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Associate Professor, Center for Heart and Reparative Medicine Research, Fralin Biomedical Research Institute
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EDUCATION

August 2007 – **Ph.D.**, Biomedical Engineering, **University of Virginia, Charlottesville, VA**

Advisor: Richard J. Price, Ph.D.

Thesis: Microvascular Remodeling in Ischemic Mouse Skeletal Muscle Exposed to Ultrasonic Microbubble Destruction: An Investigation of Mechanisms and Therapeutic Delivery

May 2005 – **M.S.**, Biomedical Engineering, **University of Virginia, Charlottesville, VA**

Advisor: Richard J. Price, Ph.D.

Thesis: Angiogenesis and Arteriogenesis in Mouse Skeletal Muscle Following Ultrasonic Microbubble Destruction

May 2001 – **B.S.**, *Major*: Electrical Engineering (Concentration: Control Systems), *Minor*: Biomedical Engineering, **University of Virginia, Charlottesville, VA**

PROFESSIONAL EXPERIENCE

July 2020 to present – **Associate Professor**, *Fralin Biomedical Research Institute*, Roanoke, VA 24016
Center for Heart and Reparative Medicine Research, Fralin Biomedical Research Institute
Department of Biomedical Engineering and Mechanics, Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences

July 2014 to present – **Assistant Professor**, Department of Basic Science Education, Virginia Tech Carilion School of Medicine, Roanoke, VA 24016

July 2014 to June 2020 – **Assistant Professor**, *Fralin Biomedical Research Institute*, Roanoke, VA 24016
Center for Heart and Reparative Medicine Research, Fralin Biomedical Research Institute
Department of Biomedical Engineering and Mechanics, Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences

May 2012 to June 2014 – **Postdoctoral Research Associate (NIH K99 Award)**, *Program in Molecular Biology and Biotechnology Laboratory*, University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599
Advisor: Victoria L. Bautch, Ph.D., Christer Betsholtz, Ph.D. (Uppsala Univ.), Shayn Peirce-Cottler, Ph.D. (Univ. of Va.), Feilim Mac Gabhann, Ph.D. (Johns Hopkins Univ.)
Research Area: Vascular Pericyte biology in the developing vasculature

October 2007 to April 2012 – **Postdoctoral Research Associate**, *Program in Molecular Biology and Biotechnology Laboratory*, University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599
Advisor: Victoria L. Bautch, Ph.D.
Research Area: Flt-1 (VEGFR-1) and Notch-Delta signaling in the developing vasculature

September 2002 to August 2007 – **Graduate Research Associate**, *Biomedical Engineering Department*, University of Virginia, Charlottesville, VA, 22903
Advisor: Richard Price, Ph.D.
Research Topic: Induction of vascular remodeling in skeletal muscle by ultrasonic microbubble destruction

June 2000 to September 2000 – **Undergraduate Research Assistant**, *Biomedical Engineering Department*, University of Virginia, Charlottesville, VA, 22903
Advisor: Richard Price, Ph.D.
Research Topic: Ultrasound-microbubble-mediated delivery of microspheres to skeletal muscle

June 1999 to September 1999 – **Undergraduate Research Assistant**, *Biomedical Engineering Department*, University of Virginia, Charlottesville, VA, 22903
Advisor: Klaus Ley, M.D.
Research Topic: Effect of L-selectin shedding on leukocyte rolling in vivo and in vitro

PUBLICATIONS AND PRE-PRINTS (*Co-corresponding Authors)

Payne LB, Tewari B, Dunkenberger L, Bond S, Savelli A, Darden J, Zhao H, Powell M, Oestreich K, Sontheimer H, Dal-Pra S, **Chappell JC**. Pericytes Directly Communicate with Emerging Endothelial Cells During Vasculogenesis. *bioRxiv* 2020.07.01.180752; doi: <https://doi.org/10.1101/2020.07.01.180752> (This article is a preprint and has not been certified by peer review.)

Payne LB, Hoque M, Houk C, Darden J, **Chappell JC**. Pericytes in Vascular Development. *Curr. Tissue Microenviron. Rep.* (2020). <https://doi.org/10.1007/s43152-020-00014-9>. Invited Review. *Currently Epub only.*

Corliss BA, Ray HC, Doty RW, Mathews C, Sheybani N, Fitzgerald K, Prince R, Kelly-Goss MR, Murfee WL, **Chappell J**, Owens GK, Yates PA, Peirce SM. Pericyte Bridges in Homeostasis and Hyperglycemia. *Diabetes*. 2020 Jul;69(7):1503-1517. doi: 10.2337/db19-0471. Epub 2020 Apr 22. PubMed PMID: 32321760; PubMed Central PMCID: PMC7306121.

Castro R, Taetzsch T, Vaughan SK, Godbe K, **Chappell J**, Settlage RE, Valdez G. Specific labeling of synaptic schwann cells reveals unique cellular and molecular features. *Elife*. 2020 Jun 25;9. doi: 10.7554/eLife.56935. PubMed PMID: 32584256; PubMed Central PMCID: PMC7316509.

Chappell JC*, Darden J, Payne LB, Fink K, Bautch VL*. Blood Vessel Patterning on Retinal Astrocytes Requires Endothelial Flt-1 (VEGFR-1). *J Dev Biol*. 2019 Sep 7;7(3). pii: E18. doi: 10.3390/jdb7030018. PubMed PMID: 31500294; PubMed Central PMCID: PMC6787756.

Gorick CM, **Chappell JC**, Price RJ. Applications of Ultrasound to Stimulate Therapeutic Revascularization. *Int J Mol Sci*. 2019 Jun 24;20(12). pii: E3081. doi: 10.3390/ijms20123081. Review. PubMed PMID: 31238531; PubMed Central PMCID: PMC6627741.

Payne LB, Zhao H, James CC, Darden J, McGuire D, Taylor S, Smyth JW, **Chappell JC**. The pericyte microenvironment during vascular development. *Microcirculation*. 2019 May 7. doi: 10.1111/micc.12554. [Epub ahead of print] Invited Review. PubMed PMID:31066166.

Zhao H, **Chappell JC**. Microvascular bioengineering: a focus on pericytes. *J Biol Eng*. 2019 Mar 29;13:26. doi: 10.1186/s13036-019-0158-3. eCollection 2019. Invited Review. PubMed PMID: 30984287; PubMed Central PMCID: PMC6444752.

Darden J, Payne LB, Zhao H, **Chappell JC**. Excess vascular endothelial growth factor-A disrupts pericyte recruitment during blood vessel formation. *Angiogenesis*. 2019 Feb;22(1):167-183. doi: 10.1007/s10456-018-9648-z. Epub 2018 Sep 20. PubMed PMID: 30238211; PubMed Central PMCID: PMC6360133.

Chappell JC, Payne LB, Rathmell WK. Hypoxia, angiogenesis, and metabolism in the hereditary kidney cancers. *J Clin Invest*. 2019 Feb 1;129(2):442-451. doi: 10.1172/JCI120855. Epub 2019 Jan 7. Invited Review. PubMed PMID: 30614813; PubMed Central PMCID: PMC6355237.

Zhao H, Darden J, **Chappell JC**. Establishment and characterization of an embryonic pericyte cell line. *Microcirculation*. 2018 Jul;25(5):e12461. doi: 10.1111/micc.12461. Epub 2018 Jun 7. PubMed PMID: 29770525.

Arreola A, Payne LB, Julian MH, de Cubas AA, Daniels AB, Taylor S, Zhao H, Darden J, Bautch VL, Rathmell WK*, **Chappell JC***. Von Hippel-Lindau mutations disrupt vascular patterning and maturation via Notch. *JCI Insight*. 2018 Feb 22;3(4). pii: 92193. doi: 10.1172/jci.insight.92193. eCollection 2018 Feb 22. PubMed PMID: 29467323; PubMed Central PMCID: PMC5916240.

Walpole J, Mac Gabhann F, Peirce SM, **Chappell JC**. Agent-based computational model of retinal angiogenesis simulates microvascular network morphology as a function of pericyte coverage. *Microcirculation*. 2017 Nov;24(8). doi: 10.1111/micc.12393. PubMed PMID: 28791758; PubMed Central PMCID: PMC5673505.

Nesmith JE, **Chappell JC**, Cluceru JG, Bautch VL. Blood vessel anastomosis is spatially regulated by Flt1 during angiogenesis. *Development*. 2017 Mar 1;144(5):889-896. doi: 10.1242/dev.145672. PubMed PMID: 28246215; PubMed Central PMCID: PMC5374355.

Chappell JC, Cluceru JG, Nesmith JE, Mouillesseaux KP, Bradley VB, Hartland CM, Hashambhoy-Ramsay YL, Walpole J, Peirce SM, Mac Gabhann F, Bautch VL. Flt-1 (VEGFR-1) coordinates discrete stages of blood vessel formation. *Cardiovasc Res*. 2016 Jul 1;111(1):84-93. doi: 10.1093/cvr/cvw091. Epub 2016 May 3. PubMed PMID: 27142980; PubMed Central PMCID: PMC4909163.

