

Teaching Activities

sketch/outline examples of ADME principles using real drug examples. Students were also given examples of recent Vanderbilt drug development efforts and presented them to the group based on the process that we discussed earlier in the week. Finally, students described how drug discovery could be related to their current rotation projects. We used the material developed for the online DMPK course to supplement the in-person lectures.

2021-2022	Pharmacology Targets	Department	Graduate Students	Presentation / Seminar	1	15	4
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As a part of the pharmacology targets course, I created three pre-recorded asynchronous videos for the student to watch prior to attending the synchronous meetings. The learning objectives of the course were:

- Describe the properties of the heart, including contractility (e.g., excitation-contraction coupling) and electrical activity (e.g., the action potential, automaticity, excitability, refractory period, conduction and the relationship to the electrocardiogram).
- Discuss the mechanisms by which the autonomic nervous system regulates heart rate and contractility.
- Cardiac cycle: Summarize what occurs during systole and diastole, Explain the relationship between ventricular pressure, aortic pressure, and atrial pressure during the cardiac cycle, Sketch out the relationship between ventricular volumes and pressure and aortic volumes and pressures during the cardiac cycle, Articulate how systole and diastole are affected by changes in heart rate.
- Cardiac output: Students will define cardiac output, Explain the relationship between cardiac output and whole-body oxygen consumption and/or work, Illustrate the role of heart rate and stroke volume in increasing cardiac output 4- to 6-fold over resting levels, Students will use an example to measure cardiac output using Fick principle with either dye dilution or thermodilution.
- Identify the intrinsic and extrinsic regulation of the cardiovascular system and its effect on cardiac cycle and output
- Students will be able to define the concepts of inotropism, chronotropic, dromotropic and lusitropic as they pertain to the mechanism of action of commonly used drugs.
- Describe cardiac and vascular smooth muscle cellular pathobiology, including mechanisms of apoptosis and responses to hypoxia, reperfusion, ischemia, and mechanical and oxidative stress.
- Students will compare and contrast clinical disorders in the context of the cardiac cycle and output (angina, arrhythmias, Edema, heart failure, systemic hypertension, pulmonary hypertension, hypotension, myocardial infarction).
- Students will identify examples, the use, and rationale for various therapeutic classes (antianginal, antiarrhythmic, antihypertensive, cardioinhibitory, cardiotonulatory, diuretic, pressor, thrombolytic, vasoconstrictor, vasodilator), particularly as it relates to cardiac cycle and output.

During the synchronous meeting time the student and I worked through problem sets to test her application of the information and conceptual knowledge base.

2021-2022	"Art-ifying" Your Science How Scientists Can (and Do) Use Art to Communicate Their Work	Community	Undergraduate Students, Medical Students, Graduate Students, Faculty, Public	Workshop	40	1	1
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This was a one-hour workshop given during the BLAST (Bacterial Locomotion and Signal Transduction) conference about the intersection of art and science. This conference includes leaders in the bacteriology field but is also geared towards trainees. The objectives of the workshop were (1) define the purpose of using art for science communication, (2) Provide examples of existing projects that have used art for science communication, (3) Empower viewers with art-based communication approaches for their own work.

2021-2022	How the digital world is changing science	Community	Graduate Students, Undergraduate Students, Medical Students, Faculty, Public	Workshop	45	1	1
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This was the second workshop that I ran as a part of the BLAST (Bacterial Locomotion and Signal Transduction) conference. The goal of the session was to outline and discuss the ways that digital communication is changing science. The objectives for the workshop were (1) define "digital world" and some "digital strategies" (2) provide some guidelines and best practices for using various digital strategies, and (3) discuss the ways that the "digital world" is impacting science.

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Teaching Evaluations

Academic Year	Title or topic of activity	Evaluators	Score	Supporting Documents
2018-2019	CSET 1001.1	8 Learners	4.38 on 1-5 Likert Scale	Yes
Project Audience: 12				
Responses Received: 8				
Response Ratio: 66.67%				
2019-2020	Creating Effective Virtual Training Content for Cores	12 Learners	4.75 on 1-5 Likert Scale	Yes
This was a post workshop survey administered by workshop leaders				
2019-2020	Introduction to Chemical, Physical, and Systems Biology	6 Learners	4.67 on 1-5 Likert Scale	No
Project Audience: 16				
Responses Received: 6				
Response Ratio: 37.50%				

