

Biomedical Science Undergraduate Major Annual Report 2018

Biomedical Science now in the Department of Biomedical Education and Anatomy

The first cohort of Biomedical Science (BMS) students entered the major in 2005. The major sat at the intersection of the College of Medicine and the School of Health and Rehabilitation Sciences (formerly the School of Allied Medical Professions).

In 2016, the Department of Biomedical Education and Anatomy was formed in the College of Medicine. The mission of the Department of Biomedical Education and Anatomy is “to advance basic and clinical medical sciences education through innovative and integrated curricula and scholarship, as well as to advance and promote basic and clinical medical science faculty in the domains of excellence in teaching and biomedical education scholarship.”

In January 2018, the BMS major became housed in the Department of Biomedical Education and Anatomy, and the degree students earn became a B.S. in Biomedical Science. Dr. Daniel Clinchot, Vice Dean for Education in the College of Medicine and the Chair of Biomedical Education and Anatomy, shared, "Moving the BMS major into the Department of Biomedical Education and Anatomy serves to highlight the strengths of the medical disciplines. As a tagged degree, the BMS undergraduate major creates an academic environment that facilitates students learning the translational aspects of foundational medical sciences."

The relocation of the BMS major into the Department of Biomedical Education and Anatomy provided an opportunity to create the College of Medicine Honors Program. Dr. Melissa Quinn, Assistant Professor-Clinical in the Division of Anatomy, serves as the Director of the College of Medicine Honors Program. Dr. Quinn shared, “I am very excited and honored to serve as the first Director of the College of Medicine Honors Program. I am looking forward to working with an extraordinary group of students who are highly motivated and will push their respective fields forward. Seeing the growth of these students from the moment they step foot on campus to the time they graduate will be such a rewarding experience for both the students and our faculty.”



The Department of Biomedical Education and Anatomy has three core divisions: Anatomy, Bioethics, and Biomedical Education. Additionally, the department houses eight offices (e.g., Clinical Skills and Assessment Center, Office of Diversity and Inclusion, Office of Research Education, etc.). So, BMS is in good company!

The BMS class of 2018 is the first cohort awarded the new B.S. in Biomedical Science. In the remainder of this report, we hope you enjoy learning more about the BMS class of 2018, as well as information about the current BMS students and alumni.

December 2018

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!

| | | |
|--|---|---|
| George Abboud Centerville, OH Archbishop Alter High School | Fakhtah Abdulla Columbus, OH Metro High School | Gabrielle Besse Granger, IN Penn High School |
| Margaret Bohmer Toledo, OH Sylvania Southview High School | Varshita Chirumamilla Powell, OH Liberty High School | Laurel Cumby Eldersburg, MD Liberty High School |
| Allison Dang Gahanna, OH Metro High School | Nikhil Desai Brookfield, WI Brookfield Central High School | Vinodh Erukonda Beavercreek, OH Beavercreek High School |
| Tanish Gandhi Powell, OH Liberty High School | Joseph Gerard Webster, NY Webster Schroeder High School | Carla Goldsmith McMurray, PA Peters Township High School |
| Lexis Hughes Dublin, OH Columbus Academy | Meghan Hummel Seville, OH Medina High School | Preetham Kastury Mason, OH William Mason High School |
| Suraj Komatineni Mason, OH William Mason High School | Lucas Krupinski Aurora, MI Aurora High School | Nicholas Lenyo Huron, OH Huron High School |
| Gregory Owendoff Chagrin Falls, OH Notre Dame-Cathedral Latin | Avni Patel Powell, OH Liberty High School | Tatum Skladany Loveland, OH Milford High School |
| Ryan Smith Germantown, OH Valley View High School | Trevor Sobol Aurora, MI Aurora High School | Benjamin Templeton Corvallis, OR Corvallis High School |
| Diego Torres Guaynabo, PR Colegio Marista | Joseph Velazquez Phoenix, AZ Paradise Valley High School | Nicholas Yavornitzky Lorain, OH Saint Ignatius High School |

Autumn 2018 Freshman Admission

Total Applicants: 159

Interviewed: 49

Enrolled: 27

- Average Calculated ACT: 33
- Average High School Class Rank: 95.7(top 4.3%)

Merit-based Scholarships

Biomedical Science (\$1,000 per year): 23

Distinction (full cost of education): 1

Eminence (full cost of education): 1

Glenna Joyce (full cost of education): 1

Land Grant (full cost of education): 1

Maximus (\$4,000 per year): 15

National Buckeye (\$12,500 per year): 7

Provost (\$2,500 per year): 4

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 2018 Enrollment at The Ohio State University

Total Enrollment: 68,100
Columbus Campus: 61,170
Undergraduate (Columbus): 46,820
Freshmen (Columbus): 7,851
Average ACT: 29.3
Average SAT: 1338

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

Congratulations, BMS Class of 2018!