Walpole J, **Chappell JC**, Cluceru JG, Mac Gabhann F, Bautch VL, Peirce SM. Agent-based model of angiogenesis simulates capillary sprout initiation in multicellular networks. *Integr Biol (Camb)*. 2015 Sep;7(9):987-97. doi: 10.1039/c5ib00024f. Epub 2015 Jul 9. PubMed PMID: 26158406; PubMed Central PMCID: PMC4558383.

Chappell JC, Mouillesseaux KP, Bautch VL. Flt-1 (vascular endothelial growth factor receptor-1) is essential for the vascular endothelial growth factor-Notch feedback loop during angiogenesis. *Arterioscler Thromb Vasc Biol*. 2013 Aug;33(8):1952-9. doi: 10.1161/ATVBAHA.113.301805. Epub 2013 Jun 6. PubMed PMID: 23744993; PubMed Central PMCID: PMC4521230.

Chappell JC, Wiley DM, Bautch VL. How blood vessel networks are made and measured. *Cells Tissues Organs*. 2012;195(1-2):94-107. doi: 10.1159/000331398. Epub 2011 Oct 12. Invited Review. PubMed PMID: 21996655; PubMed Central PMCID: PMC3325601.

Chappell JC, Wiley DM, Bautch VL. Regulation of blood vessel sprouting. *Semin Cell Dev Biol*. 2011 Dec;22(9):1005-11. doi: 10.1016/j.semcdb.2011.10.006. Epub 2011 Oct 14. Invited Review. PubMed PMID: 22020130; PubMed Central PMCID: PMC4521217.

Hashambhoy YL, **Chappell JC**, Peirce SM, Bautch VL, Mac Gabhann F. Computational modeling of interacting VEGF and soluble VEGF receptor concentration gradients. *Front Physiol*. 2011 Oct 4;2:62. doi: 10.3389/fphys.2011.00062. eCollection 2011. PubMed PMID: 22007175; PubMed Central PMCID: PMC3185289.

Randhawa PK, Rylova S, Heinz JY, Kiser S, Fried JH, Dunworth WP, Anderson AL, Barber AT, **Chappell JC**, Roberts DM, Bautch VL. The Ras activator RasGRP3 mediates diabetes-induced embryonic defects and affects endothelial cell migration. *Circ Res*. 2011 May 13;108(10):1199-208. doi: 10.1161/CIRCRESAHA.110.230888. Epub 2011 Apr 7. PubMed PMID: 21474816; PubMed Central PMCID: PMC3709466.

Chappell JC, Bautch VL. Vascular development: genetic mechanisms and links to vascular disease. *Curr Top Dev Biol*. 2010;90:43-72. doi: 10.1016/S0070-2153(10)90002-1. Review. PubMed PMID: 20691847.

Chappell JC, Taylor SM, Ferrara N, Bautch VL. Local guidance of emerging vessel sprouts requires soluble Flt-1. *Dev Cell*. 2009 Sep;17(3):377-86. doi: 10.1016/j.devcel.2009.07.011. PubMed PMID: 19758562; PubMed Central PMCID: PMC2747120.

Chappell JC, Song J, Burke CW, Klibanov AL, Price RJ. Targeted delivery of nanoparticles bearing fibroblast growth factor-2 by ultrasonic microbubble destruction for therapeutic arteriogenesis. *Small*. 2008 Oct;4(10):1769-77. doi: 10.1002/smll.200800806. PubMed PMID: 18720443; PubMed Central PMCID: PMC2716217.

Kappas NC, Zeng G, **Chappell JC**, Kearney JB, Hazarika S, Kallianos KG, Patterson C, Annex BH, Bautch VL. The VEGF receptor Flt-1 spatially modulates Flk-1 signaling and blood vessel branching. *J Cell Biol*. 2008 Jun 2;181(5):847-58. doi: 10.1083/jcb.200709114. Epub 2008 May 26. PubMed PMID: 18504303; PubMed Central PMCID: PMC2396811.

Chappell JC, Song J, Klibanov AL, Price RJ. Ultrasonic microbubble destruction stimulates therapeutic arteriogenesis via the CD18-dependent recruitment of bone marrow-derived cells. *Arterioscler Thromb Vasc Biol*. 2008 Jun;28(6):1117-22. doi: 10.1161/ATVBAHA.108.165589. Epub 2008 Apr 10. PubMed PMID: 18403725.

Chappell JC, Price RJ. Targeted therapeutic applications of acoustically active microspheres in the microcirculation. *Microcirculation*. 2006 Jan;13(1):57-70. Review. PubMed PMID: 16393947.

Chappell JC, Klibanov AL, Price RJ. Ultrasound-microbubble-induced neovascularization in mouse skeletal muscle. *Ultrasound Med Biol*. 2005 Oct;31(10):1411-22. PubMed PMID: 16223645.

Song J, **Chappell JC**, Qi M, VanGieson EJ, Kaul S, Price RJ. Influence of injection site, microvascular pressure and ultrasound variables on microbubble-mediated delivery of microspheres to muscle. *J Am Coll Cardiol*. 2002 Feb 20;39(4):726-31. PubMed PMID: 11849875.

MANUSCRIPTS IN REVIEW AND PREPARATION

Darden J, Suarez-Martinez A, Zhao H, Hendricks A, Hartland C, Chong D, Kushner E, Murfee WL, **Chappell JC**. (2020) Pericyte Migration and Proliferation are Tightly Synchronized to Endothelial Cell Sprouting Dynamics. In review at *Integrative Biology*.

Payne LB, Nolan K, Paralkar K, Bradley V, Monavarfeshani A, Fox MA, **Chappell JC**. (2020) Comparative Ultrastructure of Perivascular Cells in the Brain Microcirculation. In preparation. (Target journal: *Cell Reports*)

Darden J, Jenkins-Houk C, **Chappell JC**. (2019) Characterization of Pericyte Investment in the Developing Mouse Germinal Matrix. In preparation. (Target journal: *Journal for Comparative Neurology*)

Darden J, Savelli A, **Chappell JC**. (2020) Endothelial Cell and Pericyte Connexin43 expression and phosphorylation are modulated by the VEGF Receptor Flt-1. In preparation. (Target journal: *Angiogenesis*)

BOOK CHAPTER

Richard J. Price, Meghan M. Nickerson, **John C. Chappell**, Christopher R. Anderson, Ji Song. Bioengineering Angiogenesis: Novel Approaches to Stimulating Microvessel Growth and Remodeling. In *New Frontiers in Angiogenesis*. 2006, pp 125-157.

RESEARCH SUPPORT

-- Active --

19TPA34910121 (PI: Chappell) 07/01/2019 – 06/30/2022

American Heart Association

Ischemia-induced Pericyte Loss and BBB Fragility

This project will explore the response of brain pericytes to ischemia and the sudden loss of blood flow, focusing on the potential role of Connexin43 in mediating BBB fragility after acute ischemic events.

Role: PI

R01HL146596 (PI: Chappell) 07/01/2019 – 06/30/2023

NIH-NHLBI

Vascular Basement Membrane Composition Regulates Pericyte Investment in Developing Blood Vessels

The overall objective of this research is to investigate how Col-III and Col-IV deposition between pericytes and endothelial cells is: (i) regulated by VEGF-A signaling in endothelial cells but not pericytes, and (ii) maintained at precise levels to promote and sustain pericyte investment.

Role: PI

1752339 (PI: Chappell) 03/15/2018 – 02/28/2023

NSF

CAREER: Pericyte-Endothelial Cell Interactions via Extracellular Matrix Deposition Regulates Blood Vessel Formation and Function

This project will investigate the basic mechanisms underlying how changes in collagen IV and vitronectin in the vascular basement membrane affect pericyte adhesion and endothelial cell junctions using developmental models and computational approaches.

Role: PI

1931675 (PI: Chappell) 03/15/2018 – 02/28/2023

NSF

REU Supplement: CAREER: Pericyte-Endothelial Cell Interactions via Extracellular Matrix Deposition

Regulates Blood Vessel Formation and Function

The goal for this proposed project is to train a well-qualified REU student with an experienced Chappell lab graduate student. The requested supplemental funds will support one undergraduate student for a 10-week

Research Experience for Undergraduates (REU) project during the summer of 2019.

Role: PI

R01NS105807 (PI: Robel) 03/01/2018 – 02/28/2023

NIH-NINDS

Evaluating Astrocyte Loss After Traumatic Brain Injury in Post-Traumatic Epilepsy

The goal of this study is to determine the effects of traumatic brain injury on astrocytes, with a particular interest in disruption of the blood-brain barrier as a contributing factor in post-traumatic epilepsy.

