Curriculum Vitae

Name and Personal Data

Name:	**Elisa Boscolo, PhD** Associate Professor of Pediatrics University of Cincinnati College of Medicine Division of Experimental Hematology and Cancer Biology Cancer and Blood Diseases Institute
Office Address:	Cincinnati Children's Hospital Medical Center 3333 Burnet Avenue, MLC 7013 Cincinnati, OH 45229-3039
Phone:	513-803-7267
Fax:	513-636-3549
Email:	elisa.boscolo@cchmc.org

Education

04/2006	**PhD**	University of Padova, Italy	Tissue Engineering
03/2002	**BS/MS**	University of Padova, Italy	Molecular Biology

Post-doctoral Training

04/2006 – 11/2010 **Research Fellow in Vascular Biology, Department of Surgery**
Boston Children's Hospital, Boston, MA
Mentor: Joyce Bischoff, PhD

Academic Appointments

11/2021- Present **Associate Professor of Pediatrics, Tenured**
Division of Experimental Hematology and Cancer Biology,
Cincinnati Children's Hospital Medical Center, Department of Pediatrics,
University of Cincinnati College of Medicine, Cincinnati, OH

05/2014 – 11/2021 **Assistant Professor of Pediatrics, Tenure Track**
Division of Experimental Hematology and Cancer Biology,
Cincinnati Children's Hospital Medical Center, Department of Pediatrics,
University of Cincinnati College of Medicine, Cincinnati, OH

12/2010 – 04/2014 **Instructor**
Department of Surgery- Vascular Biology Program
Harvard Medical School, Boston, MA

11/2010 – 04/2014 **Research Associate**
Department of Surgery- Vascular Biology Program
Boston Children's Hospital, Boston, MA

04/2006 – 12/2010 **Research Fellow**
Department of Surgery- Vascular Biology Program
Boston Children's Hospital, Boston, MA

Licensing and Certification

06/2009 **Responsible Conduct of Research** (Boston Children's Hospital)

06/2014 – Present **CITI Training Courses**

- Academical and Regional Health Center Core Curriculum (ID29817 Record ID13362132)
- Good Clinical Practice (ID29819 Record ID: 13362133; ID1332281 Record ID 25552485, 39864435)
- Human Subject Research (ID29822 Record ID15576184; ID132310 Record ID23813911, 35448126)
- Responsible Research Conduct (ID38650 Record ID13362134; ID103532 Record ID15576187; ID132307 Record ID25550448)
- Pregnant Women/Fetuses/Neonates (ID29824 Record ID 15576185; ID132282 Record ID25550447)
- Children Research (ID29825 Record ID155576186; ID132283 Record ID23813907)
- Lab Core Curriculum (ID132314 Record ID23813913 38452489)
- Biosafety (ID132315 Record ID23813914 38452490)
- Animal Research (ID59066 Record ID13362135 14767185; ID59069 Record ID13362136 2199675; ID104727 Record ID14761583 24970222; ID132291 Record ID23813908 23896666; ID132294 Record ID23813909; ID132309 Record ID23813910; ID168123 Record ID29802630; ID145807 Record ID24935953)
- Export Controls (ID132304 Record ID39864434)

Awards and Honors

01/2008 **Travel Award**, North American Vascular Biology Organization (NAVBO)

08/2009 **Scholarship Award**, Angiogenesis Gordon Research Conference

02/2010 **Scholarship Award,** National Heart, Lung, and Blood Institute (NHLBI), Keystone Symposia

06/2012 **Travel Award**, North American Vascular Biology Organization (NAVBO)- Received at the International Vascular Biology Meeting (IVBM)

04/2014 **Best Scientific Paper, John Mulliken Award**, International Society for the Study of Vascular Anomalies (ISSVA)

01/2019 **Career Award, Charlotte R. Schmidlapp Women Scholars Program,** Cincinnati Children's Hospital Medical Center

02/2020 **2020 Werner Risau Early Career Investigator Award in Vascular Biology**, American Heart Association

06/2021	Elected **Councilor for the North American Vascular Biology Organization** (NAVBO)
06/2023	Elected **Meritorius Award Committee Member for North American Vascular Biology Organization (NAVBO)**
06/2024	Elected member of the **DEI committee for North American Vascular Biology Organization (NAVBO)**

Research and Scholarly Activities

Research and Scholarly Activities

The goal of my research program is to investigate the cellular and molecular mechanisms responsible for the formation and growth of childhood vascular anomalies.

Research as a trainee

The goal of my PhD training in Italy was the study of physiological cellular mechanisms regulating blood vessel formation and regression for tissue engineering purposes. My overarching idea has been that the best learning of developmental and physiological processes comes from the study of naturally occurring errors and mutations. This prompted me to join the laboratory of Dr. Joyce Bischoff - at Boston Children's Hospital/Harvard Medical School -as a postdoctoral fellow to study a vascular tumor called infantile hemangioma, which is characterized by a unique life cycle of vascular growth followed by spontaneous regression. I discovered a hemangioma stem cell population which is sufficient to recapitulate the tumor life cycle in vivo and we generated the first murine model of this vascular tumor. I also identified major signaling pathways (VEGF-A, VEGFR-1 and JAGGED1) involved in the differentiation of hemangioma stem cells into endothelial cells and into pericytes greatly contributing the scientific knowledge of infantile hemangioma formation and growth mechanisms.

Research as Independent PI

At Cincinnati Children's Hospital I developed a strong passion for translational research. My scientific goal is to elucidate the cellular and molecular mechanisms that underlie the development and growth of vascular anomalies in children. These disfiguring and life-threatening diseases still lack FDA-approved targeted treatments. One of the strengths of my research program is the use of patient-derived biopsies to isolate and characterize vascular cells. This allowed us to identify somatic mutations, determine activated signaling pathways, identify targeted treatments in vitro, and establish murine models of vascular anomalies. To date, we have pioneered the generation of xenograft and transgenic murine preclinical models of several vascular anomalies including vascular tumors (infantile hemangioma, GNAQ-related vascular tumors) and vascular malformations (venous malformation). My flexibility to pursue new research directions and opportunities is demonstrated by my ability 1- to switch from xenograft models to transgenic systems and additionally 2- I have established long standing scientific collaborations for the study of simple and complex lymphatic malformations. This unique field of study enabled me to establish additional extended collaborations with clinicians that are the world-experts in the field of vascular anomalies. This fueled the translation of our basic research findings on the mTOR inhibitor Sirolimus into safe and effective clinical trials in patients. My translational research program is one of a handful devoted to vascular anomalies. Beyond my lab, my expertise is being tapped in the form of national service as participant to NIH and DoD study sections and programmatic review panels. These experiences, combined with our track record, illustrate that my team is well positioned to impact the field of vascular biology and to shift treatment paradigms for children affected by vascular anomalies.

Grants and Contracts
Current Grants and Contracts

Diagonal Therapeutics **Elisa Boscolo (PI)** **12/04/2025 – 12/03/2026**
Effort 8%
Title: Collaboration Boscolo Laboratory-Diagonal
This statement of work aims at determining whether recruitment of an endogenous plasma membrane receptor phosphatase by a PTPRb/TIE2 clustering bispecific antibody can inhibit the overactivation of TIE2 (L914F mutation) in vitro and in vivo.
Role: Principal Investigator Not Peer Reviewed

R01 HL 167700 **Elisa Boscolo (PI)** **04/01/2024 – 03/31/2028**
Effort 23%
NIH/NHLBI
Title: Pathogenesis of Vascular Anomalies with GNAQ mutations
The goal of this project is to support a project aimed at developing innovative in vivo, in vitro, and Vessel-on-Chip models for the identification of cellular and molecular mechanisms implicated in vascular disease.
Role: Principal Investigator Peer Reviewed

R01 HL163161 Saulius Sumanas (PI) **03/01/2023- 11/30/2026**
Effort: 8%
NIH/NHLBI
Title: Role of SHE and ABL signaling in vascular tubulogenesis
The studies proposed in the grant will identify the cellular and mechanistic regulation of SHE and ABL signaling during physiological and pathological blood vessel formation and lumen expansion.
Role: Collaborator (subcontract with USF), Peer Reviewed