Members of the Class of 2018 (hometown and post-graduation pursuits)

| | | |
|--|--|--|
| Nicholas Berry <ul style="list-style-type: none"> • Muskego, WI • MD: Mayo Clinic | Nicholas Bishop <ul style="list-style-type: none"> • Eldersburg, MD • MD: University of Maryland | Anjali Doshi <ul style="list-style-type: none"> • New Albany, OH • Gap year: Nationwide Children's Hospital • Applying to medical school |
| Bradley Eichar <ul style="list-style-type: none"> • Wooster, OH • MD: University of Pittsburgh | Mason Fisher <ul style="list-style-type: none"> • Columbus, OH • Gap year: Fairfield Medical Center • Applying to medical school | Marie Jose Guerrero <ul style="list-style-type: none"> • Dublin, OH • Gap year • Applying to medical school |
| Holden Kelley <ul style="list-style-type: none"> • Cincinnati, OH • Gap year: Texas Biomedical Research Institute • Applying to physician assistant programs | Alexander Lacey <ul style="list-style-type: none"> • Dublin, OH • Microsoft: Program Manager • MBA: Stanford University | Neil Makhijani <ul style="list-style-type: none"> • Centerville, OH • MD: The Ohio State University |
| Molly McNamara <ul style="list-style-type: none"> • Dublin, OH • Gap year: Nationwide Children's Hospital • Applying to medical school | Karan Naik <ul style="list-style-type: none"> • Centerville, OH • MD: University of Pennsylvania | Christina Namakydoost <ul style="list-style-type: none"> • Powell, OH • MA (Bioethics): The Ohio State University • Applying to law school |
| Komal Paradkar <ul style="list-style-type: none"> • Mason, OH • MD: The Ohio State University | Remy Powell <ul style="list-style-type: none"> • Columbus, OH • MD: The Ohio State University | Maria Riley <ul style="list-style-type: none"> • Sunbury, OH • Gap year: The James • Applying to medical school |
| Stephen Rudolph <ul style="list-style-type: none"> • Cranberry Township, PA • MD: Temple University | Clinton Stamper <ul style="list-style-type: none"> • Ashville, OH • Amazon: Software Development Engineer | Ziyue Wang <ul style="list-style-type: none"> • Upper Arlington, OH • DO: Ohio University |
| Alexander Weiss <ul style="list-style-type: none"> • New Albany, OH • Gap year: Nationwide Children's Hospital • Applying to medical school | Jonathan Zins <ul style="list-style-type: none"> • Powell, OH • DPT: The Ohio State University | |

Degree Awarded: Bachelor of Science in Biomedical Science

Latin Honors: 19

- Cum laude (3.500-3.699): 4
- Magna cum laude (3.700-3.899): 9
- Summa cum laude (3.900-4.000): 6

Honors in the College of Medicine (COM): 20

- With Honors (completed COM Honors Program): 19
- With Honors Research Distinction (completed COM Honors Program and Thesis): 1

Minors: 6

- Bioethics (2), Business, Global Public Health, Music, and Substance Misuse and Addiction

Summer 2018 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.

Victoria Kocsuta: National Institutes of Health (NIH)

"I had the opportunity to conduct research through the NIH Summer Internship Program. I spent eight weeks in Bethesda, Maryland, at the main campus of the NIH in the Clinical Center researching under Dr. Irina Maric. My project primarily focused on identifying immunophenotypic and molecular characteristics of patients with hypereosinophilic syndrome. This topic was completely different from the infectious disease research I conducted at Ohio State; however, I used this opportunity to expand my knowledge in a different field. I learned many new techniques while at the NIH, including flow cytometry and next generation sequencing, which I know will be invaluable during my future career. During my time at the NIH, I also participated in a journal club focusing on cardiovascular health and attended many lectures discussing topics from genomics to cancer research. Overall, it was amazing to be completely immersed in research and scientific discovery for two months. The other great thing about this opportunity was being so close to Washington, D.C. I chose to live in between D.C. and Bethesda to take full advantage of being in such a historic and interesting city. I spent the evenings and weekends exploring all that Washington, D.C., has to offer. My experience at the NIH is one I will never forget!"