Teaching and Educational Scholarship Awards

Academic Year	Award Name	Sponsoring Organization	Level of Award	Criterion for Award
2017-2018	Catalyze Creativity Grant	Curb Center for Art, Enterprise and Public Policy	Institution	On a rolling basis The Curb Center offers Faculty & Staff Creative Catalyst Awards, providing members from these groups with an opportunity to implement original ideas which use creativity as a force for innovation and community engagement while challenging conventional thinking and fostering unique partnerships between all participants. An undergraduate student and I work a proposal for a "Women in Science" program that was awarded and resulted in a publication.
2018-2019	Provost Research Studios Award	Office of Faculty Affairs	Institution	The goal of the Provost Research Studios (PRS) is to support the professional development of full-time faculty (tenured, tenure track, and non-tenure track) who are not full professors or otherwise at the top of their promotion ladder. With the Provost Research Studio award, I was able to attend a training course on Brightspace to learning about online course design with the platform. I also took a digital marketing course that was instrumental when thinking about external communication in a digital world.

Mentoring and Advising:

Mentoring Activities

Training Period	Mentee Name	Mentee Role	Current Position	Topic	Achievements
Aug 2016 - Present	Emily Layton	ArtLab Studio Assistant	Post-graduate student	Communication of Science and Technology	Emily is a 2020 Vanderbilt graduate with a B.A. in Molecular and Cellular Biology. As director of ArtLab's external relations team, Emily currently works to make ArtLab not only a resource for its participants, but a conduit for the art-science world at large. Emily spent all four undergraduate years researching the Wolbachia bacterium in Dr. Seth Bordenstein's laboratory where her work was funded by the SyBBURE Research Program and NSF's Louis Stokes Alliance for Minority Participation fellowship. Her research is published in Nature, Proceedings of the National Academy of Science, and a first-author paper in mBio. Emily combined her research experience with her love of art as a 2019 ArtLab fellow and a 2020 Artist-in-Residence. She displayed her artwork at ArtLab's 2019 gallery show and created graphical educational materials for the Wolbachia-based outreach initiative The Wolbachia

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					Project. Emily is highly experienced in digital vector art, drawing, and painting, and she is learning 2D and 3D animation.
Jun 2018 - Aug 2018	Favour Akabogu	Aspirnaut Student	Research Assistant	Medical Research	Favour is an exceptional young scientist. She worked alongside me as a post-doctoral fellow to implement an innovative novel educational research model system that could be used in K-12 classrooms as part of our Aspirnaut Research experience. In the Summer of 2017, as I worked with Favour, she demonstrated exceptional high motivation, science acumen, interpersonal skills, love of science, research achievement, and a desire to impact research. Under the leadership of Dr. Billy Hudson, the group has made several discoveries on the development of tissues, emphasizing how the microenvironment of cells is made and how it works to influence cell behavior. These discoveries include a new chemical bond (Science, 2009); bromine, in the form of bromide, as an essential element in the animal kingdom for assembly of the microenvironment (Cell, 2014); and chloride as a signal for assembly of the microenvironment (J. Cell Bio. 2016). These discoveries set up fundamental questions about how bromide and chloride function in normal tissue development. Favour was instrumental in establishing a novel animal system to study the form and function of the maxillary gland that represents a primitive kidney-like structure in various ions. We searched for a primitive animal model that is tractable for the investigation of ultrafiltration mechanisms and carried out studies on brine shrimp, or sea monkeys, a primitive crustacean.
Aug 2018 - Present	Matthew Gothard	ArtLab Fellow	Undergraduate student	Interactive experiences with coding and kinetic art	Matt is an undergraduate senior from East Canton, Ohio who has created interactive experiences which can be described as the fusion of creative coding and kinetic art. Through ArtLab, he hopes to better understand the intersection of art, making, and design. He studies mechanical engineering at Vanderbilt University but enjoys exploring and developing interdisciplinary projects.
Aug 2018 - May 2020	Justin Chediak	CSET internship	Medical Student	Interactive Display of Research in Stevenson Center	Justin and I worked together for multiple years in both a laboratory and science communication setting. His senior thesis project was to design, and potential implement an interactive display outside the Stevenson lecture halls. The goal was for students to be able to browse a library of videos, each detailing the work of a certain group and whether they are interested in accepting undergraduates. The goal of his project was to present research in an informal and approachable way to undergraduate students, enhance interest in the amazing work being done at Vanderbilt, and encourage them to get involved. https://youtu.be/tJehGUc6sXg
Aug 2018 - May 2020	Eve Moll	CSET Internship	Medical Student	Exploring the Intersection of Art and Medicine	Eve Moll and I began our multi-year mentor-mentee relationship just as ArtLab was just developing. With support from the Wond'ry and the Curb Center for Art, Enterprise and Public Policy, Eve and I were able to build ArtLab Vanderbilt. The goal of this effort was to develop a program that would support the intersection of art and science. We were interested in using and supporting the creative process, critical thinking, and big picture concepts. Eve served as an undergraduate fellow where she published a manuscript, exhibited oil paintings about epigenetics, completed drawings inspired by the structure of a binary toxin and its movement through cell membranes, and curated an exhibit about women in science that featured her artwork along with Oliver's and that of Marilyn Murphy, professor of art, emerita. https://news.vanderbilt.edu/2020/04/30/exploring-the-intersection-of-art-and-medicine-eve-moll-ba20/
Jun 2019 - May 2020	Liyan Shen	Artist in Residence	Undergraduate Student	VI4 AiR Program	Liyan Shen was first a student in the iSeminar Commons Art-Science course. From there she also participated in the summer Artist-in-Residence program. Liyan has been interested in drawing for quite some time. She had been the president of the illustration club in her high

