# James William Smyth, PhD

Associate Professor, Fralin Biomedical Research Institute
Associate Professor, Center for Heart and Reparative Medicine Research
Associate Professor, Department of Biological Sciences, Virginia Tech
Assistant Professor, Department of Basic Science Education, Virginia Tech Carilion School of Medicine

## 1. PERSONAL INFORMATION:

**Name:** James William Smyth
**Address:** Fralin Biomedical Research Institute at VTC,
2 Riverside Circle, Roanoke, VA 24016
**Phone:** 540-526-2038
**Fax:** 540-985-3373
**email:** smythj@vtc.vt.edu

## 2. EDUCATION AND PROFESSIONAL TRAINING HISTORY:

### EDUCATION:

**1994-1998 B.Sc. (Honors), Industrial Microbiology**
University College Dublin, Ireland

**1999-2005 Ph.D., Virology and Cancer Biology**
Trinity College Dublin, Ireland
***Thesis Topic:*** *'Inhibition of K-BALB murine tumors using Semliki Forest Virus and its derived vector'*

### PROFESSIONAL SUMMARY:

**Primary Research Focus:** *Cardiovascular disease mechanisms*

**Areas of expertise and interest:** *Intercellular communication, gap junctions, protein translation, ion channel trafficking, cytoskeleton, cardiomyocyte cell biology, ischemia, adenovirus, viral myocarditis*

### ACADEMIC APPOINTMENTS:

**July 2005-July 2010** Postdoctoral Fellow, University of California San Francisco
**July 2010-July 2013** Specialist, University of California San Francisco
**July 2013-July 2014** Project Scientist, Cedars-Sinai Medical Center
**July 2014-June 2020** Assistant Professor, Fralin BioMedical Research Institute at VTC

**July 2014-June 2020** Assistant Professor of Biological Sciences, Virginia Tech
**July 2014-June 2020** Assistant Professor, Center for Heart and Reparative Medicine Research, Fralin BioMedical Research Institute
**Dec 2015-current** Assistant Professor, Department of Basic Science Education, Virginia Tech Carilion School of Medicine
**July 2020-current** Associate Professor, Fralin BioMedical Research Institute at VTC
**July 2020-current** Associate Professor of Biological Sciences, Virginia Tech
**July 2020-current** Associate Professor, Center for Heart and Reparative Medicine Research, Fralin Biomendical Research Institute at VTC

## 3. HONORS, AND AWARDS:

**2013** **Travel Award** and **Highly Commended Poster Presentation**
Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Ventura, California

**2013** **2nd Prize Oral Presentation Award**
International Gap Junction Conference, Charleston, South Carolina

**2017** **Invited 'Emerging leader' Keynote Speaker**
International Gap Junction Conference, Glasgow, United Kingdom

**2019** **Honoring Exemplary Researcher Outreach (H.E.R.O.) Honoree**
Roanoke Valley Governor's School

## 4. FUNDING

### *Grants and Funding: Active*

**2016-2020** **NIH R01 (R01HL102298)**
***"****Role of the Extracellular Space as a Modulator of the Cardiac Gap Junction - Conduction Velocity Relationship."*
Role: **Co-I** (Effort 5%; PI-Poelzing); Total funds: $2,098,468 ($53,709 to Smyth lab)

**2017-2022** **NIH R01 (R01HL132236)**
*"Translation initiation in cardiac intercellular communication and stress-induced remodeling."*
Role: **PI** (Effort 38%); Total funds: $1,973,324 ($1,973,324 to Smyth lab)

**2017-2019** **NIH STTR (R41CA217503)**
*"Therapeutic disruption of connexin43-mediated microtubule regulation to target glioblastoma cancer stem cells."*
Role: **Co-I** (Effort 2%; PI-Lamouille); Total funds: $85,000 ($12,889 to Smyth lab)

