Steven Poelzing, Ph.D. Work: (540) 526-2108 • Home: (801) 463-2776 poelzing@vtc.vt.edu	Associate Professor, Biomedical Engineering and Science Virginia Tech Carilion Research Institute Virginia Tech, VA

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
MetroHealth Medical Center		2004 - 2005	Postdoctoral Fellowship
Case Western Reserve University	Ph.D.	2000 - 2004	Biomedical Engineering
Case Western Reserve University	M.S.E.	1997 - 2000	Biomedical Engineering
Wright State University	B.S.	1992 - 1997	Biomedical Engineering

A. POSITIONS AND HONORS

Positions and Employment

Co-Director of Translational Biology, Medicine, and Health graduate program, Virginia Tech, VA	2016-Present
Associate Professor of Health Sciences, Virginia Tech, VA	2014-Present
Associate Professor of Medicine, Virginia Tech School of Medicine, VA	2013-Present
Associate Professor of Biomedical Engineering and Mechanics, Virginia Tech, VA	2012-Present
Research Associate Professor of Bioengineering, University of Utah, UT	2012
Adjunct Assistant Professor of Pharmacology and Toxicology, University of Utah, UT	2008-Present
Research Assistant Professor of Bioengineering, University of Utah, UT	2005-2012
Post-Doctoral Fellow. MetroHealth Medical Center, Cleveland, OH	2004-2005
Consultant to NASA Glenn Research Center, Cleveland, OH	2003-2005
Research assistant. Case Western Reserve University, Cleveland, OH	1997-2004
National Science Foundation Research Fellow. Wright State University, Dayton, OH	1996

Honors and Professional Memberships

Thank a Teacher. The Center for Excellence in Teaching and learning, Virginia Tech	2019
International Ephaptic Coupling Symposium, Chair and Organizer	2019
Tenure at Associate Professor	2018
Virginia Tech Scholar of the Week	2017
Fellow of the Heart Rhythm Society	2015
Fellow of the American Heart Association	2014
Gordon Conference on Cardiac Arrhythmia Mechanisms, Invited Speaker	2009
Frontiers in Cardiac Electrophysiology editorial board	2010-Present
Computers in Cardiology, Organizer	2009
University of Utah, Top Instructors in Engineering	2008-2011
Biomedical Engineering Society, Member	2008
American Physiological Society Member	2007
Biophysical Society Member	2005
Heart Rhythm Society Member	2004
Heart Rhythm Society, Michael Bilitch Fellowship in Cardiac Pacing and Electrophysiology	2004-2005
Rammelkamp Research Days, 1st Place Oral Presentation Presentation, MetroHealth Med. Cntr, Cleveland, OH	2004
American Heart Association Member	2003
Cardiac Electrophysiology Society Member	2003
National Institutes of Health National Research Award, Case Western Reserve University, Cleveland, OH	1997-1999

B. TEACHING EXPERIENCE

TBMH 5984	Instructor. Quantitative Imaging & Time Series Analysis Virginia Tech, Blacksburg, Virginia	2016
TBMH 5004	Block Director. Fundamentals of Translational Biology, Medicine and Health, Metabolic and Cardiovascular Track, Virginia Tech, Blacksburg, Virginia	2014-Present
TBMH	Co-Director. TBMH Metabolic and Cardiovascular Track.	

	Virginia Tech, Blacksburg, Virginia	2014-2018
TBMH	Graduate Curriculum Development for the Metabolic and Cardiovascular Track Virginia Tech, Blacksburg, Virginia	2013
VTCSOM	Y1 Research Domain Curriculum. Invited Speaker Virginia Tech School of Medicine, Roanoke, Virginia	2012-Present
BMES 5984	Excitable Membranes. Instructor Virginia Tech, Roanoke, Virginia	2013, 2020
BIOEN 1101	Fundamentals of Bioengineering I. Instructor University of Utah, Salt Lake City, Utah	2009-2012
BIOEN 6460	Electrophysiology and Bioelectricity of Tissues. Co-Instructor University of Utah. Salt Lake City, Utah	2007-2008
BIOEN 3202	Physiology for Engineers. Co-Instructor University of Utah. Salt Lake City, Utah	2006-2012
BIOEN 6464	Contemporary Topics in Cardiac Electrophysiology. Instructor University of Utah. Salt Lake City, Utah	2006-2012
EBME 105	Introduction to Biomedical Engineering, Invited Speaker Case Western Reserve University. Cleveland, Ohio	2004
EBME 324/414	Laboratory Computing in Biomedical Engineering, Invited Lecturer Case Western Reserve University. Cleveland, Ohio	2003-2004
EBME 313	Biomedical Engineering Laboratory I, Invited Lecturer Case Western Reserve University, Cleveland Ohio	2003
EGR 101	Introduction to Engineering, Instructor Wright State University. Dayton, Ohio	1995-1997
TBMH 5105	Professional Development, Lecturer. “Running a Lab” Virginia Tech, Roanoke, Virginia	2018
TBMH 5304	Research Experience. Mentor, Oral and Poster Presentation Evalutator Virginia Tech, Roanoke, Virginia	2016-Present