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		Summer 2019			<p>school for three years, so she spent a lot of time drawing illustrations, but these were typically not related to science. Over the AiR program, she worked with Alyssa Hasty to visualize how the iron-handling abilities of macrophages differ when there are extra iron in lean and obese animals and how macrophages and adipocyte react to the excess iron. Two core concepts are: MFehi macrophages are macrophages with a high iron concentration in adipose tissue, while MFelo macrophages are macrophages with a low iron concentration in adipose tissue. Her overall experience has been very great. She says, "I talked with very amazing researchers, understood a lot of scientific concepts that I've never known before, and challenged myself by converting complex theories to understandable drawings and by continue evaluating my works from the perspective of viewers." MFehi macrophages are macrophages with a high iron concentration in adipose.</p>
Aug 2019 - Present	Stephanie Castillo	Graduate Research	Graduate student	Science Communication	Stephanie is my first graduate student and is the first student at Vanderbilt to pursue an advanced degree in the Communication of Science and Technology at Vanderbilt University. As a trained chemist for nine years and a filmmaker for three, Stephanie has been share storytelling videos about science through the lens of scientists of color. With videos that highlight representation in STEM, she has been researching if the videos could be a tool for intervention in changing students of color attitudes towards belonging in STEM.
Aug 2019 - Present	Maggie Xu	ArtLab Studio Assistant	Undergraduate Student	Communication of Science and Technology	Maggie is an undergraduate student studying psychology and scientific computing. She first joined ArtLab during her freshman year. Since then, she has completed an ArtLab Fellowship project and participated in the Summer Artist-in-Residence program where she worked with the Calipari Lab to visually represent their research on how neural circuitry for processes such as reward learning and motivation contributes to psychiatric disorders. Maggie primarily works with digital art and has recently started exploring animation. Outside of art and classes, she enjoys curling up with a good book and playing piano.
Aug 2019 - Dec 2019	Jonathan Algoor	SyBBURE student	Post-graduate student	Interactive visual displays	Jonathan Algoor, a SyBBURE alumnus who graduated in 2020 with majors in Chemistry and in Communication of Science and Technology, received the Outstanding Undergraduate Research in Chemistry Award and Highest Honors in Chemistry in 2020.
Jan 2020 - Present	Skylar Cuevas	Immersion Student	Undergraduate Student	Communications of Science and Technology	Skylar Cuevas is a third-year undergraduate student studying Communications of Science and Technology and Chemistry at Vanderbilt University. With ArtLab as a foundation to explore her interests in medicine and the arts, Skylar plans to pursue a medical career in the future, to utilize her artistic passion as a voice for those in underserved communities, and to proliferate scientific discoveries to the greater public. Skylar is currently working with me to complete her Immersion project by creating a growing art-science portfolio of scientific cover art commissions and series, academic papers, graphic novels, and other small projects. https://as.vanderbilt.edu/news/2020/10/16/pandemic-student-summer-experiences-science-based-art-research/
Jan 2020 - Present	Navya Thakkar	Immersion Student	Undergraduate Student	Communications of Science and Technology	Navya Thakkar is an undergraduate student from Mumbai, India, studying Biology and Art at Vanderbilt University. From a young age, Navya had an attraction to the visual arts and loved abstracting reality with her creativity. ArtLab has allowed Navya to combine her two passions – biology and art. As she continues her college journey, she wants to discover the role that the interdisciplinary study of art and science plays in today's society and its impacts on representation and communication of science. Navya is a part of the Music Cognition research lab at Vanderbilt and is currently working with organizations across Vanderbilt's campus to create art and graphics based on their studies. At ArtLab, she is an artist, heading the Commissions team, and continues to work on her Immersion Project with me as her mentor.