NHLBI F31 Lindsay Bischoff **01/01/2024- 12/31/2025**
Effort % (not allowed)
NIH/NHLBI
F31 Fellowship (*Awarded to Lindsay Bischoff, PhD student in my laboratory)*
Title: The Role of c-ABL in Mediating TIE2 Signaling and Formation of Venous Malformation
Role: Mentor Peer Reviewed

R01 HL160582 Joseph Palumbo (PI) **12/30/2021 – 12/29/2025**
Effort 3%
NIH/NHLBI
Title: The role of contact pathway factors in mechanical circulation
The proposed studies will provide needed insights into the mechanisms coupling FXII to mechanical circulation associated thromboinflammatory pathologies.
Role: Collaborator, Peer Reviewed

R01 HL 156866 Tim Le Cras (PI) **12/30/2021 – 12/29/2025**
Effort 15%
NIH/NHLBI
Title: Pathogenesis and Treatment of Kaposiform Lymphangiomatosis
The goal of this project is to generate models to study KLA and perform preclinical studies with targeted inhibitors.
Role: Collaborator , Peer Reviewed

2R01 HL 117952 **Elisa Boscolo (PI)** **02/15/2021 – 01/31/2027 NCE**

Effort 38%
NIH/NHLBI
Title: Venous Malformation (VM): Murine Model to Identify Therapies to Target Aberrant Venous Development
The goal of this project is to deepen our understanding of molecular determinants of vascular lumen enlargement driven by mutant TIE2.
Role: Principal Investigator Peer Reviewed

Declined Grants and Contracts

PR201273 Elisa Boscolo (PI) **09/01/2021 – 08/31/2025**
Effort 42%
Department of Defense PRMRP
Mechanisms of Pathological Vascular Lumen Expansion in Venous Malformation
The goal of this project is to deepen our understanding of molecular determinants of vascular lumen enlargement driven by mutant TIE2.
Role: Principal Investigator Peer Reviewed
Reason for Decline: Overlap with funded NIH/NHLBI **2R01 HL 117952**

Previous Grants and Contracts

CCHMC Gap Award Elisa Boscolo (PI) **06/01/2023 – 05/31/2024**
Effort: Not allowed
Title: Pathogenesis of Vascular Anomalies with GNAQ mutations
The goal of this project is to support a scored but not yet funded R01 project aimed at developing innovative in vivo, in vitro, and Vessel-on-Chip models for the identification of cellular and molecular mechanisms implicated in vascular disease.
Role: Principal Investigator, Peer Reviewed

CCHMC GpG Award Elisa Boscolo (coPI) **07/01/2023 – 06/30/2024**
Effort: Not Allowed
Title: A novel gene therapy strategy for GNAQ-mediated vascular anomalies
The goal of this project is to develop a new Ras/MAPK-modulating gene therapy for *GNAQ*-associated vascular anomalies.
Role: co Principal Investigator with Elliott Robinson, Peer Reviewed

No Assigned Number Elisa Boscolo (PI) **01/01/2020 – 12/31/2021**
Effort % (not allowed)
Cincinnati Children's Hospital Medical Center
Charlotte R. Schmidlapp Women Scholars Award
Role: Principal Investigator Peer Reviewed

No Assigned Number Elisa Boscolo (PI) **04/01/2021 – 03/30/2022**
Effort % (not allowed)

University of Cincinnati, Center for Clinical and Translational Science and Training (CCTST)
Title: Pathogenesis of vascular anomalies with constitutive active GNAQ mutations
Our goal is to generate a model of hyperactive GNAQ-mutated vascular malformations and to identify novel endothelial-specific targets that could be used to advance targeted treatment in patients. We will also determine the role of MAPK/ERK signaling in the formation and expansion of vascular malformations and in the permeability of the blood vessels.
Role: Principal Investigator Peer Reviewed

AHA 833891 Sandra Schrenk (PI) **04/01/2021- 03/31/2023**
Effort % (not allowed)
American Heart Association
AHA Postdoctoral Fellowship (*Awarded to Sandra Schrenk, Post-doctoral Fellow)*
Title: Semaphorin 3A and 3F in TIE2-mutated Venous Malformation
Role: Mentor Peer Reviewed

No Assigned Number Sandra Schrenk (PI) **08/01/2020 – 07/31/2021**
Effort % (not allowed)
Cincinnati Children's Hospital Medical Center
Arnold Strauss Fellowship (*Awarded to Sandra Schrenk, Post-doctoral Fellow)*
Title: Semaphorin 3A and 3F in TIE2-mutated Venous Malformation
Role: Mentor Peer Reviewed

R01 HL 117952 Elisa Boscolo (PI) **06/12/2013 – 04/30/2019**
Effort 40%
NIH/NHLBI
Venous Malformation (VM): Murine Model to Identify Therapies to Target Aberrant Venous Development
This project proposes the establishment of a murine VM model that will help determine the mechanisms of abnormal venous channel formation. Our end-goal is to test and discover novel efficient treatments to normalize the pathological VM vasculature and avoid a rebound of the disease.
Role: Principal Investigator Peer Reviewed

No Assigned Number Elisa Boscolo (Co-PI) 50% **07/01/2018 – 06/30/2019**
Effort not allowed Timothy LeCras (Co-PI) 50%
Cincinnati Children's Center for Pediatric Genomics Internal Pilot Grant
Pathogenesis and Treatment of Capillary Lymphatic Venous Malformations (CLVM)
The overall objective of this project is to elucidate the pathogenesis of CLVM, identifying signaling pathways activated in mutated cell populations and test potential treatments in vitro.
Role: Principal Investigator Peer Reviewed

No Assigned Number Timothy LeCras (PI) **05/01/2017 – 04/30/2019**
Effort 5%
The Lymphatic Malformation Institute
Biomarkers and Pathogenesis of Lymphatic Anomalies

This project aims at measuring different cytokines with known pro-angiogenic function in plasma and serum from patients with lymphatic malformations. The long-term goal is to identify biomarkers for different types of vascular anomalies.
Role: Co-Principal Investigator Peer Reviewed

No Assigned Number Elisa Boscolo (PI) **07/01/2017 – 06/30/2018**
Effort not allowed
University of Cincinnati, Center for Clinical and Translational Science and Training (CCTST)
Targeting c-ABL as a Novel Strategy to Treat Vascular Malformations
This project aims at investigating the safety and efficacy of a novel drug combination: Ponatinib (c-ABL inhibitor) + Rapamycin for the treatment of venous malformation. The drug combination will be tested in a TIE2 driven VM murine model and in a patient derived xenograft that we propose to establish with the funding obtained.
Role: Principal Investigator Peer Reviewed

No Assigned Number Elisa Boscolo (PI) **01/01/2012 – 12/01/2014**
Effort 60%
Charles H. Hood Foundation
NOTCH Signaling During Pathological Blood Vessel Formation and Maturation
The goal of this project is to study JAGGED1-NOTCH3 signaling in the perivascular differentiation of stem cells infantile in infantile hemangioma and in the differentiation of mesenchymal stem cells in a tissue-engineering model to build blood vessels.
Role: Principal Investigator Peer Reviewed

No Assigned Number Elisa Boscolo (PI) **11/01/2012 – 10/31/2013**
Effort 30%
Manton Center for Orphan Disease Research, Boston Children's Hospital
Venous Malformation (VM): Murine Model to Identify Therapies to Target Aberrant Venous Development
This project proposes the establishment of a murine VM model to test novel efficient treatments to normalize the pathological VM vasculature and avoid a rebound of the disease.
Role: Principal Investigator Peer Reviewed

Publications

Original Peer Reviewed Articles (*corresponding author)

1. Yu Y, Wylie-Sears J, **Boscolo E**, Mulliken JB, Bischoff J. Genomic imprinting of IGF2 is maintained in infantile hemangioma despite its high level of expression. Mol Med. 2004;10(7-12):117-23. PMCID: PMC1431374

2. Conconi MT, Lora S, Baiguera S, **Boscolo E**, Folin M, Scienza R, Rebuffat P, Parnigotto PP, Nussdorfer GG. In vitro culture of rat neuromicrovascular endothelial cells on polymeric scaffolds. J Biomed Mater Res A. 2004;71(4):669-74. PMID: 15499589

3. Khan ZA, Melero-Martin JM, Wu X, Paruchuri S, **Boscolo E**, Mulliken JB, Bischoff J. Endothelial progenitor cells from infantile hemangioma and umbilical cord blood display unique cellular responses to endostatin. Blood. 2006;108(3):915-21. PMCID: PMC1895853