Trainees

Post-Doctoral Fellows

Anders Peter Larsen Ph.D., Postdoctoral Fellow, CVRTI, Utah	2010-2012
Carlsburg Post-Doctoral Research Fellow	2010-2012
Danish Council for Independent Research Post-Doctoral Fellow	2012-2014
MSD Pharmaceuticals. Medical Scientific Liaison	2014-2016
Amgen, Medical Liason	2016-Present
Vasu Gooty M.D., Research Fellow, Carilion Hospitals, Virginia	2013-2016
Gregory Hoeker, Ph.D. Postdoctoral Fellow, VT, Virginia	2014-2019
HRS Post-Doctoral Fellowship Recipient	2016
Research Assistant Professor	2019-Present

Graduate Fellows-Research Advisor

Rengasayee Veeraraghavan. Bioengineering Ph.D. student.	2005-2011
Post-Doctoral Fellow at Virginia Tech with Rob Gourdie	2012-2016
Research Assistant Professor. Virginia Tech	2016-Present
Przemyslaw Radwanski Pharm.D, Pharmacology and Toxicology Ph.D.	2007-2011
University of Utah College of Pharmacy, Wolf Prize	2011
Post-Doctoral Fellow at the Ohio State University with Sandor Györke	2011-2014
Research Assistant Professor. The Ohio State University	2014-Present
Anders Peter Larsen. Visiting Ph.D. student	2007-2009
John Ryan Rigby. Bioengineering M.S.	2007-2012
Myriad Genetics Project Manager	2012-Present
Amara Greer-Short. Biomedical Engineering Ph.D. Student	2011-2016
Ellen E. Wade Fellowship	2015-2016
Post-Doctoral Fellow at The Ohio State University with Tom Hund	2016-Present

Sharon A George. Biomedical Engineering Ph.D. Student	2011-2016
VTCRI Medical Research Scholar	2014-2015
American Heart Association Pre-doctoral Fellowship	2015-2016
David W. Francis Lillian Francis Scholarship Fund, VT	2015-2016
Post-Doctoral Fellow at George Washington University with Igor Efimov	2016-Present
Michael Entz, II. Biomedical Engineering Ph.D. Student	2013-2018
Virginia Tech. Walts Scholar	2013-2014
Cook Medical. Mechanical Test Lab Engineer	2018-Present
Christa Funch Jensen. Visiting PhD Trainee. University of Copenhagen	2014
Tristan B. Raisch. Translational Biology, Medicine and Health, PhD Student	2015-2019
Virginia Tech	
Recipient of an NIH F31 Fellowship from 2018-2019	
Post-Doctoral Fellow at Virginia Commonwealth University with Daniel Conway	2019-Present
Katrina Colucci-Chang. Biomedical Engineering and Mechanics, PhD Student	2017-Present
Virginia Tech	
S.M.A.R.T Fellowship	2018-Present
Ryan King. Translational Biology, Medicine, and Health, PhD Student	2017-Present
Virginia Tech	
NIH F31 Fellowship	2019-2021
Xiaobo Wu. Translational Biology, Medicine, and Health, PhD Student	2019-Present
Virginia Tech	
Grace Blair. Translational Biology, Medicine, and Health, PhD Student	2019-Present
Virginia Tech	
Madeline Arpin. Translational Biology, Medicine, and Health, PhD Student	2020-Present
Virginia Tech	
William Adams. Translational Biology, Medicine, and Health, PhD Student	2020-Present
Virginia Tech	