**2018-2019** **CRCF CIT Award (STTR-17-009-LS)**
*"Development of biodegradable nanoparticles encapsulating a novel therapeutic peptide to eradicate glioblastoma cancer stem cells."*
Role: **Co-I** (Effort 2%; PI-Lamouille); Total funds: $22,000 ($4,121 to Smyth lab)

**2018-2020** **NIH R21 (R21NS107941)**
*"Targeting connexin43 in post-traumatic epilepsy."*
Role: **Co-I** (Effort 10%; Co-PIs- Lamouille, Robel); Total funds: $442,750 ($52,914 to Smyth lab)

**2018-2020** **AHA Predoctoral Fellowship (18PRE33960573)**
*"Adenovirus targets intercellular communication to facilitate viral replication."*
Role: **Sponsor** (PI-Calhoun); Total funds: $53,688 ($53,688 to Smyth lab)

**2019-2023** **NIH R01 (R01HL146596)**
*"Vascular basement membrane composition regulates pericyte investment in developing blood vessels."*
Role: **Co-I** (Effort 2%; PI-Chappell); Total funds: $1,560,138 ($23,368 to Smyth lab)

**2020-2022** **NIH F31 (HL152649)**
"*Arrhythmogenic mechanisms of acute viral myocarditis.*"
Role – **Sponsor** (PI-Padget). Total funds - $101,687 ($101,687 to Smyth Lab)

***Grants and Funding: Completed***

**2009-2010** **AFAR Ellison Foundation Postdoctoral Fellowship (A112457)**
*"Age-Related Oxidative Stress on Cardiac Cell-Cell Coupling."*
Role: **PI** (Effort 100%); Total funds: $50,000

**2010-2014** **AHA NCRP Scientist Development Grant (SDG3420042)**
*"Regulation of connexin 43 forward trafficking in human cardiomyopathy."*
Role: **PI** (Effort 100%); Total funds: $308,000

**2016-2017** **NIH R56 (R56HL133826)**
*"Flt-VEGF-Cx43 Regulation of Vascular Pericyte Investment."*
Role: **Co-I** (Effort 5%; PI-Chappell); Total funds: $385,823 ($20,248 to Smyth lab)

**2017-2018** **NIH R56 (R56AI127800)**
*"Regulation of T helper cell differentiation by integrating STAT and Ikaros zinc finger transcription factor mechanisms."*
Role: **Co-I** (Effort 5%; PI-Oestreich); Total funds: $262,535 ($215 to Smyth lab).

**2017-2019** **NIH F31 (F31HL140909)**
*"Altered translation initiation in regulation of gap junction coupling."*
Role: **Sponsor** (PI-James); Total funds: $106,389 ($106,389 to Smyth lab)

## 5. SCIENTIFIC AND SCHOLARLY ACTIVITIES

***Papers (Peer reviewed):***

1. Atkins GJ, **Smyth JW**, Fleeton MN, Galbraith SE, Sheahan BJ. Alphaviruses and their derived vectors as anti-tumor agents. Current Cancer Drug Targets. 2004 Nov;4(7):597-607. PMID: 15578917

2. **Smyth JW**, Fleeton MN, Sheahan BJ and Atkins GJ. Treatment of rapidly growing K-BALB and CT26 mouse tumors using Semliki Forest virus and its derived vector. Gene Therapy. 2005 Jan;12(2):147-59. PMID: 15372069

3. Saxena A, Fish JE, White MD, Yu S, **Smyth JW**, Shaw RM, DiMaio JM, and Srivastava D. Stromal cell-derived factor-1α is cardioprotective after myocardial infarction. Circulation. 2008:117:2224-2231. PMCID: PMC2743260

4. **Smyth JW** and Shaw RM. Visualizing ion channel dynamics at the plasma membrane. Heart Rhythm. 2008 Jun;5, S7-11. PMCID: PMC2474660

5. **Smyth JW**, Hong TTH, Gao D, Vogan J, Jensen B, Fong T, Simpson P, Stainier D, Chi N, Shaw RM. Limited forward trafficking of connexin 43 reduces cell-cell coupling in stressed human and mouse myocardium. The Journal of Clinical Investigation. 2010 Jan;120(1):266-79. PMCID: PMC2798685 commentary in: The Journal of Clinical Investigation. 2010 Jan;120(1): 87-89.