Role: Co-I

Standard Research Agreement (PI: Chappell) 02/01/2020 – 1/31/2021

Merand Pharmaceuticals, Inc.

Pilot study: Targeting microRNA-93 (miR93) to enhance role of vascular mural cells (pericytes and smooth muscle cells) in blood vessel remodeling.

The goal of this project is to test the effects of microRNA-93 (miR93) on blood vessel formation specifically with regard to the contributions of vascular pericytes and smooth muscle cells.

Role: PI

-- Pending --

R01HL157397 (PI: Chappell) 04/01/2021 – 03/31/2026

Pericyte Contributions to Vasculogenic Endothelial Cell Organization

The goal of this study is to determine the mechanisms by which pericytes engage the nascent endothelium in developing vascular networks.

Role: PI

-- Completed --

Standard Research Agreement (PI: Chappell) 12/01/2019 – 06/01/2020

Veralox Therapeutics, Inc.

Pilot study of human retina immunostaining for 12-LOX

This project will quantify 12-LOX-positive signal overlap with blood vessel signal in both non-diabetic and diabetic cadaveric human retina samples via confocal imagery at multiple resolutions after immunostaining.

Role: PI

Va Tech ICTAS Junior Faculty Award (MPI: Chappell, VandeVord) 07/01/2017 – 06/30/2019

Neurovascular Dysfunction following Blast-Induced Traumatic Brain Injury

The goal of this study is to identify the changes in the structure and function of the brain vasculature in response to a traumatic brain injury.

Role: MPI

R01NS096281 (PI: Theus) 06/01/2016 – 05/31/2021

NIH-NINDS

Novel Mechanisms Regulating Cerebral Arteriogenesis and Neuro-restoration

The goal of this study is to test the hypothesis that activation of Eph receptor tyrosine kinase signaling mediates neural tissue damage and dysfunction by suppressing the endothelial cell response during arteriole vascular remodeling.

Role: Co-I

VT Adaptive Brain and Behaviors-Dest. Area RFC (MPI: Chappell, Theus) 01/01/2018 – 06/15/2018

Characterizing Vascular-related Biomarkers in patients with TBI

Within this project, TBI patient blood and cerebral spinal fluid samples will be evaluated for potential vascular-related biomarkers that will allow for further stratification of patients across risk categories.

Role: MPI

UVA-VTC Seed Grant (MPI: Chappell, Peirce-Cottler) 01/01/2017 – 12/31/2017

Computational and Experimental Modeling of Blood Vessel Growth and Vascular Pericyte Investment in the Developing Germinal Matrix

Goal: To investigate an experimental model of the developing germinal matrix blood vasculature and provide a basis for developing a computational model of the cellular and molecular events underlying the formation of this microvessel network.

Role: MPI

R00HL105779 (PI: Chappell) 12/01/2014 – 11/30/2017

NIH-NHLBI

The Role of Vascular Flt-1 in Endothelial-Pericyte Interactions

The goal of this study is to define the mechanistic relationship between Flt-1-VEGF-A modulation and the PDGF-B pathway in the recruitment and investment of vascular pericytes into developing blood vessel networks. In addition, a computational model of these mechanisms will be developed as a tool for hypothesis generation.

Role: PI

R56HL133826 (PI: Chappell) 09/15/2016 – 08/31/2017

NIH-NHLBI

Flt-1-VEGF-Cx43 Regulation of Vascular Pericyte Investment

The goal of this study is to investigate the novel hypothesis that sFlt-1 modulates VEGF-A signaling to provide essential regulation of pericyte-endothelial interactions in the developing retina through (i) coordination of endothelial phenotypic heterogeneity, and (ii) orchestrated spatial expression of Cx43 on pericytes and endothelial cells.

Role: PI

K99HL105779 (PI: Chappell) 05/01/2012 – 06/30/2014

NHLBI

The Role of Vascular Flt-1 in Endothelial-Pericyte Interactions

The goal of this study is to develop a computational model capturing VEGF Receptor-1 in modulating the recruitment and investment of vascular pericytes into developing blood vessel networks.

Role: PI/Mentee

NIH/NRSA Postdoctoral Fellowship (PI/Mentor: Victoria Bautch)

January 2009 – December 2010, Postdoctoral Fellowship (Training, Individual) - \$80,000 (total costs)

American Heart Assoc. Postdoctoral Fellowship, Mid-Atlantic Affiliate (PI/Mentor: Victoria Bautch)

July 2008 – December 2008, Postdoctoral Fellowship (Training, Individual) – \$80,000 (total costs)

UNC Lineberger Comprehensive Cancer Center Postdoctoral Fellowship in Basic Research

January 2008 – July 2008, Postdoctoral Training Grant (Training, Institution) – salary and benefits costs

FELLOWSHIPS, HONORS AND AWARDS

2019 – Liviu Librescu Faculty Prize, outstanding accomplishments for the 2018-2019 academic year – Department of Biomedical Engineering and Mechanics, Virginia Tech

2018 & 2019 – Honoring Exemplary Researcher Outreach Award, Roanoke Valley Governor's School for Science & Tech.

2018 – Leader in Research – Department of Biomedical Engineering and Mechanics, Virginia Tech

2017 – Teaching Excellence – Translational Biology, Medicine, & Health (TBMH) Graduate Program, Virginia Tech

2011 – Outstanding Trainee Oral Presentation, UNC IVB/MHI Research Symposium 2011

2010 – Joseph S. Pagano Award for Best Paper by a Postdoctoral Fellow for 2009 – First Place

2010 – Keystone Symposia Conference on Angiogenesis in Health and Disease – Travel Scholarship

2009 – Gordon Research Conference on Angiogenesis – Poster Presentation Award

2007 – University of Virginia, Engineering Research Symposium – First Place

2006 – Virginia Nanotech Student Presentation Competition (Finalist)

2002 – Seven Society Graduate Fellowship for Superb Teaching (Finalist)

INVITED TALKS

Chappell, J.C. (2021) TBD. Microcirculatory Society sponsored session at the Vascular Matrix Biology and Bioengineering Workshop, Vascular Biology 2021. Monterey, CA.

Chappell, J.C. (2018) The Pericyte Microenvironment during Angiogenic Sprouting. Invited by Drs. Anjelica Gonzalez and Yajaira Suárez. Seminar Series of the Vascular Biology and Therapeutics Program and the Section of Cardiovascular Medicine Seminar Series at Yale University. New Haven, CT.

Chappell, J.C. (2018) Vascular Abnormalities with VHL Mutations. Invited by 13th International VHL Medical / Research Symposium Planning Committee and the VHL Alliance. 13th International VHL Medical/Research Symposium. Houston, TX.

Chappell, J.C. (2018) Pericyte Migration and Investment during Developmental Blood Vessel Remodeling. Invited by World Congress of Microcirculation Program Committee. World Congress of Microcirculation 2018. Vancouver, BC, Canada.

Chappell, J.C. (2018) The Pericyte Microenvironment. Invited by Microcirculatory Society Annual Meeting Program Committee. Annual Microcirculatory Society Meeting / Experimental Biology Meeting 2018. San Diego, CA.

Chappell, J.C. (2018) Characterizing Vascular-related Biomarkers in Patients with Traumatic Brain Injury. Adaptive Brain and Behavior Destination Area Workshop. Blacksburg, VA.

Chappell, J.C. (2017) Vascular Pericyte Contributions to Blood Vessel Health and Pathogenesis. Invited by Dr. Shawn Safford. Carilion Clinic Surgical Grand Rounds. Roanoke, VA.

Chappell, J.C. (2017) Targeting Vascular Pericytes for Therapeutic Applications. Invited by Dr. Michelle Theus. Pre-Dissertation Defense Lecture. Vet-Med, VT, Blacksburg, VA.

Chappell, J.C. (2017) Building a Blood Vessel. Invited by Mr. Matthew Yanoff. VTCRI-AOA Collaboration Event, Roanoke, VA.

Chappell, J.C. and Horrell, L. (2016) Future Scientists: Developing Curiosity, Creativity, Communication, and Coping. Virginia Association for Supervision and Curriculum Development (VASCD) 2016 Annual Conference, Williamsburg, VA.

Chappell, J.C. (2016). Building a Blood Vessel. Invited by Mr. William Latham and Dr. Corey Cleland. James Madison University, Harrisonburg, Virginia.

Chappell, J.C. (2016). VEGF-A Coordinates Pericyte-Endothelial Cell Interactions via Connexin43. Invited by Conference organizers. *Gordon Research Conference on Endothelial Cell Phenotypes in Health and Disease*. Melia Golf Vichy Catalan, Girona, Spain.

Chappell, J.C. (2016). Vascular Pericytes. Invited by Symposium organizers. Inaugural Virginia Tech-Virginia Tech Carilion Research Institute Muscle Symposium, Blacksburg, Virginia.