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					https://as.vanderbilt.edu/news/2020/10/16/pandemic-student-summer-experiences-science-based-art-research/
Jun 2020 - Aug 2020	Alexandra Filipkowski	PAECER Scholar	Undergraduate student	AHA CV summer program	Alexandra Filipkowski was a student in the PAECER-SURE summer program as a rising junior at Fairfield University, a Jesuit school in Connecticut. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Logan Long	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Logan Long is a rising senior at East Carolina University in Greenville, NC. She is a Public Health major with a pre-health concentration and a minor in composite science. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	C'Aira Dillard	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	C'Aira Dillard is a rising sophomore at Johnson & Wales University in Providence, RI, but I am originally from Evansville, IN. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Alexander M. Martinez Lopez	SURE Scholar	Undergraduate Student	AHA CV Summer Program	Alexander M. Martinez Lopez, a rising senior at the Polytechnic University of Puerto Rico currently majoring in Biomedical Engineering. His research interests include Cardiovascular Engineering and Nanomedicine. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Daniella Pena	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Davin Means is from Wynne Arkansas and is a rising Junior at the University of Arkansas. He is pursuing a Biology Pre-Med major with a minor in Chemistry. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Present	Jacqueline Oh	Artist in Residence - Vanderbilt	Undergraduate Student	Communication of Science and Technology	Jacqueline Oh is a senior from Oklahoma majoring in Medicine, Health, and Society and minoring in Art History at Vanderbilt. She is also currently working as a clinical research assistant in the Department of Plastic Surgery at the Vanderbilt Medical Center but has been working with me in science communication since the summer as an Artist-in-Resident. With a particular interest in global health and health disparities, she believes these skills will help better communicate and represent science.
Jun 2020 - Present	Dayana Espinoza	Artist in Residence - Vanderbilt	Undergradadaute student	Communication of science and technology	Dayana Espinoza is an undergraduate student currently studying film and the communication of science and technology. She enjoys designing and creating innovative ways that media and art can increase the credibility and accessibility of science. She is particularly interested in how increasingly popular mediums such as virtual reality and short-form videos can be optimized to bridge the gap between the public and scientists. Beyond co-directing the ArtLab social media team, Dayana works as an illustrator and motion designer for The Kidney Project and is a lab technician at the Vanderbilt Institute of Nanoscale Science and Engineering. I first started working with Dayana as a artist in resident during the summer of 2020.
Jun 2020 - Aug 2020	Malik Robinson	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Malik Robinson is a rising sophomore at the University of Missouri. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Hector Haddock	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Hector Haddock is a Senior majoring in Interdisciplinary Studies in Natural Sciences at the University of Puerto Rico, Rio Piedras Campus. His main research interests are cognitive and behavioral neuroscience, focusing on the effects of brain damage on normal behavioral