6. Hong TTH, **Smyth JW**, Gao D, Chu K, Vogan JM, Fong TS, Jensen BC, Colecraft HM, Shaw RM. BIN1 localizes the L-type calcium channel to cardiac t- tubules. PLoS Biology. 2010 Feb 16;8(2). PMCID: PMC2821894 commentary in: PLoS Biology. 2010 Feb: 16;8(2).

7. **Smyth JW** and Shaw RM. Forward trafficking of ion channels: what the clinician needs to know. Heart Rhythm. 2010 Aug;7(8): 1135-40. PMCID: PMC2821894

8. Nordstrom SM, Holliday BA, Sos BC, **Smyth JW**, Levy RE, Dukes JW, Lord ST, Weiss EJ. Increased thrombosis susceptibility and altered fibrin formation in STAT5-deficient mice. Blood. 2010 Dec;116(25):5724-33. PMCID: PMC3031416

9. Zhang SS*, Kim KH*, Rosen A*, **Smyth JW***, Sakuma R*, Delgado-Olguín P, Davis M, Chi NC, Puviindran V, Gaborit N, Sukonnik T, Wylie JN, Brand-Arzamendi K, Farman GP, Kim J, Rose RA, Marsden PA, Zhu Y, Zhou YQ, Miquerol L, Henkelman RM, Stainier DY, Shaw RM, Hui CC, Bruneau BG, Backx PH. Iroquois homeobox gene 3 establishes fast conduction in the cardiac His-Purkinje network. Proceedings of the National Academy of Sciences USA. 2011 Aug 16;108(33):13576-81. PMCID: PMC3158173 ***contributed equally**

10. **Smyth JW** and Shaw RM. Visualizing cardiac ion channel trafficking pathways. Methods in Enzymology. 2012;505:187-202. PMID: 22289454

11. **Smyth JW** and Shaw RM. The gap junction life cycle. Heart Rhythm. 2012 Jan;9(1):151-3. PMCID: PMC3210376

12. Lamouille S, Connolly E, **Smyth JW**, Akhurst RJ, Derynck R. TGF-β-induced activation of mTOR complex 2 drives epithelial-mesynchymal transition and

cell invasion. The Journal of Cell Science. 2012 Mar 1;125(Pt 5): 1259-73. PMCID: PMC3324583

13. **Smyth JW**, Vogan JM, Buch PJ, Zhang SS, Fong TS, Hong TT, Shaw RM. Actin cytoskeleton rest stops regulate anterograde traffic of connexin 43 vesicles to the plasma membrane. Circulation Research. 2012 Mar 30;110(7):978-89. PMCID: PMC3621031 **cover article**

14. Horiuchi D, Kusdra L, Huskey NE, Chandriani S, Lenburg ME, Gonzalez-Angulo AM, Creasman KJ, Bazarov AV, **Smyth JW**, Davis SE, Yaswen P, Mills GB, Esserman LJ, Goga A. MYC pathway activation in triple-negative breast cancer is synthetic lethal with CDK inhibition. The Journal of Experimental Medicine. 2012 Apr 9;209(4):679-96. PMCID: PMC3328367

15. Hong TT, **Smyth JW**, Chu KY, Vogan JM, Fong TS, Jensen BC, Fang K, Halushka MK, Russell SD, Colecraft H, Hoopes CW, Ocorr K, Chi NC, Shaw RM. BIN1 is reduced and Cav1.2 trafficking is impaired in human failing cardiomyocytes. Heart Rhythm. 2012 May;9(5):812-20. PMCID: PMC3306544