4. **Boscolo E**, Pavesi G, Zampieri P, Conconi MT, Calore C, Scienza R, Parnigotto PP, Folin M. Endothelial cells from human cerebral aneurysm and arteriovenous malformation release ET-1 in response to vessel rupture. Int J Mol Med. 2006;18(5):813-9. PMID: 17016610

5. **Boscolo E**, Folin M, Nico B, Grandi C, Mangieri D, Scienza R, Zampieri P, Conconi MT, Parnigotto PP, Ribatti D. Beta amyloid angiogenic activity in vitro and in vivo. Int J Mol Med. 2007;19(4):581-7. PMID: 17334633

6. Picard A, **Boscolo E**, Khan ZA, Bartch TC, Mulliken JB, Vazquez MP, Bischoff J. IGF-2 and FLT-1/VEGF-R1 mRNA levels reveal distinctions and similarities between congenital and common infantile hemangioma. Pediatr Res. 2008;63(3):263-7. PMCID: PMC2810617

7. Khan ZA*, **Boscolo E***, Picard A, Psutka S, Melero-Martin JM, Bartch TC, Mulliken JB, Bischoff J. Multipotential stem cells recapitulate human infantile hemangioma in immunodeficient mice. J Clin Invest. 2008;118(7):2592-9. PMCID: PMC2413184 **(*co-first authors)**.

8. Jinnin M, Medici D, Park L, Limaye N, Liu Y, **Boscolo E**, Bischoff J, Vikkula M, Boye E, Olsen BR. Suppressed NFAT-dependent VEGFR1 expression and constitutive VEGFR2 signaling in infantile hemangioma. Nat Med. 2008;14(11):1236-46. PMCID: PMC2593632

9. Wu JK, Adepoju O, De Silva D, Baribault K, **Boscolo E**, Bischoff J, Kitajewski J. A switch in Notch gene expression parallels stem cell to endothelial transition in infantile hemangioma. Angiogenesis. 2010;13(1):15-23. PMCID: PMC2846229

10. Greenberger S, **Boscolo E**, Adini I, Mulliken JB, Bischoff J. Corticosteroid suppression of VEGF-A in infantile hemangioma-derived stem cells. N Engl J Med. 2010;362(11):1005-13. PMCID: PMC2845924 **Editorial Frieden IJ Infantile Hemangioma Research: Looking Backward and Forward J Invest Derm 2011 131:2345-2348**

11. Greenberger S, Adini I, **Boscolo E**, Mulliken JB, Bischoff J. Targeting NF-κB in infantile hemangioma-derived stem cells reduces VEGF-A expression. Angiogenesis. 2010;13(4):327-35. PMCID: PMC3034388

12. **Boscolo E**, Stewart CL, Greenberger S, Wu JK, Durham JT, Herman IM, Mulliken JB, Kitajewski J, Bischoff J. JAGGED1 signaling regulates hemangioma stem cell-to-pericyte/vascular smooth muscle cell differentiation. Arterioscler Thromb Vasc Biol. 2011;31(10):2181-92. PMCID: PMC3174332

13. Adepoju O, Wong A, Kitajewski A, Tong A, **Boscolo E**, Bischoff J, Kitajewski J, Wu JK. Expression of HES and HEY genes in infantile hemangiomas. Vasc Cell. 2011;3:19. PMCID: PMC3189131

14. Greenberger S, Yuan S, Walsh LA, **Boscolo E**, Kang K, Matthews B, Mulliken JB, Bischoff J. Rapamycin suppresses self-renewal and vasculogenic potential of stem cells isolated from infantile hemangioma. J Invest Dermatol. 2011;131(12):2467-76. PMCID: PMC3213330

15. **Boscolo E**, Mulliken JB, Bischoff J. VEGFR-1 mediates endothelial differentiation and formation of blood vessels in a murine model of infantile hemangioma. Am J Pathol. 2011;179(5):2266-77. PMCID: PMC3204018

16. Stahl A, Joyal JS, Chen J, Sapieha P, Juan AJ, Hatton CJ, Pei DT, Hurst CG, Seaward MR, Krah NM, Dennison RJ, Greene ER, **Boscolo E**, Panigrahy D, Smith LE. SOCS3 is an endogenous inhibitor of pathologic angiogenesis. Blood. 2012;120(14):2925-9. PMCID: PMC3466973

17. **Boscolo E**, Mulliken JB, Bischoff J. Pericytes from infantile hemangioma display proangiogenic properties and dysregulated angiopoietin-1. Arterioscler Thromb Vasc Biol. 2013;33(3):501-9. PMCID: PMC3573237 **Editors Pick, Arterioscler Thromb Vasc Biol, 2013 33(3)**

18. Smadja DM, Guerin CL, **Boscolo E**, Bieche I, Mulliken JB, Bischoff J. α6-integrin is required for the adhesion and vasculogenic potential of hemangioma stem cells. Stem Cells. 2014;32(3):684-93. PMCID: PMC3944134

19. Lee D, **Boscolo E**, Durham JT, Mulliken JB, Herman IM, Bischoff J. Propranolol targets the contractility of infantile haemangioma-derived pericytes. Br J Dermatol. 2014;171(5):1129-37. PMCID: PMC4193942

20. Smadja DM, Dorfmüller P, Guerin C, Bieche I, Badoual C, **Boscolo E**, Kambouchner M, Cazes A, Mercier O, Humbert M, Gaussem P, Bischoff J, Israël-Biet D. Cooperation between human fibrocytes and endothelial colony-forming cells increases angiogenesis via the CXCR4 pathway. Thromb Haemost. 2014;112(5):1002-13. PMCID: PMC4751883

21. **Boscolo E**, Coma S, Luks VL, Greene A, Klagsbrun M, Warman ML, Bischoff J. AKT hyper-phosphorylation associated with PI3K mutations in lymphatic endothelial cells from a patient with lymphatic malformation. Angiogenesis. 2015;18(2):151-62. PMCID: PMC4366356

22. **Boscolo E***, Limaye N, Huang L, Kang KT, Soblet J, Uebelhoer M, Mendola A, Natynki M, Seront E, Dupont S, Hammer J, Legrand C, Brugnara C, Eklund L, Vikkula M, Bischoff J, Boon LM. Rapamycin improves TIE2-mutated venous malformation in murine model and human subjects. J Clin Invest. 2015;125(9):3491-504. PMCID: PMC4588237

23. Rossi E, Smadja DM, **Boscolo E,** Langa C, Arevalo MA, Pericacho M, Gamella-Pozuelo L, Kauskot A, Botella LM, Gaussem P, Bischoff J, Lopez-Novoa JM, Bernabeu C. Endoglin regulates mural cell adhesion in the circulatory system. Cell Mol Life Sci. 2016;73(8):1715-39. PMCID: PMC4805714

24. Bai S, Ingram P, Chen YC, Deng N, Pearson A, Niknafs Y, O'Hayer P, Wang Y, Zhang ZY, **Boscolo E**, Bischoff J, Yoon E, Buckanovich RJ. EGFL6 regulates the asymmetric division, maintenance, and metastasis of ALDH+ ovarian cancer cells. Cancer Res. 2016;76(21):6396-6409. PMCID: PMC5120866

25. Chadwick ML, Lane A, Thomas D, Smith AR, White AR, Davidson D, Feng Y, **Boscolo E**, Zheng Y, Adams DM, Gupta A, Veillette A, Chow LML. Combined mTOR and MEK inhibition is an effective therapy in a novel mouse model for angiosarcoma. Oncotarget. 2018;9(37):24750-65. PMCID: PMC5973867

26. Goines J, Li X, Cai Y, Mobberley-Schuman P, Metcalf M, Fishman SJ, Adams DM, Hammill AM, **Boscolo E***. A xenograft model for venous malformation. Angiogenesis. 2018;21(4):725-35. PMCID: PMC6203618

27. Li X, Cai Y, Goines J, Pastura P, Brichta L, Lane A, Le Cras TD, **Boscolo E*****. Ponatinib combined with Rapamycin causes regression of murine venous malformation. Arterioscler Thromb Vasc Biol. 2019 Mar;39(3):496-512. PMCID: PMC6392210 **(*corresponding author)** ***(This article was was selected as the most outstanding paper published during 2019 in the Vascular Biology section of Arteriosclerosis Thrombosis and Vascular Biology)***

