illnesses and the lack of medical infrastructure in place to support their needs. The camp strives to be a place where we say 'yes' to things because so many of our campers' lives have been dominated by 'no.' This experience grew me in ways that I never could have anticipated and was by far the most meaningful summer experience I've had. To witness the resiliency of the kids, see their smiles and laughter, know that they are having the best week of their summer, and be an integral part of facilitating friendship and fun is incredibly rewarding."



Updates on the BMS Class of 2013

The class of 2013 is the fifth graduating class from the BMS major. Listed below are education/career updates from the members of this class.

Amie (Draper) Barda: Continuing PhD in Biomedical Informatics at University of Pittsburgh; earned MS in Biomedical Informatics from University of Pittsburgh

Russell Bonneville: Continuing PhD in Biomedical Sciences at The Ohio State University; selected for the NIH Systems and Integrative Biology Training Program

Nicholas Denton: Continuing PhD in Biomedical Sciences at The Ohio State University; conducting dissertation research at Nationwide Children's Hospital; published in *Biomedicine*

Mark Doles: Graduated from The Ohio State University College of Pharmacy summa cum laude with Doctor of Pharmacy; completing PGY1 pharmacy practice residency at Mount Carmel West Hospital (in Columbus, OH)

Corey Fete: Graduated from The Ohio State University College of Pharmacy cum laude with Doctor of Pharmacy; working as a registered pharmacist for Walgreens (in Columbus, OH area)

Alex Graham: Working as a report coordinator for MPI Research (in Mattawan, MI)

Kristen (Duckro) Graham: Graduated from University of Dayton with Master of Physician Assistant Practice; working as an internal medicine physician assistant at Bronson Methodist Hospital (in Kalamazoo, MI)

Nicholas Jarjour: Continuing PhD in Immunology at Washington University; published in *Journal of Experimental Medicine*

Calvin Lam: Graduated from The Ohio State University College of Dentistry with DDS

Michael Ratti: Graduated from The Ohio State University College of Medicine with MD; completing pediatrics residency at UMass Memorial Children's Medical Center (in Worcester, MA)

Monica (Lachey) Schroeder: Graduated from Emory University Rollins School of Public Health with MPH; working as an epidemiology program analyst for Council of State and Territorial Epidemiologists (in Atlanta, GA)

Shrey Shah: Graduated from University of Cincinnati College of Medicine with MD

Ronald Siebenaler: Continuing MD-PhD at University of Michigan; published in *Nature Communications*; in 2017, earned awards from NIH, American Association for Cancer Research, Cellular and Molecular Biology Annual Symposium, University of Michigan Comprehensive Cancer Center Research Symposium, and American Society of Clinical Oncology Interest Group

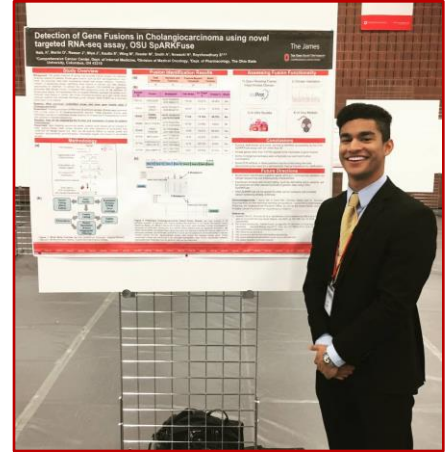
Erica (Schmenk) Siefker: Graduated from Ohio Dominican University with MS in Physician Assistant Studies; working as urology physician assistant at Lima Memorial Health System (in Lima, OH)

Sarah Swager: Graduated from The Ohio State University College of Nursing with MSN (Pediatric Primary Care Nurse Practitioner); working as pediatric nurse practitioner at Nationwide Children's Hospital Genetics Clinic (in Columbus, OH); published in *Journal of Neuromuscular Diseases* and *Human Molecular Genetics*

Research Achievements for 2016-2017

On-campus Research Fora

Forum	Students
Fall Student Poster Forum September 15, 2016 (undergraduateresearch.osu.edu)	Total: 13 Seniors: 3 Juniors: 7 Sophomores: 3
Denman Undergraduate Research Forum March 29, 2017 (denman.osu.edu) Awards: 3 (all first place) <ul style="list-style-type: none"> • Elina Misicka, BMS senior (Category: Numbers and Graphs) • Karan Naik, BMS junior (Category: Genes, Proteins and Cells) • Lilianna Suarez, BMS senior (Category: Behavioral and Cognitive Neuroscience) 	Total: 24 Seniors: 4 Juniors: 16 Sophomores: 4
OSUWMC Trainee Research Day April 13, 2017 (researchday.osu.edu) <ul style="list-style-type: none"> • Neil Makhijani, BMS junior, was selected as the sole undergraduate student to present his research as part of the Allan Yates Memorial Trainee Speaker Series. • Holden Kelley, BMS junior, was awarded an outstanding research trainee travel grant. 	Total: 4 Seniors: 1 Juniors: 3



“Research allows me to apply my learning in the classroom and pursue answers to important medical questions. Working alongside distinguished experts, I have been challenged to think in new ways and constantly improve as a scientist. Sharing my work at the Denman Forum was the culmination of my time with Dr. Roychowdhury and his team, an invaluable part of my undergraduate experience.”
 ~ Karan Naik

2017 Pelotonia Fellows

The Pelotonia Fellowship Program trains promising and accomplished Ohio State students at all levels and from any discipline who have the potential to become independent cancer researchers.

Student	Research Mentor
Alexandria Lenyo	Sameek Roychowdhury, MD, PhD
Neil Makhijani	Thomas Mace, PhD
Aman Prasad	Michael Caligiuri, MD
Maria Riley	Selvendiran Karuppaiyah, PhD

Internal Medicine “Grever” Internship 2017

Each year, Dr. Michael Grever, Chair of Internal Medicine, coordinates an intensive shadowing program for seven selected BMS students (rising juniors and seniors). For a six-week period (May-June), the interns divide their days between participating in rounds at the Wexner Medical Center and Nationwide Children’s Hospital and conducting research in their labs. This enables them to fully compare and contrast the clinical and research components of medicine. The Grever Internship began in 2006 and, to date, 78 BMS students have participated.

Intern/Student	Research Mentor
Nicholas Berry	Jeffrey Parvin, MD, PhD
Mason Fisher	Amanda Toland, PhD
Alexandria Lenyo	Sameek Roychowdhury, MD, PhD
Sophia Maharry	Albert de la Chapelle, MD, PhD
Nicholas Pappa	Traci Wilgus, PhD
Remy Powell	Steven Clinton, MD, PhD
Aman Prasad	Michael Caligiuri, MD

Biomedical Science Undergraduate Program Support Fund

This newly established fund provides enrichment grants to BMS students for activities and endeavors such as research, education abroad, internships, conferences, etc.

To donate to the Biomedical Science Undergraduate Program Support Fund, please go to go.osu.edu/giving then click on “Select a specific fund.” The fund number is 315983. If you need assistance with making a donation, please contact The Ohio State University Foundation at gifts@osu.edu or 614-292-2141.

Thank you for your support of the BMS major!