16. **Smyth JW** and Shaw RM. Autoregulation of connexin43 gap junction formation by internally translated isoforms. Cell Reports. 2013 Nov;5(3):611-8. PMCID: PMC3898934

17. **Smyth JW**, Zhang SS, Sanchez JM, Lamouille S, Vogan JM, Hesketh GG, Hong T, Tomaselli GF, Shaw RM. A 14-3-3 mode-1 binding motif initiates gap junction internalization during acute cardiac ischemia. Traffic. 2014 Jun;15(6):684-99. PMID: 24612377 **cover article**

18. Entz M, George SA, Zeitz MJ, Raisch T, **Smyth JW**, Poelzing S. Heart rate and extracellular sodium and potassium modulation of gap junction mediated conduction in guinea pigs. Frontiers in Physiology. 2016 Feb; 2(7):16. PMC4735342

19. George SA, Bonakdar M, Zeitz MJ, Davalos RV, **Smyth JW**, Poelzing S. Extracellular sodium dependence of the conduction velocity-calcium relationship: evidence of ephaptic self-attenuation. American Journal of Physiology - Heart and Circulatory Physiology. 2016 May;310(9), H1129-H1139. PMCID: PMC4867385

20. George SA, Calhoun PJ, Gourdie RG, **Smyth JW**, Poelzing S. TNFα modulates cardiac conduction by altering electrical coupling between myocytes. Frontiers in Physiology. 2017 May 23(8):334. PMCID: PMC5440594

21. James CC*, Zeitz MJ*, Calhoun PJ, Lamouille S, **Smyth JW**. Altered translation initiation of *Gja1* limits gap junction formation during epithelial-mesenchymal transition. Molecular Biology of the Cell. 2018 Apr 1;29(7), 797-808. mbc.E17-06-0406. PMCID: PMC5905293 ***contributed equally**

22. Veeraraghavan R, Hoeker GS, Alvarez-Laviada A, Hoagland D, Wan X, King DR, Sanchez-Alonso J, Chen C, Jourdan J, Isom LL, Deschenes I, **Smyth JW**, Gorelik J, Poelzing S, Gourdie RG. The adhesion function of the sodium channel beta subunit (β1) contributes to cardiac action potential propagation. ELife. 2018 Aug 14;7. PMCID: PMC6122953

23. James CC, **Smyth JW**. Alternative mechanisms of translation initiation: An emerging dynamic regulator of the proteome in health and disease. Life Sciences. 2018 Nov 1;212:138-44. PMCID: PMC6345546

24. George SA, Hoeker G, Calhoun P, Entz M 2nd, Raisch TB, King DR, Khan M, Baker CE, Gourdie RG, **Smyth JW**, Nielsen MS, Poelzing S. Modulating cardiac conduction during metabolic ischemia with perfusate sodium and calcium in guinea pig hearts. American Journal of Physiology. Heart and Circulatory Physiology. 2019 Apr 1;316(4), H849-861. doi: 10.1152/ajpheart.00083.2018. PMCID: PMC6483020

25. 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. PMID: 31066166 ***contributed equally**

26. Zeitz MJ, Calhoun PJ, James CC, Taetzsch T, George KK, Robel S, Valdez G, **Smyth JW**. Dynamic UTR usage regulates alternative translation to modulate gap junction formation during stress and aging. Cell Reports. 2019 May 28;27(9):2737-2747. PMID: 31141695

27. Roberts R, **Smyth JW**, Willa J, Roberts P, Grek CL, Ghatnekar GS, Sheng Z, Gourdie RG, Lamouille S, Foster JE. Development of PLGA nanoparticles for sustained release of a connexin43 mimetic peptide to target glioblastoma cells. Materials Science & Engineering: C. 2020 Mar;108:110191.