Graduate Medical Students-Research Advisor

Anand Abraham. Medical Student, Virginia Tech	2013-2017
Anesthesiologist, Dallas Texas	2019-Present
Matthew Yanoff. Medical Student. Virginia Tech	2014-2018
VTCSOM, Research Letter of Distinction	2015
VA Amer. Coll. Phys. First Place Talk	2016
General Surgery Resident, Baylor College of Medicine	2017-Present
Siyuan Qian. Medical Student, Virginia Tech	2016-2020
Lynn Stanwyck. Medical Student, Virginia Tech	2018-Present
William Reis. Medical Student, Virginia Tech	2018-Present
Kathyrn Harin, Medical Student, Virginia Tech	2020-Present

Graduate Fellows-Committee Member

Jason G. Little. Pharmacology and Toxicology. Ph.D	
University of Utah	2007-2012
Katherine Degen, Biomedical Engineering and Sciences. PhD Student	
Virginia Tech	2013-2018
Daniel Sweeny, Biomedical Engineering and Sciences, PhD Student	
Virginia Tech	2013-2018
Jade Montgomery, Biomedical Engineering and Sciences, PhD Student	
Virginia Tech	2013-2019

Carly Elizabeth Winton, Biomedical Engineering and Sciences, MS Student
Virginia Tech 2013-2015
Cameron Varano, Translational Biology, Medicine, and Health, PhD Student
Virginia Tech 2014-2018
Thomas Strayer, Translational Biology, Medicine, and Health, PhD Student
Virginia Tech 2017-2019
Harshawardhan Deshpande. PhD Student
Virginia Tech 2017-present
Mitchell Allen, Human Nutrition, Food, and Exercise, PhD Student
Virginia Tech 2015-2019
Rachel Paget, Translational Biology, Medicine, and Health, PhD Student
Virginia Tech 2017-present

Graduate Fellows-International Committee Member
Jeppe Egedal Kirchhoff, PhD. International PhD Opponent 2015
University of Copenhagen
Prashanna Khwaounjoo. Bioengineering, PhD Student, University of Auckland. 2017-2018

Undergraduate Students
Carl Richards. Bioengineering Senior Project 2006-2007
Medical School
Adam Smoot. Bioengineering Senior Project 2007-2008
UROP Scholarship
Winner-Undergraduate Research Symposium, University of Utah 2008
Law School
Corey Sharp. Bioengineering Senior Project 2008-2009
Zach Collins. Bioengineering Senior Project 2008-2009
Branden Hunsaker, Bioengineering Senior Project 2009-2010
UROP Scholarship
Amir Ghaffarian, Bioengineering Senior Project 2009-2011
UROP Scholarship
Harjit Kaur, Bioengineering Senior Project 2010-2013
Katherine Sciuto, Bioengineering Senior Project 2010-2012
UROP Scholarship
NASA. National Space Grant Fellowship 2012
NSF Graduate Research Fellow 2012-2015
Lance Lindsay, Bioengineering Senior Project 2012-2013
Michael Entz, Bioengineering Senior Project 2012-2013
Kayla Wilburn Kilpatrick, Bioengineering Senior Project 2012-2013
Tristan Raisch, Biomedical Engineering Student, Virginia 2013-2014
Spencer Lovegrove, Biomedical Engineering Student. Virginia 2013-2014
SURF Fellowship
Toria Knox, Molecular Biology Student. Virginia 2014-2016
Virginia College of Osteopathic Medicine
Hala Ahmed, Istanbul University, Turkey. Summer volunteer 2016
Ryan Grant, Western Virginia School of Osteopathic Medicine 2016
Ryan Crosser, Summer Undergraduate Research Fellow, FBRI VT 2018
University of Virginia.
Raissa Tchetcho Kemajou, Summer Undergraduate Research Fellow, FBRI VT 2019
Virginia State University

High School Students
Nabeel Raza. Science fair project volunteer 2016-2019

C. PUBLICATIONS AND LECTURES

Peer-Reviewed Publications **Total 60** **Total Citations: 1787** **H-index: 22** **i10-index: 37**

* indicates co-corresponding authorship.

1. King DR, Padget RL, Perry J, Hoeker G, Smyth JW, Brown DA, **Poelzing S.** Elevated Perfusate [Na+] Increases Contractile Dysfunction during Ischemia and Reperfusion. 2020. Sci Rep. 2020 Oct 14;10(1):17289.