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					functioning. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Madelyn Terhune	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Madelyn Terhune is a senior pre-med major at California Lutheran University. On track to graduate after only three years of study, she plans to pursue a career in cardiovascular medicine with a focus on pediatric patients. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Present	Qi (Kathy) Liu	Artist in Resident - Vanderbilt	Undergraduate Student	Communication of Science and Technology	Qi (Kathy) Liu is an undergraduate student from China, who studies Molecular & Cell Biology, Computer Science, and Math at Vanderbilt. In the summer of 2020, she worked with Georgiev lab to visualize the process of LIBRA-seq (linking B cell receptor to antigen specificity through sequencing). As an artist, Kathy loves doing watercolor and sketch; as for science, she is most interested in genetics and immunology. Kathy is now working as an artist and the social media director at ArtLab and also doing researches at VUMC, continuing her journey with the companion of art and science.
Jun 2020 - Aug 2020	Brandon Brown	Morehouse Scholar	Undergraduate Student	AHA CV Summer Program	Brandon Brown is a Senior at Morehouse College. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Kristen Camille Smith	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Kristen Camille Smith is a senior Biology Pre-Dental major from Tougaloo College in Jackson, MS. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Present	Anjali Kumari	Artist in Residence - External	Undergraduate Student	Communication of Science and Technology	Anjali Kumari is a Junior biology pre-medical student at North Carolina Agricultural and Technical State University. She is a researcher and an artist interested in microbiology, virology, oncology, bioinformatics, synthetic biology/biochemistry, neurobehavioral science, and fermentation biology. Given her interdisciplinary approach and a particular interest in the field of oncology, Anjali aspires to become a physician scientist and pursue her MD-PhD in oncology. She was introduced to ArtLab through the VI4 Artist-in-Residence Program and decided to continue her efforts in the program and to learn more about the intersection of art and science and to implement such findings in her career to better disseminate scientific findings and improve research education/communication.
Jun 2020 - Present	Lauren Wong	Artist in Residence - Vanderbilt	Undergraduate student	Communication of Science and Technology	Lauren Wong is an undergraduate junior student at Vanderbilt. She is currently double majoring in Communications in Science and Technology, and Human Organizational Development at Vanderbilt University. Lauren joined ArtLab during the summer after her sophomore year. During that time, Lauren worked closely with Vanderbilt Medical Center's infectious disease scientists to create art graphics that represented their research on the COVID-19 virus and vaccine efforts. Her artwork specializes in taking complex scientific information and representing them in easy-to-understand and creative ways. Lauren is currently working with ArtLab to create a comic book on the current COVID-19 vaccine efforts.
Jun 2020 - Sep 2020	Ximena Leon	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Ximena Leon began college as a Pre-Health Professions major at Columbia State Community College before transferring to the University of Tennessee at Chattanooga where she is majoring in Pre-Professional Biology with a minor in Chemistry. She is a Goldwater Scholar, an Innovations Scholar at UTC's Honors College, the President of the Sigma Chapter of the Tri-Beta National Honorary Biological Society, and a member of Best Buddies. Ximena is

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					pursuing a Ph.D in molecular and cellular biology and plans to do biomedical research and teach at the university level. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Vivian Iloabuchi	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Vivian Iloabuchi is a senior majoring in Biochemistry and Molecular Biology at Fisk University, Nashville, Tennessee. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Natalie A. Butler	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Natalie A. Butler is a junior biology major at Fisk University located in Nashville, Tennessee. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Guyton Harvey	Morehouse Scholar	Post-graduate Student	AHA CV Summer Program	Guyton Harvey is a rising senior Chemistry major and Biology and Spanish double-minor studying on the pre-med track at Morehouse College. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Dimitri Johnson	Morehouse Scholar	Undergraduate Student	AHA CV Summer Program	Dimitri Johnson has completed his Junior year as a Biology major at Morehouse College. Mr. Johnson has recently been accepted to the Morehouse School of Medicine. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Bianca Walker	PAECER Scholar	Undergraduate Student	AHA CV Summer Program	Bianca Walker is from Pontiac, MI and is junior at The Tennessee State University. She is currently pursuing a cellular and molecular biology major with a concentration in pre-medicine. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Jun 2020 - Aug 2020	Alexis Edmonds	PAECER Scholar	Undergraduate student	AHA CV Summer Program	Alexis Edmonds is from Denver, CO and is a rising senior at Xavier University of Louisiana in New Orleans, LA with a major in biology and minors in chemistry and Spanish. He worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/
Aug 2020 - Present	Helen Qian	ArtLab Studio Assistant	Undergraduate student	Communication of Science and Technology	Helen Qian is a first-year student studying neuroscience and psychology. She joined ArtLab in the Fall of 2020 and is currently the Team leader for the workshop series.
Aug 2020 - Present	Grace Garrett	SURE Scholar	Undergraduate Student	AHA CV Summer Program	Grace Garrett is from Nashville, TN and currently attends Elon University where she is a Biology major and Chemistry minor. She worked with a team of students, with me as their primary mentor, during the summer of 2020 to produce CV animations. https://myvirtualpaecersure.com/student-virtual-poster-session/ She is also the lead author on a paper that explore the impact of the video developed by students over the summer.
Aug 2020 - Present	Janet Mariadoss	Immersion Student	Undergraduate Student	Communication of Science and Technology	Janet Mariadoss is a second-year undergraduate student studying Neuroscience and Medicine, Health, and Society while on the pre-medicine track. She is particularly interested in healthcare disparities within minority communities and is a member of Vanderbilt Institute for Global Health's Student Advisory Council. As a member of Vanderbilt's ArtLab, she aims to use her visual media and artistic skills to improve the communication of scientific discoveries and bridge the gap between the public and scientific experts. She also works on

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designing and maintaining the ArtLab website as a hub for all of the working arms of ArtLab. She began her immersion project with me in the Spring of 2021.