28. Zeitz MJ, **Smyth JW**. Translating Translation to Mechanisms of Cardiac Hypertrophy. Journal of Cardiovascular Development and Disease. 2020 Mar 10;7(1):9.

29. Calhoun PJ, Phan AV, Taylor JD, James CC, Padget RL, Zeizt MJ, **Smyth JW**. Adenovirus targets transcriptional and posttranslational mechanisms to limit gap junction function. The FASEB Journal. 2020 Jun 2. doi: 10.1096/fj.202000667R.

30. Hoeker GS, James CC, Tegge AN, Gourdie RG, **Smyth JW**, Poelzing S. Attenuating loss of cardiac conduction during no-flow ischemia through changes in perfusate sodium and calcium. American Journal of Physiology - Heart and Circulatory Physiology. 2020 Jul 17. doi: 10.1152/ajpheart.00112.2020

***Selected Conference Presentations:***

1. **Smyth JW**, Sheahan BJ, and Atkins GJ. Induction of antitumor immune responses through expression of viral antigens in tumor cells using the Semliki Forest virus vector. *Poster Presentation*. 5th Gene delivery & cellular protein expression conference. Semmering, Austria. September 2001

2. **Smyth JW**, Sheahan BJ, an Atkins GJ. Semliki Forest virus and its vector as tumor therapy agents. *Oral Presentation*. 152nd Society for General Microbiology meeting, Edinburgh, Scotland. August 2003

3. **Smyth JW**, Hong TTH, Gao D, Jain M, Jensen B, Fong T, Simpson P, Stainier D, Chi N, Shaw RM. Oxidative stress interferes with targeted delivery of connexons to plaques. *Oral Presentation*. American Heart Association

Scientific Sessions. New Orleans. November 2008

4. **Smyth JW**, Hong TTH, Gao D, Vogan J, Jensen B, Fong T, Simpson P, Stainier D, Chi N, Shaw RM. Oxidative stress interferes with targeted delivery of connexons to plaques. *Poster Presentation*. Keystone Symposium: Common Mechanisms in Arrhythmias and Heart Failure. Keystone. April 2009

5. **Smyth JW**, Sanchez JM, Lamouille S, Vogan JM, Fong T, Hong TT, Shaw RM. A 14-3-3 mode-1 binding motif promotes gap junction internalization during acute cardiac ischemia. *Poster Presentation*. Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Ventura. February 2013

6. **Smyth JW**, Sanchez JM, Lamouille S, Vogan JM, Fong T, Hong TT, Shaw RM. A 14-3-3 mode-1 binding motif promotes gap junction internalization during acute cardiac ischemia. *Oral Presentation*. International Gap Junction Conference. Charleston. June 2013

7. **Smyth JW** and Shaw RM. Autoregulation of connexin 43 gap junction formation by internally translated isoforms. *Poster Presentation*. American Heart Association Scientific Sessions. Dallas. November 2013

8. James CC*, Zeitz MJ*, Jones GE, Lamouille S, **Smyth JW**. Alternate translation initiation regulates gap junction losses during epithelial-mesenchymal transition. *Oral Presentation*. Connexin and Pannexin subgroup meeting & *Poster Presentation* American Society for Cell Biology Annual Meeting, San Diego, December 2015 **contributed equally*

9. Phan AV*, Calhoun PJ*, Zeitz MJ, **Smyth JW**. Disruption of cardiac gap junctions during adenoviral infection: implications for arrhythmogenesis. *Oral Presentation*. American Society for Virology Annual Meeting, Blacksburg, Virginia, June 2016 **contributed equally*

10. James CC*, Zeitz MJ*, Calhoun PJ, Lamouille S, **Smyth JW**. Alternate translation initiation regulates gap junction losses during epithelial-mesenchymal transition. *Oral Presentation*. Pannexins in Health and Disease. University of Virginia, Charlottesville, Virginia, October 2016 **contributed equally*