Kathryn Lane: Sweden

"I participated in DIS Stockholm, a month-long learning abroad program in Sweden. Through DIS Stockholm, I completed a course entitled Public Health Policy in Practice. Sweden is facing a number of current challenges, including achieving cost-effectiveness in health care and addressing public health concerns relating to migration and increasing inequalities. The course provided an overview of the Swedish health system in relation to the broader welfare state and in relation to other Scandinavian and European countries. I gained incredibly valuable insight into how Scandinavian countries, particularly Sweden, assess public health challenges through research, health information management, and economic evaluation. Additionally, I traveled to Dublin, Ireland, and Belfast, Northern Ireland, for one week as part of the course's study tour. We toured facilities such as the NIH and Eurofound. I was able to compare the health care system of Ireland to that of Sweden, and then to that of the United States. In my free time after class, I enjoyed going to museums, grabbing *fika* (a word for Swedish coffee and pastry trips), and hiking around the various archipelagos of Sweden. Most of all, this experience was incredible because I met some of the most amazing people, all from different universities around the world. Living with local Swedes was an experience I will never forget, and studying abroad was an invaluable experience, one which I would recommend to any student interested in traveling the world and experiencing new things."



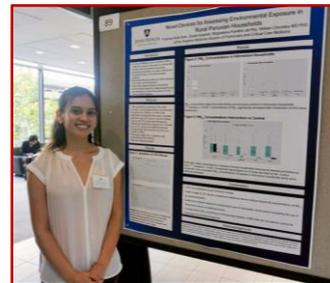
Esteban Trujillo: Finland and Estonia

"I participated in the Public Health Perspectives: Finland and Estonia education abroad program. This is a two-week program exploring the educational and socioeconomic outcomes that regulate health care delivery in both countries. This program enabled me to gain a better picture of the different aspects that have contributed to a high quality of life, particularly in this Nordic region. Finland is the current world leader in education and one of the best places to live, according to different population-based studies. We visited the National Institute of Health and Welfare of Helsinki, learned about rural life by staying on an organic farm in Jyväskylä, and toured the small town of Keuruu, where we were accompanied by local high school students who shared their personal and educational experiences growing up in Finland. Estonia, a nation rebuilding its identity after separation from the Soviet Union in the 1990s, is a rising nation that is working to establish dominant education and health care systems. We visited the United States embassy in Tallinn and the School of Public Health in Tartu. We received an overview of the very unique Wellness and Spa Management Design master's program in Pärnu. This was a unique educational opportunity, as I was able to gain a well-rounded understanding of the various socioeconomic factors that contribute to a high quality of life. Additionally, I had the privilege to explore a very advanced and unique part of the world by walking through the cities, enjoying the homemade Finnish and Estonian meals, and reflecting on the differences in our cultures."



Frances Avila-Soto: Johns Hopkins University

"I participated in a nine-week internship program at Johns Hopkins University in the Division of Pulmonary and Critical Care Medicine, where I worked with a team conducting clinical research in Puno, Peru. I assisted with evaluating data from a gas stove intervention study. The purpose of the study is to determine if the intervention reduced exposure to environmental hazards, such as particulate matter in the atmosphere, when compared to traditional biomass burning stoves. Coming from a basic science (immunology) background, clinical research was a new field for me, and I learned a lot about the design of clinical trials and large scale data analysis. In my free time, I explored Baltimore with other interns, who became close friends. We explored the food scene, went to festivals and events, and even took a weekend trip to New York. Overall, my internship experience was very transformative, as I spent a summer in a new city conducting research in a field unfamiliar to me. The support and opportunities provided to me by Johns Hopkins truly helped renew my passion for research and medicine."



Sophia Maharry: UC San Diego Moores Cancer Center



"What started as a simple conversation at a poster session during the American Association for Cancer Research Annual Meeting turned out to be a transformative experience for me as a researcher. I spent two months as a summer intern in the Computational Cancer Analysis Laboratory at the UC San Diego Moores Cancer Center, living in La Jolla (just north of San Diego) with another undergraduate from Ohio State. Together, we worked on improving a Python-based pipeline for creating "context maps" of human cancers. I specifically worked on generating maps of lung cancers, and then spent several weeks annotating the various subgroups within lung cancer. Besides learning how to code in Python, I also developed a passion for combining my prior wet lab knowledge with my newfound excitement about computational biology. We spent most of our weekends exploring beaches and cafés around San Diego (usually bringing our laptops with us to check on our code). I encourage students to take advantage of local or national conferences, especially as an opportunity to find career mentors or form research collaborations."

Updates on the BMS Class of 2014

The class of 2014 is the sixth graduating class from the BMS major. Listed below are education/career updates from 14 members of this class.