Group Advising

Training Period	Title	Number of Advisees	Type of Advisees	Frequency
Dec 2020 - Feb 2021	SciArt Initiative - Bacterial Locomotion and Signal Transduction Conference	15	Graduate Students, Undergraduate Students, Faculty, Other	Weekly/Daily during the week of the conference
I advised and organized a group of 13 SciArtist to generate visuals during a scientific conference. The Bacterial Locomotion and Signal Transduction Conference took place the week of February 17th and speakers were able to opt-in to have their scientific presentation be developed into a piece of visual art created by the SciArt team. The product of this work will be a graphic novel that encompasses the conference proceedings.				
Jun 2020 - Aug 2020	Artist in Residence program 2020	13	Undergraduate Students	Twice a week
Jun 2020 - Aug 2020	PACER-SURE Summer Program	18	Undergraduate Students	Daily
Jun 2019 - Aug 2019	Artist in Residence Programming 2019	13	Undergraduate Students	Twice a week
Aug 2017 - Present	ArtLab Programming	45	Graduate Students, Undergraduate Students, Faculty	In preparation for exhibitions
Aug 2016 - Apr 2018	Aspirnaut	158	Undergraduate Students, Other	Summer and academic year

During my time as a postdoctoral research within the lab of Dr. Billy Hudson, I personally advised no less than 15 students. These students were both high school and undergraduate level students.

Advisory Committee

Training Period	Title	Advisee's Name	Number of Advisors	Advisee's Role	Topic	Frequency
Jan 2021 - Present	Immersion student	Janet Mariadoss	1	Immersion student	Science outreach and engagement	Bi-weekly meetings

Immersion Vanderbilt provides undergraduate students with the opportunity to pursue their passions and cultivate intellectual interests through experiential learning. This intensive learning experience takes place in and beyond the classroom and culminates in the completion of a final project. Janet's project is focused on the intersection of neuroscience and how it can be coopted by the public and lead to justification for policy brutality, racist policy, and misinformed stereotypes. She will be exploring how multidisciplinary approaches are necessary for addressing these concerns, how multidisciplinary teams work, and developing community art pieces that address these issues.

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Jan 2020 - Present	Immersion student	Navya Thakkar	1	Immersion student	Visual Science Communication	Bi-weekly
Immersion Vanderbilt provides undergraduate students with the opportunity to pursue their passions and cultivate intellectual interests through experiential learning. This intensive learning experience takes place in and beyond the classroom and culminates in the completion of a final project. Navya is creating an artistic portfolio of scientific images that she has created for a number of clients. The goal of her immersion project is to publish this portfolio.						
Aug 2019 - Present	Dissertation committee	Stephanie Castillo	5	CSET Graduate Student	Science communication	Monthly

Curriculum Development

Year Developed	Topic	Role	Teaching Strategy	Type of Learners	Number of Learners	Curriculum Implemented	Degree of Responsibility
2019-2020	PAECER-SURE Summer Program	Program director	Presentation / Seminar, Small Group, Workshop	Undergraduate Students	18	Yes, Community	Owner
2018-2019	Drug Discovery Online Program	Founder and director	Didactic Lecture, Other	Graduate Students, Undergraduate Students, Medical Students, Clinical Fellows, Research Fellows, Faculty, Public		No	Developer
2018-2019	Artist in Residence Program	Founder and Director	Small Group, Workshop, Other	Undergraduate Students	13	Yes, University-wide	Owner
2016-2017	Aspirnaut Program	Scientific Program Manager	Laboratory, Workshop	Undergraduate Students, Other	16	Yes, Department	Program manager

Leadership & Administration

Start - End	Title	Role	Level of Activity	# of Teachers	# of Learners
2017 - Present	ArtLab Program	Program Director	Institutional	1	50
The ArtLab program emerged from a desire to better understand the intersection between arts and sciences. ArtLab has become an epicenter for design, visual science communication, and science outreach through innovative and engaging exhibits that showcase top biomedical researchers' latest findings through art. Our mission is to support and promote STEM students and scientists who are interested in pursuing creative outlets, generate resources that support art and science intersection, engage in informal education focused on building interactions between general and research communities, humanize the sciences and scientists					
2018 - Present	VI4 ArtLab Artist in Residence Program	Principal Investigator	International	8	90
Cross-disciplinary collaborations lead to the generation of new scientific ideas and approaches, the creation of novel and cutting-edge projects, and innovation within and between fields. Fostering cross-disciplinarity impacts the mindsets and approaches of all involved, from faculty members at the top of their fields to undergraduate students who are the future of science and civil leadership. Our mission is to cultivate a meaningful, equitable, and multidisciplinary community through an entirely virtual environment that expands the impact of cutting-edge research through art. This community provides an invaluable opportunity to develop skill sets in science communication and outreach applicable across all career stages.					
2018 - Present	Drug Discovery Online Program	Program Director	Departmental	10	200
The Drug Discovery Online program started in 2018 with the goal of increasing the digital literacy of current students, showcasing the rich research expertise within the Basic Sciences, School of Medicine and reaching additional students through creating online resources. Since our inception, we have targeted our efforts to the development of 2-week mini-courses that cover a variety of topics key to drug discovery and development. Our goal is to develop a service core to assist in online resource creation. Vanderbilt University					