11. James CC*, Zeitz MJ*, Calhoun PJ, Lamouille S, **Smyth JW**. Alternate translation initiation limits gap junction formation during epithelial-mesenchymal transition. *Poster Presentation*. International Gap Junction Conference, Glasgow, Scotland, United Kingdom, July 2017

12. Zeitz MJ, Tanenbaum MT, **Smyth JW**. Targeting the integrated stress response to prevent gap junction remodeling during cardiac hypertrophy. *Poster Presentation*. International Gap Junction Conference, Glasgow, Scotland, United Kingdom, July 2017

13. Calhoun PJ, Phan AV, Taylor JD, James CC, Zeitz MJ, **Smyth JW**. Early adenoviral proteins target intercellular communication to facilitate viral replication. *Oral Presentation*. International Gap Junction Conference, Glasgow, Scotland, United Kingdom, July 2017

14. Hoeker GS, James CC, **Smyth JW**, Poelzing S. Modulating the effects of

rotigaptide on conduction by altering extracellular ionic composition. *Poster Presentation*. International Gap Junction Conference, Glasgow, Scotland, United Kingdom, July 2017

15. **Smyth JW**, O'Rourke L, Sabile J, James CC, Guo S, Kanabur P, Roberts R, Jourdan J, Foster J, Sheng Z, Gourdie RG, Lamouille S. Targeting connexin43 to prevent glioblastoma progression and recurrence. *Oral Presentation*. International Gap Junction Conference, Scotland, United Kingdom, July 2017

16. Calhoun PJ, Phan AV, Taylor JD, Zeitz MJ, **Smyth JW**. Adenovirus targets cardiac gap junctions to facilitate viral replication. *Poster Presentation*. American Heart Association Scientific Sessions, Anaheim, California, November 2017

17. James CC, **Smyth JW**. Mechanisms regulating alternate translation initiation of *GJA1*. *Poster Presentation*. Gordon Research Conference on Post-Transcriptional Gene Regulation, Newry, Maine, July 2018

18. Zeitz MJ, Calhoun PJ, **Smyth JW**. Alternate UTR usage regulates connexin43 mRNA translation limiting gap junction formation during stress. *Poster Presentation*. American Heart Association Scientific Sessions, Chicago, Illinois, November 2018
19. James CC, Calhoun PJ, Zeitz MJ, **Smyth JW**. Mechanisms of alternative *GJA1* mRNA translation. *Poster Presentation*. American Society for Cell Biology Annual Meeting, San Diego, California, December 2018

20. Calhoun PJ, Taylor JD, Phan AV, James CC, Zeitz MJ, **Smyth JW**. Adenovirus targets gap junction expression and function to facilitate replication. *Oral Presentation*. American Society for Cell Biology Annual Meeting, San Diego, California, December 2018

21. Calhoun PJ, Taylor JD, James CC, Zeitz MJ, Padget RL, Phan V, Smyth JW. Arrhythmogenic subversion of cardiac gap junctions during adenoviral infection. *Poster Presentation*. International Gap Junction Conference. Victoria, BC, Canada. July 2019

22. Zeitz MJ, Calhoun PJ, James CC, Taetzsch T, George KK, Robel S, Valdez G, Smyth JW. Dynamic UTR usage regulates alternative translation to modulate gap junction formation during stress and aging. *Oral Presentation*. International Gap Junction Conference. Victoria, BC, Canada. July 2019

23. Padget RL, North M, King R, Calhoun PJ, Barrett S, Poelzing S, Smyth JW. Employing A Cardiotropic Mouse Adenovirus To Model Acute Viral Myocarditis And Investigate Mechanisms Of Arrhythmogenesis. *Poster Presentation*. American Society for Cell Biology Annual Meeting, Washington DC, December 2019

