

Kendra H. Oliver, Ph.D.

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A. Personal narrative

My scholarship explores design as a conduit between art, science, and communication. We must find new strategies to communicate, engage, and include more people in scientific exploration. Through visual science communications, I leverage digital technologies, online learning pedagogy, and visualization methods to design a better way to communicate science. Although classically trained as a research scientist in pharmacology, I am a science education and communication designer with skills ranging from project management and pedagogical approaches to online learning, video production, instructional design, and web design. As an active multi-disciplinary team member, I am interested in developing and utilizing these skills to produce science marketing, communication, outreach, and engagement strategies, particularly those at the intersection of art and science. My current efforts are focused on developing, testing, and implementing multimedia products (art, videos, websites) for science education, communication, and engagement. My research uses a mixed-methods approach to provide evidence-based approaches for visual science communication. Examples include creating science-based artworks, developing resources to support video production for science communication, and programming approaches to support biomedical and cross-disciplinary training and virtual learning and engagement strategies.

As a graduate student, I focused on building education and communication skills by completing the Certificate in College Teaching for the Center for Teaching and participating in the Blended-Online Learning Design Fellowship. After completing my Ph.D., I took a postdoctoral fellowship position at Vanderbilt University Medical Center with Dr. Billy Hudson in Discovery Science Education, which exposed me to mentoring and educating K-20 students. During this time, I also founded a transdisciplinary program called ArtLab. With the support of The Wond'ry and The Curb Center, ArtLab is developing a national network exploring visual science communication and engagement. Based on these interests, I initiated a secondary appointment in the Communication of Science and Technology Program to build ArtLab as a central hub for art-science exploration within the Vanderbilt campus. In the department of pharmacology, I began my appointment as an instructor within the Department of Pharmacology to create an online program called Drug Discovery Online. Vanderbilt University and Vanderbilt School of Medicine are world leaders in pharmacology, drug discovery, and drug development. Drug Discovery Online targets the design and construction of online programs for students interested in the pharmaceutical industry. This effort builds entrepreneurial thinking and resources to support rigorous and reproducible science.

B. Appointments

Scientific Program Manager	The Division of Nephrology and Hypertension at Vanderbilt University Medical Center	Aug 2016 – Mar 2018	Aspirnaut™
Visiting Lecturer	The Wond'ry	Aug 2017 - present	Vanderbilt University
Instructor	Department of Pharmacology, School of Medicine Basic Sciences	Apr 2018 – Apr 2019	Vanderbilt University
Senior Lecturer, Adjunct Assistant Professor	Communication of Science and Technology, College of Arts and Science	Oct 2018 - present	Vanderbilt University
Assistant Professor	Department of Pharmacology, School of Medicine Basic Sciences	Apr 2019 - present	Vanderbilt University

C. Professional Preparation

Loyola University	Chicago, IL, USA	B.S., Biology, Aug 2010
Vanderbilt University	Nashville, TN, USA	Ph.D., Pharmacology, Jun 2016
"Novel implications of lost serotonin transporter function on platelet biology" under the mentorship of Professor Heidi Hamm and Assistant Professor Ana M.D. Carneiro.		
Vanderbilt University Medical Center	Nashville, TN, USA	Postdoctoral Fellowship, 2016-2018
"Discovery Science Education" under the mentorship of Professor Billy G. Hudson and VUMC Vice President Dr. Julie Hudson		
Maryland Institute College of Art	Baltimore, MD, USA	Master of Professional Studies, User Experience Design, Communications Expected graduate date: May 2023

D. Products

HONORS, FUNDING, AND AWARDS

	LOCATION	DATE	AMOUNT
Clinical Research Grants, VICTR	Nashville, TN, USA	2013	\$2,000
Mechanisms of Vascular Biology Training Grant	Nashville, TN, USA	2013	\$23,844
ATVB Young Investigator Travel Award	Dallas, TX, USA	2013	\$1,000
Vanderbilt Graduate Student Travel Award	Nashville, TN, USA	2013, 2014	\$1,000
SFB35 Student Travel Award- Transporters in Health and Disease	Vienna, Austria	2014	\$250
American Heart Association Pre-Doctoral Fellowship (14PRE19640007)	Nashville, TN, USA	2014-2016	\$53,688
ASPET Travel Award	San Diego, CA, USA	2016	\$1,000
Curb Center Catalyst Creativity Grant (Awarded along with undergraduate mentee, Eve Moll)	Nashville, TN, USA	2017	\$2,000
Provost Research Studio Award	Nashville, TN, USA	2018-19	\$4,000
Public Health Simulator - The Computational Thinking and Learning Initiative (CTLI)	Nashville, TN, USA	2020	\$1200
Vanderbilt Institute for Infection, Immunology, and Inflammation (VI4) Artist in Residence (AiR) Program (VI4-AiR) - Burroughs Wellcome Fund, Co-PI	Nashville, TN, USA	2020	\$75,000
Nested Knowledge: disentangling history, truth, and race in STEM experiences - Mellon Partners in Humanities Education Faculty Collaboration Funds, PI	Nashville, TN, USA	2020	\$13,450