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and Vanderbilt School of Medicine are world leaders in the areas of pharmacology, drug discovery, and drug development. Drug Discovery Online is targeting the design and construction of online programs for students interested in the pharmaceutical industry. We apply the latest approaches and state-of-the-art practices in online learning. Quality Matters (QM) is an international, U.S.-based non-profit organization specializing in standards, processes, and professional development for quality assurance in online and blended learning. QM tools and resources are regularly revised to reflect current research and best practices. The Drug Discovery Online program follows the QM rubric to maintain the highest quality of online materials.

2019 - 2020	2020 Provost Online Education Committee	Committee Member	Institutional	14	0
Vanderbilt will take stock of its resources for online education through the work of a new provost-appointed committee to ensure that the schools and colleges receive the needed support for these offerings, which advance the university's mission of educating the whole student while encouraging lifelong learning. Douglas L. Christiansen, vice provost for university enrollment affairs and dean of admissions and financial aid, will serve as committee chair.					
2021 - Present	2021 VUSRP Application Review Committee	Committee Member	Institutional		
The Vanderbilt Undergraduate Summer Research Program (VUSRP) provides Vanderbilt undergraduate students with the opportunity to fulfill 10 weeks of full-time research during the summer under the mentorship of any full-time Vanderbilt faculty member, including faculty in the graduate and professional schools. The goal of VUSRP is to encourage and enhance student-faculty mentoring and joint research efforts. The program dates for 2021 are June 7 through August 13.					

Scholarly Approach to Education: Professional Development in Education

Dates of Program	Program Name	Sponsor	Program Type	Number of Hours
9/1/2016 - 5/1/2017	Blended Online Learning and Design Program	Center for Teaching, Vanderbilt University	Small Group	40
The Blended & Online Learning Design (BOLD) Fellows Program is designed to help graduate student/faculty teams build expertise in developing online instructional materials grounded in good course design principles and our understanding of how people learn. Faculty members partner with graduate students to design and develop online instructional materials to solve a teaching "problem" in one of their courses. The teams implement the materials in an existing class and investigate their impact on student learning. Examples of projects can be seen in the BOLD Gallery . My project can be found here: https://www.vanderbilt.edu/bold/docs/honors-185-wibc-why-is-biology-complex/				
7/1/2018 - 9/26/2018	Digital Marketing Analytics	MIT Sloan	Seminar	30
New digital technologies have fundamentally reshaped marketing theory and practice over the last decade and have led to a drastic shift in the quality and quantity of information we are able to store, access, and analyze. With this proliferation of data has come an increasing need for many businesses to better understand and react to various consumer patterns, as well as evolve the way they measure, plan, and implement their marketing activity. As such, there's been a growing demand for skilled marketing analysts who are equipped to ensure optimal return on investment (ROI) for marketing spend and to deliver valuable insights that drive better customer service. This online program was my introduction to digital marketing and social media analytics.				
4/1/2019 - 6/1/2019	The Brightspace Teaching & Learning Certificate Program	Brightspace	Other	35
The Teaching and Learning Program offered by Brightspace is designed to ensure that attainment of the knowledge, skills, strategies and best practices to develop courses designed to help learners succeed. To successfully complete this course, I needed to review the self-paced and interactive course activities to achieve a certificate. Successful completion of the assessments in each course is required to achieve the certificate.				
5/1/2019 - 1/5/2020	ESME Certificate in Medical Education	Association for Medical Education in Europe (AMEE)	Other	40
The need for doctors, scientists and others involved with teaching in the healthcare professions to have training in teaching is widely recognized. The AMEE Essential Skills in Medical Education (ESME) Online course has been designed to meet this need. This course is designed for instructors who wish review best practice and develop a greater understanding of the basic principles. The award of the AMEE-ESME Certificate in Medical Education provides evidence of the participant's interest in education and abilities as a teacher.				