***Invited Conference Presentations:***

1. **Smyth JW**. Dissecting the connexin43 vesicular transport pathway by super-resolution microscopy. *Invited Oral Presentation*. Microscopy and Microanalysis Columbus, Ohio, July 2016

2. **Smyth JW**. Pathologic regulation of connexin43 expression in the stressed and infected myocardium. ***Keynote****: Emerging Research Leader Speaker*. International Gap Junction Conference, Glasgow, Scotland, United Kingdom, July 2017

3. **Smyth JW**. Targeting internal translation initiation in regulating electrical coupling in the heart. *Invited Oral Presentation*. Heart Rhythm Society Scientific Sessions, Boston, Massachusetts, May 2018

4. **Smyth JW**. CRISPR/Cas9 genome editing: impacting medical research in Roanoke and implications for the future. *Invited Oral Presentation*. Carilion Clinic 69th Annual Spring Symposium, Roanoke, Virginia, April 2018

5. **Smyth JW**. Intercellular communication in the heart; lessons on arrhythmogenesis from a virus. *Invited Oral Presentation*. 29th Annual HeartNet of the Virginias Cardiac Symposium, Roanoke, Virginia, September 2018

***Invited Seminars:***

1. New insights into regulation of electrical coupling in the heart. Virginia Tech Life Science Seminars (VTLSS). Virginia Tech, Blacksburg, Virginia. September 2014

2. New insights into regulation of connexin43 and cardiac electrical coupling: from internal translation to trafficking. Departments of Cellular & Molecular Medicine, Chemistry & Biochemistry, and Molecular & Cellular Biology joint seminar series. University of Arizona, Tucson, Arizona. April 2015

3. Tackling translation to restore connexin43 gap junction coupling in disease. Cardiovascular Research Institute, Department of Cell Biology and Molecular Medicine, Rutgers New Jersey Medical School, Rutgers University, Newark, New Jersey. September 2015

4. Adenovirus targets gap junction intercellular communication to facilitate replication. Department of Biology, Wake Forest University, Winston-Salem, North Carolina, November 2017

5. Found in translation: new insights into gap junction regulation at the RNA level. Department of Physiology and Biophysics, Virginia Commonwealth University, Richmond, Virginia, April 2018

6. Regulating intercellular communication at the RNA level. Department of Molecular Physiology and Biological Physics, University of Virginia, Charlottesville, Virginia, September 2018

7. Regulation of intercellular communication at the RNA level; transcription impacts translation. Department of Anatomy and Cell Biology, Western University, Ontario, Canada, March 2019

8. Regulation of intercellular communication at the RNA level; stress affects the message. Division of Medical Sciences, University of Victoria, British Columbia, Canada, August 2019

9. Found in translation; RNA impacts intercellular communication to elicit distinct pathologies from cancer to cardiac disease. School of Biomolecular and Biomedical Science, University College Dublin, Dublin, Ireland, September 2019

## 6. TEACHING, ADVISING AND MENTORING:

***Postdoctoral fellows mentored:***

**Michael Zeitz, Ph.D.** Postdoctoral Research Scientist at FBRI (2014-current)
**Carissa James, Ph.D.** Postdoctoral Fellow (2019)

***Students advised:***

*Graduate students:*

**Carissa James**, *Ph.D. candidate, Translational Biology, Medicine, and Health program, VT* (2015-2019, graduated)
**Patrick Calhoun**, Ph.D. candidate, Biological Sciences, VT (2016-2020, graduated)
**Rachel Padget**, Ph.D. candidate, Translational Biology, Medicine, and Health program, VT (2018-current)

*Medical students:*

**Allen Vu Phan**, VTCSOM (2014-2018)
**Jaspreet Hira**, VTCSOM (2015-2017)
**Mira Tanenbaum**, VTCSOM (2016-2020)
**Jordan Taylor**, VTCSOM (2016-2020)
**Darlon Jan**, VTCSOM (2017-2020)
**Michael North**, VTCSOM (2018-current)
**Ellen Shrontz**, VTCSOM (2019-current)
**Kenneth Young II**, VTCSOM (2020-current)