PEER-REVIEWED ARTICLES

1. **Kendra H. Oliver**, Tammy Jessen, Emily L Crawford, Chang Y Chung, James S Sutcliffe, and Ana M Carneiro. *Pro32Pro33 Mutations in the Integrin $\beta 3$ PSI Domain Results in $\alpha 11b\beta 3$ Priming and Enhanced Adhesion: Reversal of the Hypercoagulability Phenotype by the Src Inhibitor SKI-606*. Mol Pharmacol. Jun 2014.
2. **Kendra H. Oliver**, Matthew T. Duvernay, Heidi E. Hamm, and Ana M.D. Carneiro. *Loss of Serotonin Transporter Function Alters ADP-Mediated Integrin $\alpha 11b/\beta 3$ Activation through Dysregulation of the 5-HT_{2A} Receptor*. Journal of Biological Chemistry. Jul 2016.
3. Michael Dohn, Christopher Kooker, Lisa Bastarache, Tammy Jessen, Capria Rinaldi, Seth Varney, Matthew Mazalouskas, Hope Pan, **Kendra H. Oliver**, Digna Velez Edwards, James Sutcliffe, Joshua Denny, and Ana Carneiro. "The Gain-of-Function Integrin $\beta 3$ Pro33 Variant Alters the Serotonin System in the Mouse Brain". Journal of Neuroscience. Aug 2017.

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4. Amanda K. Darbyshire, **Kendra H. Oliver**, Tammy L. Mulrooney, Carissa P. Jones, and Kelli L. Boyd. *Effects of anesthesia and euthanasia solutions on the histologic quality of brine shrimp (Artemia franciscana)*. Journal of Histotechnology. May 2017.
 5. Amanda K Darbyshire, **Kendra H. Oliver**, William D Dupont, Kelli Boyd. *Anesthesia and Euthanasia of Brine Shrimp (Artemia franciscana)*. Journal of the American Association for Laboratory Animal Science. Jan 2019.
 6. **Kendra H. Oliver**, Eve Moll, and Marylin Murphy. *The woman scientist: Brief reflections of the visual representation on women*. Leonardo, MIT Press. Jun 2019.
 7. **Kendra H. Oliver**, Jonathan Erhman, and Christina Marasco. *Vigilante Innovation (VIX): Case study on the development of student skills through a team-based design process and environment*. International Journal of STEM Education. Oct, 2019.
 8. Max E. Joffe, Chiaki I. Santiago, **Kendra H. Oliver**, James Maksymetz, Nicholas A. Harris, Julie L. Engers, Craig W. Lindsley, Danny G. Winder, P. Jeffrey Conn. mGlu2 and mGlu3 Negative Allosteric Modulators Divergently Enhance Thalamocortical Transmission and Exert Rapid Antidepressant-like Effects. Neuron. Jan, 2020.
 9. Stephanie Castillo, Karisa Calvitti, Jeffery Shoup, Madison Rice, Helen Lubbock, **Kendra H. Oliver**. Outlining the Production Processes for Creating Educational Videos. CBE-Life Sciences Education. Summer 2021.
 10. **Kendra H. Oliver**, Christina Keeton, Roger Chalkley, and Elizabeth Bowman. Virtual Vanderbilt Summer Science Academy highlighted the opportunity to impact early STEM students career knowledge through narrative. PLOS ONE. Nov 10, 2021.
 11. **Kendra H. Oliver**, Stephanie Higgs, and Jay Clayton. Acceptance of lost Genetic Privacy in the 'blade runner' cannon. *Science Fiction Film and Television*.
 11. Tinuola B. Ajayi, Adrienne L. Mueller, Ike S. Okwuosa, Asha Barshilia, Joseph C. Wu, , Emelia J. Benjamin, Joey V. Barnett, **Kendra H. Oliver**. Innovations in undergraduate research training through multi-site collaborative programming: American Heart Association Summer Undergraduate Research Experience Syndicate. Journal of the American Heart Association.
 12. Skylar Cuevas, Qi (Kathy) Liu, Helen Qian, Max E. Joffe, Karisa Calvitti, Megan Schladt, Eric P. Skaar, and **Kendra H. Oliver**. Differences in self-reported benefits for student-artist versus faculty experiences in a virtual artist-in-residence program. Under review at PLOS ONE.