Chappell, J.C. (2016). Curiosity, Creativity, Communication, and Coping. "Bite of Science" Presentation, Jefferson College of Health Sciences, Roanoke, Virginia. Invited by Center for Excellence in Education, McLean, Virginia.

Chappell, J.C. (2014). Faculty Candidate Interview, Columbia University, Biomedical Engineering Department, New York, NY.

Chappell, J.C. (2014). Faculty Candidate Interview, Georgia Regents University, Vascular Biology Center, Augusta, GA.

Chappell, J.C. (2014). Faculty Candidate Interview, Case Western Reserve University, Department of Biology, Cleveland, OH.

- Chappell, J.C.** (2014). Faculty Candidate Interview, Baylor College of Medicine, Dept. of Obstetrics and Gynecology, Houston, TX.
- Chappell, J.C.** (2014). Faculty Candidate Interview, Georgia Tech, Biomedical Engineering Department, Atlanta, GA.
- Chappell, J.C.** (2013). Faculty Candidate Interview, Virginia Tech Carilion Research Institute, Roanoke, VA.
- Chappell, J.C.** (2013). Faculty Candidate Interview, West Virginia University, Department of Pharmacology and Physiology, Morgantown, WV.
- Chappell, J.C.** (2013). Does Flt-1 Regulation of VEGF Signaling Modulate Pericyte Recruitment and Investment? *Host: Christer Betsholtz*, Uppsala University, Uppsala, Sweden.
- Chappell, J.C.** (2013) Dynamic Imaging of Developing Blood Vessels Reveals Unique Aspects of Endothelial Cell Sprouting and Vascular Network Formation. *Gordon Research Seminar on Angiogenesis 2013*. Salve Regina University, Newport, RI.
- Chappell, J.C.** (2013) Flt-1 Modulates the Intersection between VEGF and Notch Signaling to Regulate Endothelial Cell Proliferation and Blood Vessel Formation. *IVB/MHI Research Symposium 2013*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2013) Sprouting Angiogenesis: The Need for Computational Approaches. Invited by Dr. Feilim Mac Gabhann. Johns Hopkins University, Baltimore, MD.
- Chappell, J.C.** (2012) Flt-1 Regulates Blood Vessel Morphology in the Developing Mouse Retinal Vasculature. *UNC Developmental Biology Club Meeting*. Chapel Hill, NC.
- Chappell, J.C.** (2012) Flt-1 Modulates the Intersection between VEGF and Notch Signaling to Regulate Endothelial Cell Proliferation and Blood Vessel Formation. *NAVBO Workshops in Vascular Biology*. Monterey, CA.
- Chappell, J.C.** (2011) Flt-1 Regulates Blood Vessel Morphology in the Developing Mouse Retinal Vasculature. *UNC Genetics Retreat*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2011) The Role of Vascular Flt-1 (VEGFR-1) in Endothelial Heterogeneity. *IVB/MHI Research Symposium 2011*. University of North Carolina at Chapel Hill, Chapel Hill, NC. [Outstanding Presentation Award]
- Chappell, J.C.** (2010). Flt-1 (VEGFR1) Activity Intersects with Notch Signaling During Vessel Formation. *Lineberger Comprehensive Cancer Center 35th Annual Postdoc-Faculty Research Day – Joseph S. Pagano Award*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2010). How Vessel Sprouts Leave Home and Find New Friends. *Curriculum in Genetics and Molecular Biology Happy Hour*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2010). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). *Keystone Symposia Conference on Angiogenesis in Health and Disease*. Keystone, CO.
- Chappell, J.C.** (2009). How Vessel Sprouts Leave Home and Find New Friends. *The Sixth Annual Developmental Biology Symposium*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2009). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). *Lineberger Comprehensive Cancer Center 34th Annual Postdoc-Faculty Research Day*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** (2009). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). University of Virginia, Charlottesville, VA.

Chappell, J.C. (2008). Flt-1 (VEGFR-1) regulation of endothelial cell sprouting and blood vessel morphogenesis. *Lineberger Comprehensive Cancer Center 33rd Annual Postdoc-Faculty Research Day*. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C. (2007). Postdoctoral Fellow Interview with Victoria Bautch, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C. (2007). Postdoctoral Fellow Interview with Anne Eichmann, INSERM, Paris, France.

ABSTRACTS / POSTER PRESENTATIONS

North, M, Payne LB, **Chappell JC**. (2020) Potential Blood and Vascular Defects in a Model of Null and Type 2B VHL Mutations. *14th International VHL Medical/Research Symposium*. October 2020. Virtual conference. – *Abstract submitted*.

Payne LB, Tewari B, Dunkenberger L, Bond S, Savelli A, Darden J, Zhao H, Powell M, Oestreich K, **Sontheimer H**, Dal-Pra S, **Chappell JC**. Direct communication between pericytes and the developing endothelium observed during vasculogenesis in a novel mouse ESC line. [Poster] presented at *2019 NAVBO Vascular Biology Conference*. October 2019, Monterey, CA.

Taylor S, Masters S, **Chappell JC**. Pericyte contributions to hyperglycemia-induced extracellular matrix remodeling around intestinal villi microvessels. [Poster] presented at *2019 NAVBO Vascular Biology Conference*. October 2019, Monterey, CA.

McGuire D, **Chappell JC**. The Impact of Hyperglycemia on the Expression of Vascular-Bound Transporters of Amyloid-beta and Vascular Cell Survival in the Blood-Brain Barrier. [Poster] presented at *2019 NAVBO Vascular Biology Conference*. October 2019, Monterey, CA.

Chada AR, Lord MG, Nguyen HHT, Davis JN, Bouzaher MH, Taylor SC, Payne LB, Durica AR, **Chappell JC**. (February 2019) Impact of Smoking on Smooth Muscle Content of Placental Vessels in Preeclampsia. [Poster] presented at *2019 Society of Maternal-Fetal Medicine*. February 2020, Dallas, TX.

Chada AR, Lord MG, Nguyen HHT, Davis JN, Bouzaher MH, Masters S, Taylor SC, Payne LB, Durica AR, **Chappell JC**. (September 2019) "Vascular Remodeling in Preeclampsia: Smooth Muscle Content in Placenta Vessels." Oral and Poster Presentations, *American College of Obstetricians and Gynecologists (ACOG) Joint Districts Annual Meeting*. New Orleans, LA.

Zhao, H, **Chappell JC**. (2019) Pericyte-Endothelial Cell Interactions during Blood Vessel Formation and in Diabetic Scenarios. Poster presented at *2019 Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences Annual Student Symposium*. Blacksburg, VA.

Patolia H, Rikard SM, Walpole J, Peirce S, **Chappell JC**. (2019) Agent-Based Model Simulates Effect of Dose-Dependent Inhibition of Angiogenesis by Increasing Secretion of Extracellular Soluble PDGF Receptor-Beta by Pericytes. *European Vascular Biology Organization/European Society for Microcirculation Meeting 2019*. Maastricht, Netherlands.

Houk, C, Darden J, **Chappell JC**. (2019) Characterization of germinal matrix vasculature in the early postnatal mouse brain. *European Vascular Biology Organization/European Society for Microcirculation Meeting 2019*. Maastricht, Netherlands.

Suarez-Martinez AD, Wang J, **Chappell JC**, Murfee WL. (2019) Investigating Pericyte Dynamics During Angiogenesis in the Mouse Mesometrium Culture Model. Poster presented at *Experimental Biology/Microcirculatory Society Annual Meeting 2019*. Orlando, FL.

Zhao, H, **Chappell JC**. (2018) Diabetic Retinopathy as a chronic microvascular disease. Poster presented at *2018 Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences Annual Student Symposium*. Winston-Salem, NC.