28. Hall A, Choi K, Liu W, Rose J, Zhao C, Yu Y, Na Y, Cai Y, Coover RA, Lin Y, Dombi E, Kim M, Levanon D, Groner Y, **Boscolo E**, Pan D, Liu P, Lu RQ, Ratner N, Huang G, Wu J. RUNX represses *Pmp22* to drive neurofibromagenesis. Sci Adv. 2019 Apr;5(4):eaau8389. PMCID: PMC6482019

29. **Boscolo E**, Pastura P, Glaser K, Goines J, Hammill AM, Adams DM, Dickie P, Hsi Dickie B, Le Cras TD. Signaling pathways and inhibitors of cells from patients with kaposiform lymphangiomatosis. Pediatr Blood Cancer. 2019 Aug;66(8):e27790. PMCID: PMC6588438

30. Cai Y, Schrenk S, Goines J, Davis GE, **Boscolo E***. Constitutive Active Mutant TIE2 Induces Enlarged Vascular Lumen Formation with Loss of Apico-basal Polarity and Pericyte Recruitment. Scientific Reports. 2019 Aug 26;9(1):12352. PMCID: PMC6710257

31. Le Cras TD, Goines J, Lakes N, Pastura P, Hammill AM, Adams DM, **Boscolo E***. Constitutively active PIK3CA mutations are expressed by lymphatic and vascular endothelial cells in Capillary Lymphatic Venous Malformation. Angiogenesis. 2020 Aug;23(3):425-42. PMCID: PMC7311380

32. Schrenk S, Goines J, **Boscolo E***. A Patient-Derived Xenograft Model for Venous Malformation. J Vis Exp. 2020 Jun 15;(160). PMCID: PMC7457366

33. Crane J, Manfredo J, **Boscolo E**, Coyan M, Takemoto C, Itkin M, Adams DM, Le Cras TD. Kaposiform lymphangiomatosis treated with multimodal therapy improves coagulopathy and reduces blood angiopoietin-2 levels. Pediatr Blood Cancer. 2020 Sep;67(9):e28529. doi: 10.1002/pbc.28529. Epub 2020 Jul 7. PMID: 32634277

34. **Boscolo E***, Pastura P, Schrenk S, Goines J, Kang R, Pillis D, Malik P, Le Cras TD*. $NRAS^{Q61R}$ mutation in human endothelial cells causes vascular malformations. Angiogenesis. 2022 Aug; 25(3): 331–342. PMCID: PMC9631803

35. Schrenk S, Bischoff LJ, Goines J, Cai Y, Vemaraju S, Odaka Y, Good SR, Szabo S, Reynaud D, Van Raamsdonk CD, Lang RA, **Boscolo E***. MEK inhibition reduced vascular tumor growth and coagulopathy in a mouse model with endothelial hyperactive GNAQ. Nature Communications. 2023, 6 14(1):1929. PMCID: PMC10079932

36. Cullion K, Ostertag-Hill CA, Pan M, Timko B, **Boscolo E**, Kohane DS. Ablation of Venous Malformations by Photothermal Therapy with Intravenous Gold Nanoshells. Nano Lett. 2023 Aug 9;23(15):7092-7099. PMC10773554

37. Schrenk S, Bischoff LJ, **Boscolo E***. Protocol for three-dimensional whole-mount imaging of the vascular network in the intestinal muscle. STAR Protocols. 2024 5(3):103170. PMC11269289

38. Bischoff LJ, Schrenk S, Soroko K, Sherpa C, Arasu A, Reynaud D, **Boscolo E*.** Expression of mutant TIE2 p.L914F during mouse development causes embryonic lethality and defects in vascular remodeling. Developmental Dynamics. 2025; Oct 11. PMCID: PMC12853423

39. Schrenk S, Sherpa C, Bischoff LJ, Cai Y, **Boscolo E*.** Semaphorin 3A and 3F Promote Lumen Expansion in TIE2-Mutated Venous Malformation. Arteriosclerosis, Thrombosis and Vascular Biology. 2025; 45(12):2243-2260. PMCID: PMC12616615 **(This Article was Featured on Arteriosclerosis Thrombosis and Vascular Biology December issue, 2025) (Cover Image of December 2025 issue)**

40. Liu B, Stuart WD, Fink-Baldauf IM, **Boscolo E**, Mino-Kenudson M, Snyder EL, Maeda Y. PBAE-PEG/Lipid Nanoparticle Delivery of RNA for the Creation of Genetically Engineered Lung Cancer Mouse Models. Nano Letters 2025 Dec 24;25(51):17578-17583. doi: 10.1021/acs.nanolett.5c04269. Epub 2025 Dec 11. PMID: 41378732

41. Bischoff LJ, Sherpa C, Schrenk S, **Boscolo E*.** Constitutive, Mosaic Expression of TIE2 p.L914F During Mouse Development Causes Venous Malformation. FASEB J. 2026 May 15;40(9):e71862. PMCID: PMC13159068

42. Tang W, Li Y, **Boscolo E**, Kohane DS, Cullion K. Polymeric rapamycin nanoparticles encapsulating ponatinib cause regression of venous malformations in mice. Sci Transl Med. 2026 May 6;18(848):eaeb7597. Epub 2026 May 6. PMCID: PMC13383109

***Peer Reviewed* Books, Chapters, Reviews, and Other Publications**

1. **Boscolo E**, Bischoff J. Vasculogenesis in infantile hemangioma. Angiogenesis. 2009;12(2):197-207. *Review.* PMCID: PMC2810616

2. Le Cras TD, **Boscolo E***. Cellular and molecular mechanisms of PIK3CA-related vascular anomalies. Vasc. Biol. 2019 May 28;1(1):H33-H40. *Review*. PMCID: PMC7439927

3. Goines J, **Boscolo E***. A xenograft model of venous malformation. Methods Mol Biol. 2021;2206:179-192. *Book Chapter.* PMCID: PMC7444280

4. Hammill AM, **Boscolo E*.** Capillary malformations. J Clin Invest. 2024 Apr 15;134(8):e172842. PMC11014659

5. Komal S, **Boscolo E*.** Advances in genetics, signaling, and modeling of venous malformations. Frontiers in Cardiovascular Medicine. 2026; 13:1770126. PMCID: PMC12921440

Invited Commentary

1. Schrenk S, **Boscolo E*.** A transcription factor is the target of propranolol treatment in infantile hemangioma. J Clin Invest. 2022 Feb 1;132(3):e156863. **(* corresponding author)** PMCID: PMC8803321

Quality Review of Publications

1. **Boscolo E**, Folin M, Nico B, Grandi C, Mangieri D, Scienza R, Zampieri P, Conconi MT, Parnigotto PP, Ribatti D. Beta amyloid angiogenic activity in vitro and in vivo. Int J Mol Med. 2007;19(4):581-7. PMID: 17334633

   Quality Review: *During my PhD training I investigated the effects of ßAmiloid peptide on the proliferation and vascular tube formation of endothelial cells and demonstrated that the peptide has pro-angiogenic properties.*

   39 total citations (Web of Science)

2. Khan ZA*, **Boscolo E***, Picard A, Psutka S, Melero-Martin JM, Bartch TC, Mulliken JB, Bischoff J. Multipotential stem cells recapitulate human infantile hemangioma in immunodeficient mice. J Clin Invest. 2008;118(7):2592-9. PMCID: PMC2413184 **(*co-first authors)**.