Article under review of in preparation:

13. Qi (Kathy) Liu, Karisa Calvitti, Megan Schladt, Eric P. Skaar, and **Kendra H. Oliver**. Case-study exploring the impact of visually focused tweets within the science Twitter-verse. *In preparation*.
 14. Janet Mariadossa, and **Kendra H. Oliver**. *Nested Knowledge: a systematic review and case study of a multidisciplinary projects between the arts and sciences based in project management theory. In preparation for special issue in Frontiers in Communication, "The Creation and Impact of Visual Narratives for Science and Health Communication."*
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15. Deborah McCabe, & **Kendra H. Oliver**. Reimagining video-based online learning through UX Design: From LSMs to novel video platform prototypes. *Under review at Medical Science Educator*.
16. Christian Egly, Bjorn C. Knollmann, & **Kendra H. Oliver**. ClinPharm Fellows as Producers: Developing an online course in clinical pharmacology as a professional development opportunity. *Under review at Journal of Chemical Education*.

NON-PEER REVIEWED PUBLICATIONS AND DIGITAL PRODUCTS

In-person and Virtual Exhibitions

- [Catalogue for ArtLab 2019 Exhibition](#)
- American Society of Civil Engineering [Art Show](#)
- ArtLab; Intersection of Art and Science 2017 [catalog](#)
- VI4 Artist in Residence Program 2021
- VI4 Artist in Residence Program 2022

Website, Video and Graphic Design

- ArtLab website: artlabvanderbilt.com
- Vanderbilt Institute for Infection, Immunology, and Inflammation Artist in Residence Program: artlab-air.com
- Research videos for Basic Sciences
- [Drug Discovery Online](#)
- ArtLab [website](#), [twitter](#), and [Instagram](#) accounts

Online Resources

- SciVid Website: scivid.online
- Kendra H. Oliver and Richard R. Coble (2016). [Teaching with Blogs](#). Vanderbilt University Center for Teaching.

TEACHING

COURSE NAME	DEPARTMENT	DATE	ROLE	AFFILIATED FACULTY
College Teaching Certificate Program	Center of Teaching and Learning	2013	Student	Cynthia Brame, Ph.D.
Blended Online Learning and Design Program	Center of Teaching and Learning	2015 - 2016	Fellow	Cynthia Brame, Ph.D.
Why is Biology So Complex?, Honors Course	Department of Physics	Fall 2015	Teaching Assistant	John Wikswo, Ph.D.
Diversity Seminar Series, Astronaut™	VUMC, Nephrology and Hypertension	Summer 2017	Instructor	Aaron Fidler, Ph.D. Billy G. Hudson, Ph.D.
Artist in Residence; Visual Communication in Science, iSeminar	Communication of Science and Technology	Spring 2019	Instructor	Garret Kaas, Ph.D.
Day of Discovery: Visual Science communication (6 th -8 th graders)	Center for Science Outreach	May 2019	Instructor	Bryson Reynolds, Ph.D. Clayton Coffman, Ph.D.
Artist-in-Residence Summer Program with VI4	VI4 (Infection, Immunology, and Inflammation)	Ongoing	Founder and Director	Eric Skaar, Ph.D., M.P.H.
BrightSpace Training Certificate		Jun 2019		
EMSE Online Teaching Certificate		Jan 2020		
Overview of Drug Discovery	Quantitative and Systems Biology Program	09/2020	Lecturer	Vito Quaranta, M.D.
Immersion Mentor	Communication of Science and Technology	Ongoing	Mentor	David Weintraub, Ph.D.
Cardiovascular Pharmacology - Targets	Pharmacology	01/2021	Lecturer	Alan Brash, Ph.D.

Overview of Drug Discovery	Quantitative and Systems Biology Program	09/2021	Lecturer	Vito Quaranta, M.D.
Rigor and Reproducibility; Foundations of Experimental Design and Hypothesis Testing	Cell and Developmental Biology	10/2021	Lecturer	Alissa Weaver, Ph.D.
Rigor and Reproducibility; Foundations of Experimental Design and Hypothesis Testing	Medical Scientist Training Program	11/2021	Lecturer	Lourdes Estrada, Ph.D.
Rigor and Reproducibility; Foundations of Experimental Design and Hypothesis Testing	Neuroscience Training Program	12/2021	Lecturer	Carrie A. Grueter, Ph.D.