- Patolia H, Rikard SM, Peirce S, **Chappell JC**. (2018) Agent-Based Model of Pericyte Response to Platelet-Derived Growth Factor-BB from Sprouting Endothelial Cells in the Developing Mouse Retina. *Annual Microcirculatory Society Meeting / Experimental Biology Meeting 2018*. San Diego, CA.
- Rikard SM, Patolia H, **Chappell JC**, Peirce SM. (2018) Agent based model of endothelial cell and pericyte interactions during angiogenesis in the germinal matrix. *Annual Microcirculatory Society Meeting / Experimental Biology Meeting 2018*. San Diego, CA.
- Nguyen T, Patolia H, Rikard SM, Walpole J, Peirce-Cottler SM, **Chappell JC**. (2018) Characterization of Pericyte Loss in Cadaveric Human Retinas in Diabetes Mellitus. *ARVO Annual Meeting 2018*. Honolulu, HI.
- Taylor S, **Chappell JC**. (2018) Effect of chronic hyperglycemia on intestinal smooth muscle using leptin receptor knockout model of diabetes. *2018 VT-VTCRI Muscle Symposium*. Roanoke, VA.
- Zhao, H., **Chappell, J.C.** (2017). Pericyte Cell Line Isolation, Validation, and Applications. *NAVBO Vascular Biology*. Asilomar, CA.
- Darden, J., **Chappell, J.C.** (2017). Loss of Flt-1 Impacts Pericyte Recruitment and Investment during Early Development. *Gordon Research Conference on Vascular Cell Biology*. Ventura, CA.
- Darden, J., **Chappell, J.C.** (2016). Loss of Flt-1 Alters Pericyte Recruitment and Investment during Early Development. *International Vascular Biology Meeting*. Boston, MA.
- Savelli, A., Darden, J., Taylor, S., **Chappell, J.C.** (2016). Endothelial Cell and Pericyte Connexin43 expression and phosphorylation are modulated by the VEGF Receptor Flt-1. *International Vascular Biology Meeting*. Boston, MA.
- Darden, J., Savelli, A., Zhao, H., Taylor, S., **Chappell, J.C.** (2016). VEGF-A-Cx43 Signaling Axis Regulates Vascular Pericyte Investment. *Gordon Research Conference on Endothelial Cell Phenotypes in Health and Disease*. Melia Golf Vichy Catalan, Girona, Spain.
- Darden, J. and **Chappell, J.C.** (2015) Loss of Flt-1 Alters Pericyte Recruitment and Investment during Early Development. *Vasculata 2015*. University of Virginia, Charlottesville, VA.
- Taylor, S. and **Chappell, J.C.** (2014) Pericytes– Potential Targets in Treating Vascular Pathologies. *2014 CTSI-CN & VT Research Day*. Washington, D.C.
- Walpole, J., **Chappell, J.C.**, Cluceru, J.G., Mac Gabhann, F.M., Bautch, V.L., Peirce, S.M (2014). Agent-Based Model for Predicting Angiogenic Sprout Frequency in 3D Culture. *Biomedical Engineering Society Annual Meeting 2014*. San Antonio, TX.
- Chappell, J.C.**, Julia Cluceru, V.L. Bautch (2014). Dynamic Imaging of Developing Blood Vessels Reveals Unique Aspects of Endothelial Cell Sprouting and Vascular Network Formation. *Gordon Research Conference on Endothelial Cell Phenotypes in Health and Disease*. Melia Golf Vichy Catalan, Girona, Spain.
- Arreola, A., **Chappell, J.C.**, V.L. Bautch, K. Rathmell (2013). Role of von Hippel-Lindau Mutant on Vasculogenesis. *Gordon Research Conference on Angiogenesis 2013*. Salve Regina University, Newport, RI.
- Chappell, J.C.**, Julia Cluceru, V.L. Bautch (2013). Dynamic Imaging of Developing Blood Vessels Reveals Unique Aspects of Endothelial Cell Sprouting and Vascular Network Formation. *Gordon Research Conference on Angiogenesis 2013*. Salve Regina University, Newport, RI.
- Chappell, J.C.**, K. Hannan, M. Saponaro, H. Park, G. Wozniak, S. Strickland, V.L. Bautch. VEGF-Notch Pathway Interactions Require a Critical Flt-1-Mediated Feedback Loop during Angiogenesis. *Lineberger Comprehensive Cancer Center 37th Annual Postdoc-Faculty Research Day*. University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Chappell, J.C.** Flt-1 Regulates Blood Vessel Morphology in the Developing Mouse Retinal Vasculature. *IVB/MHI Research Symposium 2012*. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C., K. Hannan, M. Saponaro, H. Park, G. Wozniak, S. Strickland, V.L. Bautch (2011). Endothelial Notch Output is Context-Dependent. *Gordon Research Conference on Vascular Cell Biology 2011*. Ventura, CA.

Hashambhoy Y.L., **J.C. Chappell**, A. Nguyen, S.M. Peirce, V.L. Bautch, F. Mac Gabhann. (2011). Simulations Predict that Competing Gradients of VEGF and sFlt1 Alter VEGF Receptor Activation. *Biophysical Society Annual Meeting*. Baltimore, MD.

Chappell, J.C., K. Hannan, M. Saponaro, H. Park, G. Wozniak, V.L. Bautch. (2010). Flt-1 (VEGF-R1) and Notch in Blood Vessel Formation. *The Seventh Annual Developmental Biology Symposium 2010*. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C., S.M. Taylor, N. Ferrara, V.L. Bautch (2010). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). *Keystone Symposia Conference on Angiogenesis in Health and Disease*. Keystone, CO. [Travel Scholarship Award]

Chappell, J.C., S.M. Taylor, N. Ferrara, V.L. Bautch (2009). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). *The Seventh Annual Biology Retreat and Symposium*. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C., S.M. Taylor, N. Ferrara, V.L. Bautch (2009). A Novel Form of Vessel Sprout Guidance Requires Soluble Flt-1 (VEGFR-1). *Gordon Research Conference on Angiogenesis 2009*. Salve Regina University, Newport, RI. [Poster Presentation Award]

Chappell, J.C., G. Zeng, N.C. Kappas, J.B. Kearney, V.L. Bautch (2008). The Role of flt-1 (Vascular Endothelial Growth Factor Receptor 1) in the Guidance of Sprouting Blood Vessels. *The Fifth Annual Developmental Biology Symposium 2008*. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Chappell, J.C., J. Song, A.L. Klivanov, R.J. Price (2008). Amplification of Ultrasound-Microbubble-Induced Arteriogenesis by the Targeted Delivery of Fibroblast Growth Factor-2 Bearing Nanoparticles. *International Symposium on Therapeutic Ultrasound 2008*.

Chappell, J.C., J. Song, A.L. Klivanov, R.J. Price (2008), Therapeutic Arteriogenesis by Ultrasonic Microbubble Destruction is Dependent on the Recruitment of CD18 (Beta2 integrin)-Expressing Bone Marrow-Derived Cells. *International Symposium on Therapeutic Ultrasound 2008*.

Chappell, J.C., J. Song, A.L. Klivanov, R.J. Price (2008). Therapeutic Arteriogenesis via the Ultrasound-Microbubble-Targeted Delivery of Fibroblast Growth Factor-2 (FGF-2) Bearing Poly(Lactic-Co-Glycolic Acid) Nanoparticles. *Experimental Biology 2008*.

Chappell, J.C., G. Zeng, N.C. Kappas, J.B. Kearney, V.L. Bautch (2008). The Role of flt-1 (VEGFR-1) in Sprout Guidance and Vessel Morphogenesis. *Integrative Vascular Biology and Carolina Cardiovascular Biology Center Research Symposium 2008*.

Chappell, J.C., A.L. Klivanov, R.J. Price (2007). Therapeutic Arteriogenesis via the Ultrasound-Microbubble-Targeted Delivery of Fibroblast Growth Factor-2 (FGF-2) Bearing Poly(Lactic-Co-Glycolic Acid) Nanoparticles. *BMES Annual Fall Meeting 2007*.

Chappell, J.C., J.Y. Hsiang, A.L. Klivanov, R.J. Price (2007). Therapeutic Arteriogenesis by Ultrasonic Microbubble Destruction Requires the Recruitment of Bone-Marrow Derived Cells Through a CD18 Dependent Pathway. *Experimental Biology 2007 – FASEB J 20*.

Chappell, J.C., A.L. Klivanov, R.J. Price (2007). Nanoparticle Delivery into Biological Tissues by Ultrasonic Microbubble Destruction. *University of Virginia Engineering Research Symposium (2007)*. [First Place Award]

Chappell, J.C., J. Song, A.L. Klivanov, R.J. Price (2007) Therapeutic Neovascularization by Ultrasonic Microbubble Destruction Requires the Recruitment of Bone Marrow-Derived Cells through a CD18 Dependent Pathway. *World Congress for Microcirculation 2007*.

Chappell, J.C., J. Song, A.L. Klivanov, R.J. Price (2006) Nanoparticle Delivery into Biological Tissues by Ultrasonic Microbubble Destruction. *Virginia Nanotech 2006*. [Award Finalist]

Chappell, J.C., T.J. O'Neill, and R.J. Price (2005) Ultrasound-Microbubble Induced Neovascularization: Marrow-Derived Cells and MB Dosage. *BMES Annual Fall Meeting 2005*.

Chappell, J.C., T.J. O'Neill, and R.J. Price (2005) Ultrasound-Microbubble Induced Microvascular Remodeling in Mouse Skeletal Muscle: Marrow-Derived Cell Recruitment and the Effects of Microbubble Dosage. *Morphogenesis and Regenerative Medicine Institute Symposium 2005*. University of Virginia, Charlottesville, VA.

Chappell, J.C., T.J. O'Neill, and R.J. Price (2005) Ultrasound-Microbubble Induced Microvascular Remodeling in Mouse Skeletal Muscle: Marrow-Derived Cell Recruitment and the Effects of Microbubble Dosage. *Experimental Biology 2005 – FASEB J. 18*.