   Quality Review: *In 2008, we isolated and characterized a stem cell population (HemSC) from infantile hemangioma tumor. When injected into mouse, these cells form hemangioma-like blood vessels in vivo in 7 days and after 2 months these blood vessels spontaneously regress while HemSC-derived adipose cells appear, thereby recapitulating the life-cycle of the tumor.*

   192 total citations (Web of Science)

3. Jinnin M, Medici D, Park L, Limaye N, Liu Y, **Boscolo E**, Bischoff J, Vikkula M, Boye E, Olsen BR. Suppressed NFAT-dependent VEGFR1 expression and constitutive VEGFR2 signaling in infantile hemangioma. Nat Med. 2008;14(11):1236-46. PMCID: PMC2593632

   Quality Review: *VEGFR1 is downregulated in Endothelial cells isolated from infantile hemangioma promoting constitutive activation of VEGFR2 and excessive blood vessel formation. We found that decreased VEGFR1 expression is due to reduced activity of a novel signaling complex by Integrinβ1-TEM8-VEGFR2-NFAT.*

   232 total citations (Web of Science)

4. Greenberger S, **Boscolo E**, Adini I, Mulliken JB, Bischoff J. Corticosteroid suppression of VEGF-A in infantile hemangioma-derived stem cells. N Engl J Med. 2010;362(11):1005-13. PMCID: PMC2845924

   Quality Review: *Corticosteroids act specifically on the hemangioma stem cells (HemSC) by down-regulating VEGF-A. Here, I performed crucial experiments to show that 1-HemSC upregulated VEGF-A, and 2- downregulation of VEGF-A in HemSC prevented hemangioma formation in vivo.*

154 total citations (Web of Science)

5. **Boscolo E**, Stewart CL, Greenberger S, Wu JK, Durham JT, Herman IM, Mulliken JB, Kitajewski J, Bischoff J. JAGGED1 signaling regulates hemangioma stem cell-to-pericyte/vascular smooth muscle cell differentiation. Arterioscler Thromb Vasc Biol. 2011;31(10):2181-92. PMCID: PMC3174332

   Quality Review: *I determined that endothelial JAGGED1-NOTCH activation is crucial for differentiation of hemangioma stem cells-to-pericytes. Excessive levels of JAGGED1 in hemangioma endothelial cells cause abnormal proliferation of blood vessels and prevent their maturation.*

   48 total citations (Web of Science)

6. **Boscolo E**, Mulliken JB, Bischoff J. VEGFR-1 mediates endothelial differentiation and formation of blood vessels in a murine model of infantile hemangioma. Am J Pathol. 2011;179(5):2266-77. PMCID: PMC3204018

   Quality Review: *I determined that VEGF-A is involved in the differentiation of hemangioma stem cells into vascular cells. In particular, disruption of the VEGF-A/VEGFR-1 signaling in the hemangioma stem cells prevented their differentiation into endothelial cells, the cells that form the tumor blood vessels. This data was validated in a murine model of infantile hemangioma pinpointing the crucial role of VEGF-A in the formation and progression of this childhood tumor.*

   45 total citations (Web of Science)

7. **Boscolo E**, Coma S, Luks VL, Greene A, Klagsbrun M, Warman ML, Bischoff J. AKT hyper-phosphorylation associated with PI3K mutations in lymphatic endothelial cells from a patient with lymphatic malformation. Angiogenesis. 2015;18(2):151-62. PMCID: PMC4366356

   Quality Review: *We have identified somatic activating PIK3CA mutation H1047L in endothelial cells isolated from patients affected by lymphatic malformation. Rapamycin and PI3K-inhibitors halted AKT phosphorylation downstream of PIK3CA mutation and inhibited proliferation and vessel sprouting.*

   59 total citations (Web of Science)

8. **Boscolo E***, Limaye N, Huang L, Kang KT, Soblet J, Uebelhoer M, Mendola A, Natynki M, Seront E, Dupont S, Hammer J, Legrand C, Brugnara C, Eklund L, Vikkula M, Bischoff J, Boon LM. Rapamycin improves TIE2-mutated venous malformation in murine model and human subjects. J Clin Invest. 2015;125(9):3491-504. PMCID: PMC4588237 **(*corresponding Author)**

   Quality Review: *In 2015, I devised a murine model of venous malformation, based on the TIE2 mutation identified in patients. I showed that rapamycin effectively prevents lesion growth in the murine model and we determined its efficacy in a subset of patients enrolled in a pilot clinical trial.*

78 total citations (Web of Science)

9. Li X, Cai Y, Goines J, Pastura P, Brichta L, Lane A, Le Cras TD, **Boscolo E***. Ponatinib combined with Rapamycin causes regression of murine venous malformation. Arterioscler Thromb Vasc Biol. 2019 Mar;39(3):496-512. PMCID: PMC6392210 **(*corresponding author)**

   Quality Review: *Combination treatment with the ABL kinase inhibitor Ponatinib and the mTOR inhibitor rapamycin caused murine VM lesions to regress. Mechanistically, the drug combination enhanced AKT inhibition compared to monotherapy and reduced PLCγ/MAPK activity.*

   5 total citations (Web of Science)

10. Le Cras TD, Goines J, Lakes N, Pastura P, Hammill AM, Adams DM, **Boscolo E***. Constitutively active PIK3CA mutations are expressed by lymphatic and vascular endothelial cells in Capillary Lymphatic Venous Malformation. Angiogenesis. 2020 Aug;23(3):425-42. PMCID: PMC7311380 **(*corresponding author)**

    Quality Review: *We deterimined that PIK3CA mutations are present in both lymphatic and vascular endothelial cell clonal populations isolated from patients affected by capillary lymphatic venous malformation. These patient-derived clonal populations showed constitutive AKT activation, increased proliferation and generated lymphatic or vascular lesions in mouse.*

    3 total citations (Web of Science)

Patents

15/649,786 — 07/14/2017
Bcr-ABL inhibitors to treat Venous Malformations with activated TIE2.
Inventor: Elisa Boscolo — Non-provisional Patent

Teaching and Mentoring

Teaching

Trainees

06/2008 – 06/2009 — Camille Linick Stewart; Boston Children's Hospital
Responsibility: Training of medical student awarded Sarnoff Fellowship
Achievements under my mentorship: AHA 2008, poster presentation, Sarnoff Medical Student Meeting, seminar, Children's Hospital Research Day, poster presentation *AWARDED AS BEST "BASIC RESEARCH" PRESENTATION. Second author in ATVB publication, 2011
Current Position: General Surgeon, Duarte, CA

12/2014 – 12/2017 Xian Li, PhD; Cincinnati Children's Hospital Medical Center
Responsibility: Training of post-doctoral scholar
Achievements under my mentorship: 2 publications (1 first author)
Current position: Research Associate, University of Kentucky, PI Jeremy Wood

10/2015 – 04/2018 Yuqi Cai, PhD; Cincinnati Children's Hospital Medical Center
Responsibility: Training of post-doctoral scholar
Achievements under my mentorship: 4 publications (2 first author)
Current Position: Senior Account Manager at GenScript

06/2016 – 09/2016 Alexandra Burnett, BS; Cincinnati Children's Hospital Medical Center
Responsibility: Training of medical school summer student
Current Position: MD, MHS, University of Cincinnati

10/2017 – 03/2018 William Sebastien; Cincinnati Children's Hospital Medical Center
Responsibility: Training of undergraduate McNair student

06/2018 – 10/2018 Omar Khalfaoui; Cincinnati Children's Hospital Medical Center
Responsibility: Training of undergraduate RAMP student
Achievements under my mentorship: Recipient of the SURF poster presentation award
Current Position: Biology Student (Pre-Med) at Ohio State University.

09/2019 – 12/2019 Austin MacMillian, BS; University of Cincinnati
Responsibility: Training of rotating graduate student in UC's Cancer and Cell Biology Graduate Program

01/2020 – 3/2020 Zhiyun Yu, BS; University of Cincinnati
Responsibility: Training of rotating graduate student in UC's Cancer and Cell Biology Graduate Program

10/2019 – 11/2020 Junyi Zhu, MD, PhD; visiting scholar recipient of the China Council Scholarship
Responsibility: Training of visiting post-doctoral scholar

05/2018 – 05/2020 Nora Lakes, BS; Cincinnati Children's Hospital Medical Center
Responsibility: Training of undergraduate student (Capstone) and Research Assistant
Achievements under my mentorship: Recipient of the Peter K. Lauf Travel Award of the Ohio Physiological Society, 1 publication
Current Position: MD/PhD (MSTP) student at University of Cincinnati.

09/2014 – Present Jillian Goines, MS; Cincinnati Children's Hospital Medical Center
Responsibility: Training of Research Assistant III & IV
Achievements under my mentorship: 9 publications (4 first author); Recipient of the Safety Star Award (CCHMC)

04/2019 – Present Sandra Schrenk, PhD; Cincinnati Children's Hospital Medical Center
Responsibility: Training of post-doctoral scholar

Achievements under my mentorship: 8 publications (first and second author), Recipient of the Arnold Strauss Award in 2020 and American Heart Postdoctoral Fellowship in 2021.