Products of Educational Scholarship: Publications Related to Education

List articles, books and other products specifically related to education. Do NOT include clinical or research publications.

Articles

Educator Portfolio

Kendra Oliver, Ph.D.
Updated 02/19/2021

- The Woman Scientist: Brief Reflections on the Visual Representation of Women. KH Oliver - Leonardo, 2019
- Vigilante Innovation (VIX): case study on the development of student skills through a team-based design process and environment. KH Oliver, JD Ehrman, CC Marasco. International Journal of STEM Education 6 (1), 1-15

Other

- Aspirnaut (TM): Maximizing STEM achievement for students from diverse backgrounds by holistic, long-term commitment to scientific development. Poster Abstract.KH Oliver, AL Fidler, BG Hudson, J Hudson - Molecular Biology of the Cell, 2016
- Use of Web-logs (Blogs) to Promote Student Ownership. Poster Abstract. KH Oliver, D Picard, J Wikswo, C Brame - The FASEB Journal, 2016
- One BOLD-Fellows Journey from Cellular Platelet Biologist to Discovery Science Educator. Kendra Oliver, Ph.D. CFT BOLD Fellow

Products of Educational Scholarship: Workshops and Peer-reviewed/Invited Presentations

Date	Title	Location	Audience	Number of Attendees	Medium	Scope	Peer-Reviewed	Invited
4/15/2019	Keynote speaker - Intersection of art and science	Nashville, TN	Biological Sciences, College of Arts and Sciences	55	Didactic Presentation	Departmental	No	Yes

Products of Educational Scholarship: Educational Grants

	Title	Role	Funding Source	Total Direct Cost	Scope
Nov 2020 - Present	Vanderbilt Institute for Infection, Immunology, and Inflammation (VI4) Artist in Residence (AiR) Program (VI4-AiR)	Co-Principal Investigator	Burroughs Wellcome Fund	\$75,000.00	National
Cross-disciplinary collaborations lead to the generation of new scientific ideas and approaches, the creation of novel and cutting-edge projects, and innovation within and between fields. Fostering cross-disciplinarity impacts the mindsets and approaches of all involved, from faculty members at the top of their fields to undergraduate students who are the future of science and civil leadership. Our mission is to cultivate a meaningful, equitable, and multidisciplinary community through an entirely virtual environment that expands the impact of cutting-edge research through art. This community provides an invaluable opportunity to develop skill sets in science communication and outreach applicable across all career stages.					
Aug 2020 - Nov 2020	Public Health Simulator	Principal Investigator	The Computational Thinking and Learning Initiative (CTLI)	\$1,200.00	Institutional
The Public health simulators were created to visualize the spread of disease and the impact of public health measures. This was done in collaboration with Corey Brady and the Computational Thinking and Learning Initiative (CTLI) funded as part of a TIPs proposal.					
Jan 2020 - Present	Education Faculty Collaboration Funds	Principal Investigator	Mellon Partners in Humanities	\$13,450.00	Regional
The proposed project seeks to directly engage the neuroscientific community on the question of how the neuroscience of drug addiction--in particular, the production, analysis, and public circulation of drug science--is made to sustain systemic racism as it relates to drug stereotypes. Beyond individual bias or intent, what does institutionalized racism in neuroscience and its impacts look like? What are researchers' responsibilities, and what are the actions they can take? Answering these questions is fundamentally an interdisciplinary endeavor and opening up avenues for the humanities to contribute to growing conversations in STEM about race and racism is crucial. We seek to bring life scientists, humanists, and social scientists together to reflect on how the practice of science works within social structures that are discriminatory and unjust.					

Products of Educational Scholarship: Other Educational Products

Year Created	Product Description	Utilization Venue	Scope	Date First Utilized
2020-2021	https://medschool.vanderbilt.edu/educator/ I created this website for the Basic Science Educators. The Basic Science Educators' contributions are essential to the academic mission of the school including: To be national leaders in graduate and medical education innovation, To educate the next generation of leaders, innovators, scientists, and physicians, and To enhance the diversity and inclusion of the learning environment	Online community engagement and education	Institutional	3/1/2020
2017-2018	https://www.artlabvanderbilt.com/ This is the ArtLab Vanderbilt website that I have created to showcase work of the program. Currently this website, the ArtLab social media accounts, and the external resources are managed by students both at Vanderbilt and beyond.	Online community engagement and education	Institutional	6/1/2017