Song, J., **J.C. Chappell**, and R.J. Price. (2004) Arteriogenesis and Angiogenesis in Ischemic Hindlimb via Ultrasound-Microbubble Interactions. *BMES Annual Fall Meeting 2004*.

Chappell, J.C., and R.J. Price (2004) Mononuclear Cell Recruitment and Microvascular Remodeling in Mouse Skeletal Muscle Exposed to Ultrasonic Microbubble Destruction. *Experimental Biology 2004 – FASEB J. 17*.

Chappell, J.C., and R.J. Price (2003) Angiogenesis and Arteriogenesis in Mouse Skeletal Muscle Following Ultrasonic Microbubble Destruction. *Experimental Biology 2003 – FASEB J. 16*.

Song, J., **J.C. Chappell**, M. Qi, E.J. VanGieson, S. Kaul, and R.J. Price. (2001) Optimizing Contrast Ultrasound Targeted Drug Delivery: Implications for Tumor Therapy. *BMES Annual Fall Meeting 2001*.

Song, J., **J.C. Chappell**, M. Qi, and R.J. Price. (2001) Transport of 100 nm Particles to Skeletal Muscle with Insonified Microbubbles is Influenced by Ultrasound Pulsing Interval, Microbubble Injection Site, and Microvascular Pressure. *Experimental Biology 2001 – FASEB J. 15*.

PROFESSIONAL MEMBERSHIPS AND SERVICE

2020 – present	Editorial Board, Journal of Vascular Research
2010 – present	<i>North American Vascular Biology Organization</i> , Professional Member
2006 – present	<i>The Microcirculatory Society</i> , Professional Member (currently serving as Treasurer)
2001 – present	<i>Biomedical Engineering Society</i> , Professional Member
2014 (July)	Gordon Research Seminar on Endothelial Cell Phenotypes in Health and Disease, Chair

Ad hoc reviewer for the following journals:

2020	<i>Advanced Science, Journal of Vascular Research, International Journal of Molecular Sciences</i>
2019	<i>Nature Communications, Journal of Clinical Investigation, Biophysical Journal, Microcirculation</i>
2018	<i>Applied Journal of Physiology, Current Eye Research, Journal of Clinical Investigation, Microcirculation</i>
2017	<i>Journal of Clinical Investigation, Systems Biology and Applications, Microcirculation PLoS ONE, Current Eye Research</i>
2016	<i>Journal of Clinical Investigation, PLoS ONE, Journal of Visualized Experiments</i>
2015	<i>Journal of Clinical Investigation, Nature Communications, Journal of Cell Biology, PLoS ONE, Vascular Pharmacology, Microcirculation, PLoS ONE Computational Biology</i>
2014	<i>Journal of Clinical Investigation, PLoS ONE, PLoS ONE Computational Biology, BMC Physiology</i>
2013	<i>Journal of Clinical Investigation, PLoS ONE</i>

Ad hoc reviewer for NIH study section:

2020	February—NIH / NINDS / Special Emphasis Panel: Molecular Mechanisms of Blood-Brain Barrier Function and dysfunction in Alzheimer's disease and Alzheimer's related dementias
2019	November—NIH / NINDS / Special Emphasis Panel: Blood Brain Barrier
2019	June—NIH / NINDS / Special Emphasis Panel: Blood-Brain Barrier
2019	January—NIH / NINDS / Special Emphasis Panel: Blood-Brain Barrier
2018	October—NIH / NINDS / Special Emphasis Panel: Blood-Brain Barrier
2015	October—NIH / NHBLI / Cardiovascular Differentiation and Development (CDD)

Ad hoc reviewer for international and non-NIH funding agencies:

2020 July—UKRI, Medical Research Council
2019 May—UKRI, Alzheimer’s Disease Research
2019 March—UKRI, Medical Research Council
2018 March—South Carolina EPSCoR/IDeA Program
2018 September—UKRI, Medical Research Council
2016 July—Dutch Cancer Society

2019 NAVBO *Vascular Biology*. Asilomar, CA. – Co-chaired session “Microfluidic Platforms in Vascular Biology”
2017 NAVBO *Vascular Biology*. Asilomar, CA. – Co-chaired session “Vascular Imaging”

TEACHING EXPERIENCE

Virginia Tech Carilion School of Medicine, AY1920 Block IV (neuroscience block) – Instructor: Kristofer Rau, Ph.D.
Guest Lecturer (1), Virginia Tech, Roanoke, VA Spring 2020
Topics: Cerebral Blood Flow Regulatory Mechanisms / Intracranial Pressure and Volume Relationships

Fundamentals of Tissue Engineering and Regenerative Medicine, TBMH 5064 (survey of the human lifespan, covering fundamentals of pre-natal and post-natal development, maturation and aging, and the capacity and mechanisms of tissue repair in a variety of organ systems) – Instructors: Robert Gourdie, Ph.D. and Mark Van Dyke, Ph.D.
Guest Lecturer (1), Virginia Tech, Blacksburg, VA Spring 2020
Topics: Blood Vessel Development

Fundamentals of Metabolic and Cardiovascular Sciences, TBMH 5044 (cardiovascular system basics, metabolism, and pathological conditions related to cardiovascular science) – Instructors: Steven Poelzing, Ph.D. and Jamie Smyth, Ph.D.
Guest Lecturer (4) and Grader, Virginia Tech, Blacksburg, VA Spring 2020
Topics: Blood Vessel Development and Physiology

Translational Biology, Medicine, Health “Gateway” Course, TBMH 5004 (overview of underlying processes of human health and disease and related contexts) - Instructors: Steven Poelzing, Ph.D. and Audra Van Wart, Ph.D.
Guest Lecturer, Virginia Tech, Blacksburg, VA Fall 2019
Topic: Blood Vessel Development and Physiology

Engineering Principles in the Vascular System, BMES 5984 (overview of the vascular system including basics of vascular development, physiology, pathology, as well as connecting vascular research and medicine to basic engineering disciplines, specifically computational, tissue, chemical, and electrical engineering) – Instructor: Chappell
Course Director and Lecturer – FBRI (Roanoke, VA) / Virginia Tech (Blacksburg, VA) / Wake Forest (Winston-Salem, NC) Spring 2019

Fundamentals of Development, Aging, and Repair, TBMH 5064 (survey of the human lifespan, covering fundamentals of pre-natal and post-natal development, maturation and aging, and the capacity and mechanisms of tissue repair in a variety of organ systems) – Instructor: Robert Gourdie, Ph.D.
Guest Lecturer (2), Virginia Tech, Blacksburg, VA Spring 2019
Topics: Blood Vessel Development

Fundamentals of Neuroscience, TBMH 5014 (survey of brain and cognitive neuroscience across scales: normal function, pathology, therapeutics, and social and economic conditions) – Instructor: Michael Fox, Ph.D.
Guest Lecturer (1), Virginia Tech, Blacksburg, VA Spring 2019
Topics: Blood Vessel Development and Function in the Brain

Fundamentals of Metabolic and Cardiovascular Sciences, TBMH 5044 (cardiovascular system basics, metabolism, and pathological conditions related to cardiovascular science) – Instructors: Steven Poelzing, Ph.D. and Jamie Smyth, Ph.D.
Guest Lecturer (4) and Grader, Virginia Tech, Blacksburg, VA Spring 2019
Topics: Blood Vessel Development and Physiology

Translational Biology, Medicine, Health “Gateway” Course, TBMH 5004 (overview of underlying processes of human health and disease and related contexts) - Instructors: Steven Poelzing, Ph.D. and Audra Van Wart, Ph.D.
Guest Lecturer, Virginia Tech, Blacksburg, VA Fall 2018

Topic: Blood Vessel Development and Physiology

Fundamentals of Development, Aging, and Repair, TBMH 5064 (survey of the human lifespan, covering fundamentals of pre-natal and post-natal development, maturation and aging, and the capacity and mechanisms of tissue repair in a variety of organ systems) – Instructors: Robert Gourdie, Ph.D. and Mark Van Dyke, Ph.D.

Guest Lecturer (1), Virginia Tech, Blacksburg, VA

Spring 2018

Topics: Blood Vessel Development

Fundamentals of Neuroscience, TBMH 5014 (survey of brain and cognitive neuroscience across scales: normal function, pathology, therapeutics, and social and economic conditions) – Instructor: Michael Fox, Ph.D.