01/2021 – 04/2021 Andrew Hoffmann, UC Undergraduate Student; Cincinnati Children's Hospital Medical Center
Responsibility: Training for CoOp in my laboratory

01/2021 – Present Rachel Kang, UC Undergraduate Student; Cincinnati Children's Hospital Medical Center
Responsibility: Training of undergraduate RAMP (virtual) and SURF (on site) student. She is now lab aide while planning to apply to MD or MD/PhD- MCAT score 523!
Achievements under my mentorship: 1 publication as coauthor.

07/2021 – Present Lindsay Bischoff, UC Graduate Student; Cancer and Cell Biology Graduate Program, University of Cincinnati.
Responsibility: Training of PhD student.
Achievements under my mentorship: AHA and F31 predoctoral fellowships. Abstract selected for talks in 4 different conferences/meetings. European Vascular Biology Organization Summer School Award, June 2022; Travel Award at the Vascular Anomalies Conference in Brussels, Febr 2023; 2 publication as second author, 1 publication as 1st author

07/2022 – 06/2024 Jorie Gatts, MD. Clinical Fellow in Hematology/Oncology.
Responsibility: Training Clinical Fellow.

05/2022 – 08/2022 Lauren Mestas, University of Cincinnati Cancer Scholar Research
Responsibility: Research training of undergraduate student in my laboratory

05/2023 – 08/2023 Amelia Uhde, University of Cincinnati Cancer Scholar Research
Responsibility: Research training of undergraduate student in my laboratory

05/2023 – present Lydia Knutson, University of Cincinnati Cancer Scholar Research, RAMP & Capstone
Responsibility: Research training of undergraduate student in my laboratory

08/2023 – present Andrew Barney, University of Cincinnati Cancer Scholar Research, RAMP & Capstone
Responsibility: Research training of undergraduate student in my laboratory

06/2023 – 09/2024 Dhanashri Deshmukh, PhD; Cincinnati Children's Hospital Medical Center
Responsibility: Training of post-doctoral scholar

05/2024 – present Kara Soroko, Research Assistant IV
Responsibility: Research training in my laboratory
Achievements under my mentorship: 1 publication as coauthor.

08/2024 – present Chhiring Sherpa, MS; Research Assistant
Responsibility: Research Training in my laboratory
Achievements under my mentorship: 2 publications as coauthor.

09/2024 – 01/2025	Kaitlyn Zenner, MD; Clinical Fellow **Responsibility**: Training Clinical Fellow.
12/2024 – present	Komal Sagar, PhD; Postdoctoral Fellow- Cincinnati Children's Hospital Medical Center **Responsibility**: Training of post-doctoral scholar
01/2026 – present	Favour Onyeogaziri, PhD; Postdoctoral Fellow- Cincinnati Children's Hospital Medical Center **Responsibility**: Training of post-doctoral scholar

Academic Courses

11/2019	Data Critique course, Taught 1 class. University of Cincinnati, Cancer and Cell Biology Graduate Program.
10/2020	Data Critique course/Virtual Journal Club, Taught 1 class. University of Cincinnati, Cancer and Cell Biology Graduate Program
09/2023-present	2 Classes/year: Cell-Cell Communication Molecular and Developmental Biology Graduate Program

Invited Lectures

02/2008	**Role of VEGF-B and VEGF-B Receptors in Hemangioma Stem Cells.** Developmental Vascular Biology Workshop III, Monterey, CA. [Seminar]
06/2008	**Multipotential Stem Cells Recapitulate Human Infantile Hemangioma in Immunodeficient Mice.** The International Society for the Study of Vascular Anomalies (ISSVA) 17th International Workshop, Boston, MA. [Seminar]
10/2011	**JAGGED1 Signaling Regulates Hemangioma Stem Cell-to-Pericyte/Vascular Smooth Muscle Cell Differentiation.** NAVBO Workshop in Vascular Biology, Hyannis, MA. [Seminar]
11/2011	**The Origin of EC in Pathological Angiogenesis -Infantile Hemangioma.** Boston Angiogenesis Meeting, Boston, MA. [Seminar]
10/2012	**Venous Malformation (VM): Murine Model to Identify Therapies to Target Aberrant Venous Development.** NAVBO-Genetics and Genomics of Vascular Disease Workshop II, Monterey, CA. [Seminar]
04/2014	**Venous Malformation (VM): From Causative TIE2 Mutation to Murine Model and Targeted Therapy.** The International Society for the Study of Vascular Anomalies (ISSVA) 20th International Workshop, Melbourne, Australia. [Seminar]

10/2015 **Rapamycin Improves TIE2-mutated Venous Malformation in Murine Model and Human Subjects.** NAVBO- Vascular Biology 2015, Hyannis, MA. [Seminar]

03/2017 **Identification of Novel Targeted Therapies for the Treatment of Venous Malformation.** Boston Children's Hospital, Boston, MA. [Seminar]

05/2017 **Targeted Therapies for Venous Malformation.** 9th Annual Vascular Anomalies Symposium. Charleston, SC. [Seminar]

10/2017 **Identification of Novel Targeted Therapies for the Treatment of Venous Malformation.** Ohio University, Athens, OH. [Invited Seminar]

11/2017 **Identification of Novel Targeted Therapies for the Treatment of Venous Malformation.** UT Southwestern Medical Center, Dallas, TX. [Invited Seminar]

03/2018 **Pathogenesis of Capillary Lymphatic Venous Malformations.** 10th Annual Vascular Anomalies Symposium, Charleston, SC. [Invited Seminar]

05/2018 **Activation of AKT in Endothelial Cells & Elevated Serum ANG-2 levels in Patients with Capillary Lymphatic Venous Malformations.** The International Society for the Study of Vascular Anomalies (ISSVA) 22nd International Workshop, Amsterdam, Netherlands. [Presentation]

05/2018 **ABL Kinase Inhibitor Ponatinib Combined with Rapamycin Causes Regression of Murine Venous Malformation.** The International Society for the Study of Vascular Anomalies (ISSVA) 22nd International Workshop, Amsterdam, Netherlands. [Presentation]

07/2018 **Our Research on Capillary-Lymphatic Venous Malformation.** K-T Support Group Meeting at the Mayo Clinic, Rochester, MN. [Invited Seminar]

09/2018 **Future of Overgrowth Syndrome: Basic Science.** Medical, Surgical, and Minimally Invasive Management of Vascular Anomalies and Overgrowth Syndromes, Atlanta, GA. [Invited Lecture]

07/2019 **Vascular Anomalies: Disease Models and Targeted Therapies.** The Sturge-Weber Foundation Research Network International Conference, Wilmington, DE. [Invited Lecture]

10/2019 **Constitutive Active Mutant TIE2 Induces Enlarged Vascular Lumen Formation with Loss of Apico-basal Polarity and Pericyte Recruitment.** Vascular Biology 2019, NAVBO, Asilomar, CA. [Seminar]

02/2020 **Vascular Anomalies: Disease Models and Targeted Therapies.** Vascular Anomalies Meeting, Charleston, SC [Invited Seminar]

04/2020 **Ponatinib Combined with Rapamycin Causes Regression of Murine Venous Malformation.** Vascular Discovery: From Genes to Medicine Scientific Session 2020 Chicago (Virtual) [Invited Lecture to receive AHA Award]

04/2020 **Constitutive Active Mutant TIE2 Induces Enlarged Vascular Lumen Formation with Loss of Pericyte Recruitment.** NAVBO Virtual Mini-Symposia [Invited Seminar]

10/2021 **Molecular Mechanisms of Venous Malformation.** EMBO Meeting on Vascular Anomalies, Barcelona, Spain. [Invited Seminar]

05/2022 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** The International Society for the Study of Vascular Anomalies (ISSVA) 23nd International Workshop, Vancouver, Canada. [Presentation]

05/2022 **Cellular and molecular Mechanisms of Pathological Vascular Lumen Expansion in Venous Malformation.** University of Illinois Chicago. Virtual. [Invited Lecture]

02/2023 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** Vascular Anomalies Conference in Brussels, Belgium. [Invited Presentation]

05/2023 **Cellular and Molecular Mechanisms of Pathological Lumen Formation in Vascular Anomalies.** National Institute of Health- NHLBI Bethesda, MD [Invited Speaker]

10/2023 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** Vascular Biology 2023, Newport, RI [Selected Presentation]