Elizabeth Butler: Graduated from Baylor College of Medicine with MS in Physician Assistant Studies; working as physician assistant at Cleveland Clinic Adult Epilepsy Center

Alexandra Butz: Graduated from University of Cincinnati College of Medicine with MD; completing pediatrics residency at Cincinnati Children's Hospital

Jordan Chambers: Continuing PhD in Molecular and Translational Medicine at Boston University School of Medicine; presented at the Society for Redox Biology and Medicine

Rachel D'Amico: Graduated from The Ohio State University College of Medicine with MD; completing internal medicine-pediatrics residency at The Ohio State University and Nationwide Children's Hospital

Callie Drohan: Graduated from the University of Pittsburgh School of Medicine with MD; completing internal medicine residency at University of Pittsburgh Medical Center; published in *Journal of Resuscitation*

Christine Fung: Continuing MD at The Ohio State University College of Medicine

Brian Hurwitz: Continuing MD-PhD at Weill Cornell Medicine; conducting research at The Rockefeller University

Andrew O'Neil: Graduated from Indiana University School of Medicine with MD; completing anesthesiology residency at IU Health University Hospital

Mark Rudolph: Continuing MD at University of Toledo College of Medicine and Life Sciences; published in *Breast Cancer Research and Treatment*

Tyler Siekmann: Graduated from The Ohio State University College of Medicine with MD; completing emergency medicine residency at Carolinas Medical Center

Katherine Stanfill: Graduated from Emory University Rollins School of Public Health with MPH; working as quality analytics consultant for Kaiser Permanente

Radhika Tampi: Graduated from Johns Hopkins Bloomberg School of Public Health with MHS in International Health Economics; working as health economist for INOVA Health System in the Center for Integrated Research; published in *Hepatology*

Chelsea Torres: Graduate from University of Southern Florida Morsani College of Medicine with MD; completing pediatrics residency at New York-Presbyterian/Columbia University Medical Center

John Wegman: Graduated from The Ohio State University College of Medicine with MD; completing family medicine residency at Fort Wayne Medical Education Program

Research Achievements for 2017-2018

| On-campus Research Fora | |
|---|--|
| Forum | Students |
| Fall Undergraduate Research Forum September 14, 2017 | Total: 19 Seniors: 3 Juniors: 14 Sophomores: 2 |
| Denman Undergraduate Research Forum April 3, 2018 Awards: 4 <ul style="list-style-type: none"> • Category: Drugs and Surgical Interventions to Improve Clinical Outcomes First Place: Eaman Abay (sophomore) • Category: Molecular Genetics and Genomics First Place: Alicia Bao (junior) • Category: Toward Precision Cancer Medicine Second Place: Maria Riley (senior) • Category: Pelotonia Fellowship Second Place: Neil Makhijani (senior) | Total: 31 Seniors: 5 Juniors: 21 Sophomores: 2 Freshmen: 3 |
| OSUWMC Trainee Research Day April 12, 2018 Awards: 2 <ul style="list-style-type: none"> • Category: Outstanding Undergraduate Trainee First Place: Ayush Peddireddi (junior) Second Place: Victoria Kocsuta (junior) | Total: 11 Juniors: 10 Sophomores: 1 |

Dr. John Gunn Moves to Nationwide Children's Hospital

Dr. John Gunn serves as the BMS Faculty Director and has been in this role since 2010. In October 2018, he moved to the Center for Microbial Pathogenesis at The Research Institute at Nationwide Children's Hospital (NCH). This new position enables Dr. Gunn to rebalance his career back toward research. He remains as Associate Director of the Infectious Diseases Institute and as Faculty Director of the BMS Major. As Dr. Gunn noted, "I have been on this campus in the College of Medicine for over 15 years and am excited for this new path of my career." With his move to NCH, Dr. Gunn is now a Professor of Pediatrics.

2018 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 |
|----------------------|-----------------------------|
| Karthik Chakravarthy | Lawrence Kirschner, MD, PhD |
| Browning Haynes | Leah Pyter, PhD |
| Andrew Hu | Terence Williams, MD, PhD |
| Rohan Makhijani | Steven Clinton, MD, PhD |

Internal Medicine "Grever" Internship 2018

Each year, Dr. Michael Grever, Physician and Faculty Emeritus, 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, 85 BMS students have participated.

| Intern/Student | Research Mentor |
|----------------------|-----------------------------|
| Colin Angell | Federica Accornero, PhD |
| Karthik Chakravarthy | Lawrence Kirschner, MD, PhD |
| Kyle Deistler | Andrew Fischer, PhD |
| Kathryn Lane | Randee Hunter, PhD |
| Rohan Makhijani | Steven Clinton, MD, PhD |
| Megan Mansour | Mark Ziolo, PhD |
| Ryan Wilkins | Lei Cao, PhD |

Please Donate

Biomedical Science Undergraduate Program Support Fund

This 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!