*Undergraduate students:*

**Lindsay Bolles**, Virginia Western Community College (2014-2015)
**Patrick Calhoun**, Biological Sciences, VT (2014-2016)
**Timothy Reinaldo**, Biological Sciences, VT (2015)
**Proma Ahmed**, Biological Sciences, VT (2016)
**Biruk Ergetie**, Biological Sciences, VT (2016)
**Tanha Patel**, Biochemistry, VT (2016-2017)
**John Sodusta**, Biological Sciences, VT (2017)
**Ravin Fisher**, *MolVis*SURF/VTCSOM Early Identification Program (EIP), Hampton University (2017)
**Veronica Able-Thomas**, *MolVis*SURF, Hollins University (2017)
**Douglas Murray**, Biological Sciences, VT (2017-2019)
**Daniel Purcell**, Biological Sciences, VT (2017-2019)
**Soshiant Raeesian**, Biochemistry, VT (2018)
**Shericia Campbell**, *MolVis*SURF/VTCSOM EIP, Virginia State University (2018)
**Julia Kawas**, Physics, VT (2018-current)
**Noah Schrayer**, *MolVis*SURF, VT (2019)
**Jenny Johnson**, *MolVis*SURF, Hollins University (2019)

*High School students:*

**Olivia Offermann**, Patrick Henry High School student (2016-2017)
**Ellen Wood**, Roanoke Valley Governor's School (2016-2017)
**Lauren Frampton**, Roanoke Valley Governor's School (2017-current)
**David Whitacre**, Roanoke Valley Governor's School (2018-current)

***Thesis Committees:***

**Michael Entz**, Ph.D. graduate student (2014-2017, graduated). Department of Biomedical Engineering and Mechanics, VT. Advisor – Dr. Steven Poelzing

**Courtney Long**, Ph.D. graduate student (2015-2019, graduated). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Sarah McDonald

**Tristan Raisch**, Ph.D. graduate student (2015-2019, graduated). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Steven Poelzing

**Randy Strauss**, Ph.D. graduate student (2016-current). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Robert Gourdie

**Alyssa Brunal-Brown**, Ph.D. graduate student (2017-current). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Yuchin Albert Pan

**Joseph Greico**, Ph.D. graduate student (2018-current). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Eva Schmelz

**Kaitlin Read**, Ph.D. graduate student (2018-2019). Department of Biomedical Sciences and Pathobiology, VT. Advisor – Dr. Kenneth Oestreich. Now transferred to Ohio State University.

**Xiaobo Wu**, Ph.D. graduate student (2018-current). Translational Biology, Medicine, and Health program, VT. Advisor – Dr. Steven Poelzing

**Morgan North**, M.Sc. graduate student (2019-2020). Virginia Tech Carilion School of Medicine/Translational Biology, Medicine, and Health program, VT. Advisor – Dr. John Chappell

***Courses:***

- Lecturer in VT TBMH 5004 Gateway Course (2014-current)
- Lecturer in VT TBMH 5044 Fundamentals of Metabolic and Cardiovascular Science track (2014-current)
- Lecturer in VT TBMH 5024 Fundamentals of Cancer track (2015-current)
- Lecturer in VT TBMH 5064 Fundamentals of Development Aging

and Repair track (2015-current)
- Director VTCRI Molecular Visualization Summer Undergraduate Research Fellowship course (2016-current)
- Director of VT TBMH 5044 Fundamentals of Metabolic and Cardiovascular Science track (2018-current)

## 7. PROFESIONAL MEMBERSHIPS

American Heart Association (2007-current)
American Society for Cell Biology (2014-current)
American Society of Virology (2018-current)
Cardiac Electrophysiology Society (2018-current)
RNA Society (2020-current)

*Updated 072720*