10/2024 **Cell autonomous and non-Cell autonomous roles of Semaphorin 3A and 3F in TIE2-mutated Venous Malformation.** Vascular Biology 2024, Asilomar, CA [Selected Brief Presentation]

03/2025 **Cellular and Molecular Mechanisms driving aberrant vascular development in Venous Malformation.** Children's Hospital of Philadelphia, Philadelphia, PA [Invited Speaker]

04/2025 **Cellular and Molecular Mechanisms driving aberrant vascular development in Venous Malformation.** Tulane University, New Orleans, LA [Invited Speaker]

11/2025 **Cellular and Molecular Mechanisms driving aberrant vascular development in Vascular Anomalies.** Ball State University, Muncie, IN [Invited Speaker]

Invited Seminars at CCHMC/UC

09/2014 **Vascular Anomalies: Murine Models and Targeted Therapies.** Division of Critical Care

10/2016 **Vascular Anomalies: Disease Models and Targeted Therapies.** Hematology Grand Rounds

10/2016 **Venous Malformations: from causative TIE2 mutations to murine model to targeted therapy.** HVMC Radiology Conference

02/2017 **Targeting mTOR and c-ABL as a novel strategy to treat Venous Malformation.** University of Cincinnati Vontz Center Cancer Biology Seminar Series

02/2017 **Identification of a novel Combination therapy for Venous Malformation.** Hematology Grand Rounds

05/2018 **Vascular Anomalies: from causative mutations to murine models and targeted therapies.** Cronobiology, Vascular Biology and Visual System Group Combined Seminar Series

09/2018 **Murine models to study mechanisms of pathological vasculogenesis.** Translational Vascular Anomalies Series

05/2019 **Vascular Anomalies: disease models and targeted therapies.** Cronobiology, Vascular Biology and Visual System Group Combined Seminar Series

04/2021 **Cellular and molecular Mechanisms of Pathological Vascular Lumen Expansion in Venous Malformation.** University of Cincinnati Vontz Center Cancer Biology Seminar Series 2021

08/2022 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition. 2022 Translational Research Retreat.** Cincinnati Children's Hospital. [Invited Presentation]

10/2022 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** University of Cincinnati Cancer Center [Invited Presentation]

02/2023 **GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** Rasopathy meeting - CCHMC [Invited Presentation]

Participation in Patient and Family Educational Activities

07/2017	**Our Research on Sturge Weber Syndrome and tour of my Laboratory with patients and families.** The Sturge-Weber Foundation Patient Conference, Cincinnati, OH. [I Presented an Invited Lecture and Brought Patients to Visit my Laboratory with Fun Science Activities for Children)
07/2018	**Our Research on Capillary-Lymphatic Venous Malformation.** Klippel-Trenaunay (K-T) Support Group Patient Meeting at the Mayo Clinic, Rochester, MN. [I Presented an Invited Seminar]
07/2019	**Vascular Anomalies: Disease Models and Targeted Therapies.** The Sturge-Weber Foundation Research Network International Conference, Wilmington, DE. [I presented an Invited Lecture]
05/2022	**Cellular and molecular Mechanisms of Pathological Vascular Lumen Formation in Vascular Anomalies**. Lymphatic Anomalies Association (LGDA). https://lgdalliance.org/who-we-are/ Virtual. [Invited Presentation]
08/2022	**Constitutively active PIK3CA mutations are expressed by lymphatic and vascular endothelial cells in Capillary Lymphatic Venous Malformation.** PIK3CA-related Overgrowth syndrome (PROS) Roundtable, CLOVES syndrome community. https://clovessyndrome.org/physicians-researchers/#pik3ca-related-conditions-research-roundtable Virtual. [Invited Lecture]
02/2024	**GNAQ mutation in the endothelium causes aberrant vascular morphogenesis and coagulopathy that are rescued by MEK inhibition.** Lymphatic Anomalies Association (LGDA). https://lgdalliance.org/who-we-are/ Virtual. [Invited Presentation]

Mentoring

Thesis Committees

12/2014 – 02/2017	PhD Thesis Committee member for Michelle Glaunert (PI Lionel Chow) Cancer and Cell Biology Graduate Program Cincinnati Children's Hospital Medical Center
02/2015 – 02/2018	PhD Thesis Committee member for Andrew Koenig (PI Saulius Sumanas) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
10/2016 – 03/2020	PhD Thesis Committee member for Satish CasieChetty (PI Saulius Sumanas) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
01/2018 – 11/2020	PhD Thesis Committee member for Jennifer Courtney

	(PI Helen Jones) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
05/2019	Qualifying Exam Committee member for Johnny Donovan (PI Tanya Kalin) Cancer and Cell Biology Graduate Program Cincinnati Children's Hospital Medical Center
08/2020	Qualifying Exam Committee member for Xuyao Chang (primary reviewer) (PI Richard Lu) Molecular and Developmental Biology Program Cincinnati Children's Hospital Medical Center
10/2019 – 12/2021	PhD Thesis Committee member for Xin Wei (PI Timothy Phoenix) Pharmaceutical Sciences Graduate Program University of Cincinnati
10/2020 – 11/2024	PhD Thesis Committee member for Anusha Acharya (PI Tanya Kalin) Cancer and Cell Biology Graduate Program Cincinnati Children's Hospital Medical Center
12/2020	Grant Writing Course 'expert' for Maria Uscatelgui Calderon Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
04/2023-present	PhD Thesis Committee member for Roman Caceres (PI Biplab Dasgupta) Cancer and Cell Biology Graduate Program Cincinnati Children's Hospital Medical Center
12/2022 – 05/2025	PhD Thesis Committee member for Alyssa Solano (PI Brian Gebelein) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
10/2024 – Present	PhD Thesis Committee member for Sara Alharbi (PI Timothy Le Cras) Cancer and Cell Biology Graduate Program Cincinnati Children's Hospital Medical Center
12/2024 – 02/2026	PhD Thesis Committee member for Griffin McDaniel (PI Timothy Le Cras) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center
08/2025 – Present	PhD Thesis Committee member for Sadani Lyana Badalge (PI Nancy Ratner) Molecular and Developmental Biology Graduate Program Cincinnati Children's Hospital Medical Center

Qualifier Exams

09/2024 – 09/2025	Qualifier Exam **Standing Committee Member -** Molecular and Developmental Biology (DSRM) Graduate Program
05/2022 – 4/2023	Qualifier Exam **Standing Committee Member -** Cancer and Cell Biology Graduate Program (years 2022 and 2023)
02/2022 – Present	Qualifier Exam Ad-Hoc Reviewer for: Alyssa Solano 2022 – MDB/DSRM Mingjun Cai - 2022 - MDB/DSRM Sara Alharbi 2023 - CCB

Graduate Program Rotating Students

2019	Austin McMillan – CCB
2019	Zhiyun Yu – CCB
2021	Lindsay Bischoff – CCB
2022	Andy Wong – MDB/DSRM
2022	Sara Alharbi - CCB
2022	Camila Hayde Cuervo Jimenez - PMM
2023	Nonso Nduka – MDB/DSRM
2024	Taylor Joseph - CCB
2025	Pardis Amini – DSRM
2026	Haedi Dinh - DSRM

Fellow Scholarship Oversight Committees

06/2017 – 2019	SOC Committee member for Catherine Urban (PI Basilia Zingarelli) Division of Critical Care Medicine Cincinnati Children's Hospital Medical Center
11/2019 – 2021	SOC Committee member for Anthony Sabulski (PI Stella Davies) Division of Hematology Cincinnati Children's Hospital Medical Center
01/2024 – Present	SOC Committee member for Lindsay Haacker (PI Susa Wells) Cincinnati Children's Hospital Medical Center
06/2025 – Present	SOC Committee member for Matthew Hapstack (PI Mihir Atreya) Cincinnati Children's Hospital Medical Center
01/2025 – Present	SOC Committee member for Svatava Merkle

(PI Tim Le Cras)
Cincinnati Children's Hospital Medical Center

Post-doctoral Mentoring

08/2018 – 06/2020 Post-doctoral Mentoring Committee member for Sanjeeva Metikala
(PI Saulius Sumanas)
Molecular and Developmental Biology
Cincinnati Children's Hospital Medical Center

Career Development Committee

09/2020 – 05/2025 Career Development Committee member for Mihir Atreya, Instructor
Division of Critical Care Medicine
Cincinnati Children's Hospital Medical Center