Guest Lecturer (1), Virginia Tech, Blacksburg, VA

Spring 2018

Topics: Blood Vessel Development and Function in the Brain

Engineering Principles in the Cardiovascular System, BMES 5984 (overview of the cardiovascular system including basics of cardiovascular development, physiology, pathology, as well as connecting cardiovascular research and medicine to basic engineering disciplines, specifically mechanical, computational, tissue, and electrical engineering) – Instructor: Chappell

Course Director and Lecturer – VTCRI (Roanoke, VA) / Virginia Tech (Blacksburg, VA) / Wake Forest (Winston-Salem, NC)

Fall 2017

Translational Biology, Medicine, Health “Gateway” Course, TBMH 5004 (overview of underlying processes of human health and disease and related contexts) - Instructors: Steven Poelzing, Ph.D. and Audra Van Wart, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Fall 2017

Topic: Blood Vessel Development and Physiology (September 27, 2017)

Integrative Tumor Ecology, BMES 5984 (overview of cancer across multiple scales, from the molecular to the macroscopic, covering insights from the field of cancer biology, as well as the physical sciences, engineering, and ecology) - Instructor: Scott Verbridge, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Fall 2016

Topic: Blood Vessel Development and Physiology in Normal and Tumor Tissues (October 20 & 25, 2016)

Translational Biology, Medicine, Health “Gateway” Course, TBMH 5004 (overview of underlying processes of human health and disease and related contexts) - Instructors: Steven Poelzing, Ph.D. and Audra Van Wart, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Fall 2016

Topic: Blood Vessel Development and Physiology (September 28, 2016)

Fundamentals of Immunity and Infectious Disease, TBMH 5054 (survey of the human immunity, covering fundamentals of infectious agents and disease across scales) - Instructors: Kenneth Oestreich, Ph.D. and Kathleen Alexander, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Spring 2016

Topics: Interactions between the Immune System and the Vasculature (February 29-March 3, 2016)

Translational Biology, Medicine, Health “Gateway” Course, TBMH 5004 (overview of underlying processes of human health and disease and related contexts) - Instructors: Michael Friedlander, Ph.D. and Audra Van Wart, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Fall 2015

Topic: Blood Vessel Development and Physiology (November 18, 2015)

Fundamentals of Development, Aging, and Repair, TBMH 5064 (survey of the human lifespan, covering fundamentals of pre-natal and post-natal development, maturation and aging, and the capacity and mechanisms of tissue repair in a variety of organ systems) - Instructors: Robert Gourdie, Ph.D. and Mark Van Dyke, Ph.D.

Guest Lecturer, Virginia Tech, Blacksburg, VA

Spring 2015

Topics: Blood Vessel Development (February 12, 2015)

Fundamentals of Metabolic and Cardiovascular Sciences, TBMH 5044 (cardiovascular system basics, metabolism, and pathological conditions related to cardiovascular science) - Instructors: Steven Poelzing, Ph.D. and Deborah Good, Ph.D.

Guest Lecturer and Grader, Virginia Tech, Blacksburg, VA

Spring 2015

Topics: Blood Vessel Development and Physiology (February 9-12, 2015)

Laboratory in Cell Biology, BIOL 447 (basic cell biology, biological sample analysis, cell signaling, intracellular organelles and structures) - Instructor: Alan Jones, Ph.D.
 Guest Lecturer, University of North Carolina, Chapel Hill, NC Spring 2014
 Topics: Vascular Cell Development using Mouse Models (April 9, 2014)

Biomechanics and Biotransport, BIOM 322 (continuum mechanics, cell and tissue mechanics, fluid dynamics, tissue engineering applications) - Instructor: Richard Price, Ph.D.
 Guest Lecturer, University of Virginia, Charlottesville, VA Spring 2007
 Topics: Tendon and ligament mechanics

Biomechanics and Biotransport, BIOM 322 (continuum mechanics, cell and tissue mechanics, fluid dynamics, tissue engineering applications) - Instructor: Thomas Skalak, Ph.D.
 Guest Lecturer, University of Virginia, Charlottesville, VA Spring 2006
 Topics: Viscoelasticity introduction; Tendon, ligament and skin mechanics

Biomechanics and Biotransport, BIOM 422 (continuum mechanics, cell and tissue mechanics, fluid dynamics, tissue engineering applications) - Instructor: Thomas Skalak, Ph.D.
 Teaching Assistant, University of Virginia, Charlottesville, VA Spring 2003
 Duties: grading, weekly office hours, exam review sessions

Ordinary Differential Equations, APMA 206/213 (modeling and solving ordinary differential equations) - Instructor: James Rovnyak, Ph.D.
 Teaching Assistant, University of Virginia, Charlottesville, VA Fall 2001
 Duties: grading, weekly office hours, exam review sessions

INVITED PANELIST

November 2014— University of Virginia, Charlottesville, VA, Biomedical Engineering Society (BMES)
 Graduate Student – Early Career Stage and Teaching Panel

UNIVERSITY SERVICE

2020 – present	Tissue Engineering and Regenerative Medicine (TERM) Track Director, TBMH Program
2020 – present	FBRI/HST Cardiovascular Sciences Faculty Recruitment Search Committee Member
2015 – present	Va Tech-Wake Forest School of Biomedical Engr. & Science (SBES) Qualifying Exam Member
2019	FBRI Associate Director of Facility Development and Technical Operations
2015 – 2019	SBES/BEAM Graduate Student Recruiting Activities and Interviews
2015 – 2019	VT TBMH Graduate Program Student Recruiting Activities and Interviews
2018 – 2019	Glial Biology Faculty Recruitment Search Committee Member
2017 – 2018	VTCRI Pioneers in Biomedical Research Seminar Speaker Selection Committee
2016 – 2018	SBES Graduate Student Symposium Poster Evaluations
2016 – 2017	VTC SoM Dept. of Basic Science Education Faculty Recruitment Search Committee Member
2016 – 2017	VTCRI Frontiers in Biomedical Science Seminar Speaker Selection Committee

MENTORING

Trained students in a wide range of laboratory techniques (cell culture, PCR, Western blot analysis, immunohistology techniques, animal procedures, confocal laser imaging, quantitative image analysis):

University of Virginia, Charlottesville, VA – 3 undergraduates: Jennifer Nguyen, Judith Hsiang, Adam Smith

University of North Carolina at Chapel Hill, Chapel Hill, NC – 8 graduate, 5 undergraduates (UG), 1 high school (HS):

Amanda Wicz, <i>Grad</i> (Spring 2008)	Glenn Wozniak, <i>Grad</i> (Fall 2010)	Kathleen Hannan, UG (Spring 2011)
Teresa Crowl, <i>Grad</i> (Spring 2009)	Esteban Terzo, <i>Grad</i> (Spring 2011)	Hannah Park, UG (Fall 2010)
Samantha Strickland, <i>Grad</i> (Spring 2009)	Eric Ubil, <i>Grad</i> (Spring 2011)	Matt Saponaro, UG (2008-2009)
Tamara Roman, <i>Grad</i> (Fall 2009)	Julia Cluceru, UG (2012-2014)	Maggie Haynesworth, HS (2010-2011)
Jim Dunleavey, <i>Grad</i> (Spring 2010)	Erin Spence, UG (Spring 2012)	

Fralin Biomedical Research Institute, Roanoke, VA –**– Current –**

Laura Beth Payne, *Postdoctoral Fellow*
(Fall 2016-current)

Maruf Hoque, *TBMH Grad* (Summer
2019-current)

Hanaa Abdelazim, *TBMH Grad* (Summer
2019-current)

Zuzana Mironovova, *TBMH Grad*
(Summer 2020-current)

Morgan (Julian) North, *UG HNFE, VT;*
VTCSoM Med (2016-current);
TBMH Grad (Spring 2019-Spring
2020) – M.S.

Stephanie Master, *VTCSoM Med*
(Winter 2018-current)

Kyle Nolan, *VTCSoM Med* (Winter
2020-current)

Mina Lee, *VTCSoM Med* (Winter 2020-
current)

Madeline D'Aquila, *VTCSoM Med* (Winter
2020-current)

Richard McLane, *VTCSoM Med* (Winter
2020-current)

Karleigh Schuhlen, *UG Chemistry VT*
(2019-current)

Alexis Bryant, *UG HNFE VT* (2019-current)

– Previous –

Jordan Darden, *TBMH Grad* (Spring
2015-Spring 2019) – Ph.D.

Huaning Zhao, *BEAM Grad* (Summer
2015-Spring 2019) – Ph.D.

David McGuire, *TBMH Grad* (Spring
2016-Spring 2020) – M.S.