For more details, see Education Portfolio

MENTORING*

TRAINING PERIOD	MENTEE NAME	MENTEE ROLE	CURRENT POSITION	TOPIC
Aug 2016 - Present	Emily Layton	ArtLab Studio Assistant	Post-graduate student	Communication of Science and Technology
Jun 2018 - Aug 2018	Favour Akabogu	Aspirnaut Student	Research Assistant	Medical Research
Aug 2018 - Present	Matthew Gothard	ArtLab Fellow	Undergraduate student	Interactive experiences with coding and kinetic art
Aug 2018 - May 2020	Justin Chediak	CSET internship	Medical Student	Interactive Display of Research in Stevenson Center
Aug 2018 - May 2020	Eve Moll	CSET Internship	Medical Student	Exploring the Intersection of Art and Medicine
Aug 2019 - May 2022	Stephanie Castillo	Graduate Research	Graduate student	Science Communication
Jan 2020 – May 2022	Skylar Cuevas	Immersion Student	Undergraduate Student	Communications of Science and Technology
Jan 2020 - May 2022	Navya Thakkar	Immersion Student	Undergraduate Student	Communications of Science and Technology
Jun 2020 - Aug 2020	Alexander M. Martinez Lopez	SURE Scholar	Undergraduate Student	AHA CV Summer Program
Aug 2020 - Present	Janet Mariadoss	Immersion Student	Undergraduate Student	Communication of Science and Technology
January 2021- Present	Qi (Kathy) Liu	Immersion Student	Undergraduate Student	Communication of Science and Technology
January 2021- Present	Helen Qian	Immersion Student	Undergraduate Student	Communication of Science and Technology

***For more details, see Education Portfolio**

PROFESSIONAL MEMBERSHIPS

American Physiological Society	2015 – 2016
American Heart Association	2014 – 2016, 2020 – Present
Atherosclerosis, Thrombosis, and Vascular Biology	
American Society for Pharmacology and Experimental Therapeutics	2012 – Present
American Society of Nephrology	2016 – 2018
American Society of Cell Biology	2016 – Present
American Society of Bioethics	2018 – Present
International Society of Medical Educators	2019 – Present
Academy of Academic Excellence	2021 – Present

Association of Science and Technology Centers	2020 – Present
SECAC (Southeastern College Art Conference)	2022– Present

SERVICE

Review Committee for Vanderbilt Pharmacology Journal Club	2014 - 2015	Member
Vanderbilt Pharmacology Graduate Student Association	2015	President
Vanderbilt Pharmacology Student-Invited Form Committee	2016	Member
Adventure Science Center Volunteer	2016	Volunteer
SyBURRE Searle Undergraduate- Research Program	2016 – 2019	Scientific adviser
Day of Discovery: 7 th -8 th grade outreach with ArtLab	2019	Instructor
ArtLab	2017 – Current	Founder/Director
Provost Appointed Online Education Committee	2019	Member
Online Learning Community at the Center for Teaching	2019	Member
Reviewer, International Journal of STEM Education	2020	Reviewer
Immersion Vanderbilt Faculty presentation and advisor	2022	Faculty representative
PLOS ONE	2022	Academic Editor

INVITED TALKS AND WORKSHOPS

Talk Title	Location	Date	Role
ArtLab: Building an Art-Science community at Vanderbilt	Department of Biological Sciences Annual Retreat	05/2019	Keynote Speaker
Using digital communication strategies to your advantage; websites, videos, courses and more	Vanderbilt Shared Resource & Core Retreat	09/2019	Speaker
Creating Effective Virtual Training Content for Cores: Using low-budget resources to create high quality videos	Core Exchange Virtual Event	09/2020	Workshop leader
Video production for scientists: a step-by-step approach to videography	The Association of Biomolecular Resource Facilities	09/2020	Workshop leader
How the digital world is changing science	Bacterial Locomotion and Signal Transduction conference	01/2021	Workshop leader
“Art-ifying” Your Science How Scientists Can (and Do) Use Art to Communicate Their Work	Bacterial Locomotion and Signal Transduction Conference	01/2021	Workshop leader
The role of design in online education	ISC Director meeting	07/22	Seminar speaker