Service and Leadership

Service

Professional Organizations

05/2007 – Present North American Vascular Biology Organization (NAVBO)
Regular Member

05/2014 – Present International Society for the Study of Vascular Anomalies (ISSVA)
Active Member and Member of the Scientific Committee

06/2021 - 2024 North American Vascular Biology Organization (NAVBO)
Elected Councilor

02/2022 - Present European Vascular Biology Organization (EVBO)
Regular Member

08/2023 - Present North American Vascular Biology Organization (NAVBO)
Elected member of the Meritorious Award committee

08/2024 - Present North American Vascular Biology Organization (NAVBO)
Elected member of the Growth and Enrichment committee

Committees

05/2019 – 06/2022 Institutional Animal Care and Use Committee (IACUC)
Local, Cincinnati Children's Hospital Medical Center
Committee Member

08/2019 – 06/2022 Medical Scientist Training Program (MSTP)
Local, University of Cincinnati College of Medicine

	Admission Committee Member
12/2022 – present	Cancer and Cell Biology Graduate Program Local, University of Cincinnati College of Medicine Committee Member
08/2023 – present	CBDI seminar series co-Organizer with Dr. Andrew Volk CCHMC

Editorial Service

11/2014 – 06/2022	Member of Editorial Advisory Board for American Journal of Hematology IF: 10.05
12/2014 – Present	Member of Editorial Board for Journal of Hematology and Thrombosis
11/2021 – Present	Associate Editor for Frontiers in Cardiovascular Medicine IF: 6.050

Grant Reviewer

02/2011	Call for Grants from Italian Ministry of Health- study section reviewer
02/2012	Call for Grants from Italian Ministry of Health- study section reviewer
02/2017	Ohio University Research Council- Ad Hoc reviewer
03/2017 – Present	CCHMC RIP/GAP grant applications- study section member
02/2018	Israel Science Foundation- Ad Hoc reviewer
12/2018	CCHMC Center for Clinical and Translational Science and Training (CCTST)
06/2019	Department of Defense (DoD), PRMRP Discovery Award
10/2019	The Cancer Biology Research Center, Tel-Aviv University- Ad Hoc reviewer
04/2019 – Present	CCHMC Arnold Strauss Fellowship for Research Fellows- study section member
04/2020	CCTST Rochester- Ad Hoc reviewer
06/2020	Joint NSFC-ISF Research Grant- Ad Hoc reviewer
09/2020	CCTST Pilot Translational Research and Innovative Core Program
07/2020 – Present	CCHMC Trustee Award- study section member
06/2021	Cancer Free Kids
06/2021	Department of Defense (DoD), PRMRP Discovery Award

10/2021	Orphan Disease Center- Million Dollar Bike Ride (UPenn)
09/2022	Department of Defense (DoD), PRMRP Focused Program Award - study section member
10/2022	UCCC Pilot Project Award – study section member
10/2022	Orphan Disease Center Million Dollar Bike Ride at UPenn, Pilot Grant Program
11/2022-Present	Schmidlapp Scholars Award - study section member
10/2023, 02/2024	NIH – BMBI study section (9 grants)
10/2023-	Orphan Disease Center Million Dollar Bike Ride at UPenn, Pilot Grant Program
12/2023	Cardiovascular Research Institute Pilot Grants– University of Cincinnati
05/2024	LMI Lymphatic Malformation Institute
10/2024	NIH Study Section **ZRG1 EMS-Y (58) Understanding Chronic Conditions Understudied Among Women Special Emphasis Panel (SEP)**
06/2024	PTEN research foundation
09 & 12/2024	Department of Defense PRMRP Programmatic Review I and II
10/2025	NIH – CDD study section (8 grants)

Conference Abstract Reviews and Poster Judging

01/2018	Reviewer of 58 Abstracts for The International Society for the Study of Vascular Anomalies (ISSVA) 22nd International Workshop, Amsterdam, Netherlands
10/2019	Poster judge at the Vascular Biology Meeting 2019- North American Vascular Biology Organization (NAVBO)
01/2020	Reviewer of 35 Abstracts for The International Society for the Study of Vascular Anomalies (ISSVA) 23rd International Workshop, Vancouver, Canada
10/2020	Poster judge at the Vascular Biology Meeting 2020- North American Vascular Biology Organization (NAVBO) Virtual Meeting
06/2021	Podium talks judge for the LEARN Young Investigator Award at the Lymphatic Forum 2021
10/2021	Poster judge at the Vascular Biology Meeting 2021- North American Vascular Biology Organization (NAVBO) Virtual Meeting

01/2022	Reviewer of 35 Abstracts for The International Society for the Study of Vascular Anomalies (ISSVA) 2022 ISSVA World Congress, Vancouver, Canada
10/2022	Poster judge at the International Vascular Biology Meeting 2022- North American Vascular Biology Organization (NAVBO) San Francisco, CA
10/2023	Poster judge at the Vascular Biology Meeting 2023- North American Vascular Biology Organization (NAVBO) Newport, RI
07/2025	Poster judge at the Angiogenesis Gordon Conference 2025 Newport, RI
08/2025	Abstract judge for the American Heart Association meeting 2025, New Orleans, LA
12/2025	Abstract judge for ISSVA – 2026 Philadelphia Congress

Manuscript Reviews

Journal of Clinical Investigation; Nature Communications, Nature Cardiovascular Research, AAAS, JCI Insight; Human Molecular Genetics; Arteriosclerosis, Thrombosis and Vascular Biology; Angiogenesis; FASEB Journal; Experimental Cell Research; Circulation Research, Circulation, Journal of Hematology and Oncology; Vascular Cell; Cellular Physiology and Biochemistry; Acta Pediatrica; Pediatric Blood and Cancer; Vascular Biology; Journal of European Academy of Dermatology Venereology; Scientific Reports; PlosOne	Average of 10-15 Manuscripts/Year

Professional and Leadership Activities

2014 – Present	Representative at Cincinnati Children's Hospital Medical Center for the North American Vascular Biology Organization (NAVBO)
10/2015	Chair of 'Matrix Remodeling in Vascular Disease' session at Vascular Biology Meeting, Hyannis, MA
10/2019	Chair of 'Mural Cell Origins and Functions' session at Vascular Biology Meeting, Asilomar, CA
10/2020	Poster Discussion Moderator at the Vascular Biology Meeting 2020- North American Vascular Biology Organization (NAVBO), Virtual Meeting
10/2021	Invited Plenary Session Leader/Moderator at the LGDA/LMI International Research Symposium, Virtual Meeting
10/2021	Chair of 'Blood Vessel and Lymphatic Malformations I' session at Vascular Biology Meeting, 2021
10/2021	Chair of 'Pre-Clinical research Session' at International Scientific Meeting for PIK3CA Related Conditions, Virtual Meeting 2021

07/2021 - Present	Elected - Councilor for the North American Vascular Biology Organization (NAVBO)
10/2022	Chair of ' Vascular Anomalies Session' at International Vascular Biology Meeting 2022- North American Vascular Biology Organization (NAVBO) San Francisco, CA
09/2023	Session Leader/Moderator at the LGDA/LMI International Research Symposium, Dallas, TX
09/2023-present	Elected - Voting member of the meritorious award committee for the North American Vascular Biology Organization (NAVBO)
03/2023 -present	Co-organizer for CBDI seminar series
10/2024	Panelist for session on mentoring – Vascular Biology Meeting 2024, Asilomar, CA
07/2025	Session Chair and moderator at the Angiogenesis Gordon Conference 2025 Newport, RI
08/2026	*Organizer and moderator of an online roundtable:* Strategies to build an academic scientific career in the US

Community Activities

08/2014	Volunteer for event at Gabriel's Place *Organized by Office of Faculty Development CCHMC*
02/2015	Volunteer for event at Freestore Foodbank *Organized by Office of Faculty Development CCHMC*
07/2015	Volunteer for Health Fair event at Su Casa Hispanic Center in Cincinnati
09/2015	Presenter for Career Symposium for postdoctoral fellows (CCHMC) Presentation: How to find a job in Academia
04/2018	Published personal article on the NAVBO website: Lessons Learned *http://www.navbo.org/resources/lessons-learned*

“I have reviewed the curriculum vitae for completeness and accuracy and agree with its contents.”

07/20/2026

Faculty Member Signature and Date