Marcos Cervantes, *VT PREP Scholar*
(Fall 2019-Summer 2020)

Anisha Chada, *VTCSoM Med* (Winter
2017-Spring 2020)

Harsh Patolia, *VTCSoM Med* (Winter
2017-Spring 2020)

Malek Bouzaher, *VTCSoM Med* (Winter
2017-Spring 2020)

Timothy Nguyen, *VTCSoM Med*
(Winter 2016-Spring 2019)

Clifton Jenkins-Houk, *VTCSoM Med*
(Winter 2016-Spring 2019)

Caroline Crowe, *Wake Forest Med*
Summer Fellow (Summer 2016)

Alyssa Savelli, *VTCSoM Med*
(Summer 2015-Spring 2018)

Justin Davis, *UG Biology, VT*
(2017-2020)

Samantha Bond, *UG VT, MolVis*
SURF Fellow (Summer 2019)

Rachael Ward, *UG VT, SURF Fellow*
(Summer 2019)

Christina Compton, *UG HNFE, VT* (Fall
2018-Spring 2019)

Karan Paralkar, *UG Neuroscience, VT*
(2016-Spring 2018)

Soshiant Raeesian, *UG Biochemistry, VT*
(2015)

Caitlin Hartland, *UG* (2014-2016)
Morgan Claybrook, *UG Biology, Roanoke
College* (2016)

Erica Jarrells, *UG* (2014-2015)

Vanessa Bradley, *Post-bacc., JMU* (2014)

Carissa James, *Grad Rotation* (Fall 2014)

Nicole Keenan, *Grad Rotation* (Fall 2014)

Kisha Gresham, *Grad Rotation* (Fall 2014)

Tristan Raisch, *Grad Rot.* (Spring 2015)

Alissa Hendricks, *Grad Rot.* (Fall 2016)

Jacklyn Cargill, *Grad Rot.* (Winter 2017)

Jacob Bond, *Grad Rotation* (Fall 2019)

William Adams, *Grad Rot.* (Winter 2020)

Abhinav Karri, *High School, RVGS*
(2019-Spring 2020)

Kevin Sheng, *High School, RVGS*
(2018-Spring 2020)

Nathalie Lemon, *High School, RVGS*
(2018- Spring 2020)

Ella Higgins, *High School, RVGS*
(2018- Spring 2020)

Logan Dunkenberger, *High School,*
RVGS (2018-Spring 2019),
High School neuroSURF Fellow
(Summer 2019)

Abigail Ingram, *High School, RVGS*
(2018-Spring 2019)

Christine Flora, *High School, RVGS*
(2017-Spring 2018)

Katherine Fink, *High School, RVGS*
(2017-Spring 2018)

Richard Qiu, *High School, RVGS*
(2017-Fall 2018)

Matthew Svec, *High School, RVGS*
(2015-Fall 2018)

Thesis Committee Member

Hamid Hosseinzadegan, *Mech Engr, VT*

Kisha Gresham, *TBMH, VT*

Alicia Kerr, *TBMH, VT*

Tre Mills, *TBMH, VT*

Shaylen Greenberg, *TBMH, VT*

Jade Montgomery, *BEAM-SBES, VT*

Katrina Colucci-Chang, *SBES, VT*

Randy Strauss, *TBMH VT*

Bruce Corliss, *BME UVA*

Swagatika Paul, *Vet Med, VT*

SCIENCE OUTREACH

- **Virginia Tech STEAM Day (Taubman Art Museum, Roanoke, VA) – November 8, 2019** – My lab members and I interacted with elementary school students and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits that we created.
- **5th Annual STEM Night (West Salem Elementary School, Salem, VA) – March 27, 2018** – My lab members (Sarah Taylor and David McGuire) and I interacted with elementary school students and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits that we created.
- **Roanoke Valley Governor's School STEM Career Panel (Roanoke Valley Governor's School, Roanoke, VA) – March 20, 2018** – I participated in a career panel session in which panel members described their career path

and current professional position, as well as answered questions that students had regarding how to pursue those specific careers.

- **Virginia Tech STEAM Day (Taubman Art Museum, Roanoke, VA) – October 6, 2017** – My lab members and I interacted with elementary school students and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits that we created.
- **4th Annual STEM Night (West Salem Elementary School, Salem, VA) – April 4, 2017** – My lab members and I interacted with elementary school students and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits that we created.
- **Roanoke Valley Governor’s School for Science and Technology – September 23, 2016** – Invited by Ms. Cindy Bohland (RVGS teacher and Science Chairperson) to present interactive lectures to 3 biology classes on research from my lab.
- **Virginia Tech Science Festival School Preview Day (Taubman Art Museum, Roanoke, VA) – September 30, 2016** – My lab members interacted with Festival participants and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits that we created.
- **American Heart Association, Roanoke Regional Heart Walk Luncheon – May 5, 2016** – Presented research from my lab relevant to fundraising efforts for the Heart Walk Fundraiser event scheduled for October 22, 2016.
- **Virginia Science Festival (Taubman Art Museum, Roanoke, VA) – September 25-26, 2015** – Interacted with Festival participants and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation. Demonstrated several hands-on exhibits.
- **Interview with a Scientist (VTCRI, Chappell Lab, Roanoke, VA) – May 15, 2015** – Provided videos of cell experiments to 5th grade class (taught by Mrs. Leah Horrell, Stonehouse Elementary School, Williamsburg, VA), conducted an online interview with Dr. Sarah McDonald where students asked questions about cells, and gave a virtual tour of the laboratory and imaging facilities (Chappell Lab)
- **Virginia Science Festival (Va Tech-Carilion Research Institute, Roanoke, VA) – October 11, 2014** – Interacted with Festival participants and explained developmental and pathological aspects of the blood vascular system; showed several movies of cellular processes during blood vessel formation.
- **Interview with a Scientist (UNC Chapel Hill, Bautch Lab, Chapel Hill, NC) – April 21, 2014** – Provided videos of cell experiments to 5th grade class (taught by Mrs. Leah Horrell, Stonehouse Elementary School, Williamsburg, VA), conducted an online interview where students asked questions about cells, and gave a virtual tour of the laboratory and imaging facilities

PRESS RELEASES

- **Virginia Tech Daily – March 10, 2020 Article** – Coverage of placental vascular biology research conducted by Chappell Lab Medical Student, Ms. Anisha Chada. Found at: <https://vtnews.vt.edu/articles/2020/03/vtcsom-chadaresearch.html>
- **Fralin Biomedical Research Institute, Internal News Release – September 11, 2019** – Article highlighting American Heart Association award granted to the Chappell Lab to study pericytes in stroke. Found at: <https://research.vtc.vt.edu/news/2019/sep/11/fralin-biomedical-research-institute-scientist-ear/>
- **Virginia Tech Engineering Magazine – Fall 2018 Issue** – Article contains interviews of NSF CAREER Awardees and their career path decisions as well as their personal and professional interests. Found at:

<https://eng.vt.edu/magazine/stories/fall-2018/record-number-of-early-career-faculty-win-national-awards/john-chappell.html>

- **NAVBO Members' Lab Feature – November 2018** – Article highlighting the Chappell lab, its members, primary research area, recent publications, collaborations, and recent presentations. Found at: <http://www.navbo.org/membership/members-labs/750-lab112018>
- **Virginia Tech Daily – April 30, 2018 Article** – Coverage of NSF CAREER Award. Found at: <https://vtnews.vt.edu/articles/2018/04/John-Chappell-CAREER-Award.html>
- **Research News Feature – March 2 & 8, 2018 Article** – Coverage of paper published in *JCI Insight* detailing observations of molecular mechanisms underlying vascular defects that arise during genetic mutations in the von Hippel-Lindau gene. Found at: <https://research.vtc.vt.edu/news/2018/mar/02/researchers-discover-molecular-mechanism-hereditary/>
<http://news.vumc.org/2018/03/08/vicc-study-sheds-new-light-on-von-hippel-lindau-syndrome/>
- **Research News Feature – Winter 2016** – News release describing seed grants funded as a part of the Virginia Tech Carilion-UVA Partnership. Found at: <https://thriv.virginia.edu/virginia-tech-carilion-uva-partnership-seed-grants/>

Also highlighted in the Roanoke Times:

https://www.roanoke.com/news/education/higher_education/virginia-tech-and-uva-join-forces-to-advance-field-of/article_64774fc7-2c8a-5366-9497-c3889c01f735.html

- **Carolina Scientific – Fall 2013 Issue** – Article describes the role for Flt-1 in the cross-talk between two pathways essential for blood vessel formation that was published in *Arteriosclerosis, Thrombosis, and Vascular Biology* in August 2013: (Chappell JC, Mouillesseaux KP, Bautch VL (2013)). Found at: http://issuu.com/uncsci/docs/carolina_scientific_f13_web/17
- **UNC Med School Press Office** - Video describes a novel form of sprout guidance that was published in *Developmental Cell* on Sept. 15, 2009: (Chappell JC, Taylor SM, Ferrara N, Bautch VL (2009). Local guidance of emerging vessel sprouts requires soluble Flt-1. *Dev Cell* 17, 377-386.) Victoria Bautch describes the work and its potential importance in diseases such as cancer, and co-authors John Chappell and Sarah Taylor are also featured. Found at: <http://labs.bio.unc.edu/Bautch/NewWEB909/BautchWEBmoviePAPER510new.html>