2. Allen ME, Pennington ER, Perry JB, Dadoo S, Makrecka-Kuka M, Dambrova M, Moukdar F, Patel HD, Han X, Kidd GK, Benson EK, Raisch TB, **Poelzing S,** Brown DA, Shaikh SR. The cardiolipin-binding peptide elamipretide mitigates fragmentation of cristae networks following cardiac ischemia reperfusion in rats. Commun Biol. 2020 Jul 17;3(1):389.
3. 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. Am J Physiol Heart Circ Physiol. 2020 Jul 17.
4. Nowak MB, Greer-Short A, Wan X, Wu X, Deschênes I, Weinberg SH*, **Poelzing S**.* Intercellular sodium regulates repolarization in cardiac tissue with sodium channel gain-of-function. Biophys J. 2020 Jun 2;118(11):2829-2843.
5. Jiang J, Hoagland D, Palatinus JA, He H, Iyyathurai J, Jourdan LJ, Bultynck G, Wang Z, Zhang Z, Schey K, **Poelzing S**, McGowan FX, Gourdie RG. Interaction of α Carboxyl Terminus 1 Peptide With the Connexin 43 Carboxyl Terminus Preserves Left Ventricular Function After Ischemia-Reperfusion Injury. J Am Heart Assoc. 2019 Aug 20;8(16)
6. 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. Am J Physiol Heart Circ Physiol. 2019 Feb 1.
7. Raisch T, Khan M, **Poelzing S**. Quantifying Intermembrane Distances with Serial Image Dilations. J Vis Exp. 2018 Sep 28;(139)
8. Veeraraghavan R, Hoeker GS, Alvarez-Laviada A, Hoagland D, Wan X, King DR, Sanchez-Alonso J, Chen C, Jourdan J, Isom LL, Deschenes I, Smith 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. pii: e37610
9. Raisch TB, Yanoff MS, Larsen TR, Farooqui MA, King DR, Veeraraghavan R, Gourdie RG, Baker JW, Arnold WS, AlMahameed ST, **Poelzing S**. Intercalated Disk Extracellular Nanodomain Expansion in Patients with Atrial Fibrillation. Front Physiol. 2018 May 4;9:398.
10. Kinney N, Larsen TR, Kim DM, Varghese RT, **Poelzing S**, Garner HR, AlMahameed ST. Whole Exome Sequencing Reveals Microsatellites DNA Markers for Response to Dofetilide Initiation in Patients with Persistent Atrial Fibrillation, A Pilot Study. Clin Cardiol. 2018 Apr 19.
11. Entz MW 2nd, King DR, **Poelzing S**. Design and validation of a tissue bath 3D printed with PLA for optically mapping suspended whole heart preparations. Am J Physiol Heart Circ Physiol. 2017 Sep 22:
12. George SA, Calhoun PJ, Gourdie RG, Smyth JW, **Poelzing S**. TNFα modulates Cardiac Conduction by altering Electrical Coupling between Myocytes. Front Physiol. 2017. Front Physiol. 2017 May 23;8:334
13. Greer-Short A, George SA, **Poelzing S**,* Weinberg SH*, Revealing the Concealed Nature of Long QT Type 3 Syndrome. Circ Arrhythm Electrophysiol. 2017 Feb;10(2)
14. Hoeker GS, Skarsfeldt MA, Jespersen T, **Poelzing S**. Electrophysiologic effects of the IK1 inhibitor PA-6 are modulated by extracellular potassium in isolated guinea pig hearts. Physiol Rep. 2017 Jan;5(1)
15. Veeraraghavan R, Lin J, Keener JP, Gourdie RG, **Poelzing S,** Potassium Channels in the Cx43 Gap Junction Perinexus Modulate Ephaptic Coupling: An Experimental and Modeling Study. Pflugers Arch. 2016 Oct;468(10):1651-61
16. George SA, Bonakdar M, Zeitz M, Davalos R, Smyth JW, **Poelzing S**. Extracellular Sodium Dependence of the Conduction Velocity-Calcium Relationship: Evidence of Ephaptic Self-Attenuation. Am J Physiol Heart Circ Physiol. 2016 May 1;310(9):H1129-39.
17. Entz M, George SA, Zeitz M, Raisch T, Smyth J, **Poelzing S.** Heart Rate and Extracellular Sodium and Potassium Modulation of Gap Junction Mediated Conduction in Guinea Pigs. Front Physiol. 2016 Feb 2;7:16
18. Greer-Short A, **Poelzing S.** Temporal response of ectopic activity in guinea pig ventricular myocardium in response to isoproterenol and acetylcholine. Front Physiol. 2015 Oct 20;6:278
19. Abdullah O, Gomez AD, Merchant S, Heidinger M, **Poelzing S**, Hsu E, Orientation Dependence of Microcirculation-Induced Diffusion Signal in Anisotropic Tissues. Magn Reson Med. 2015. Oct 29
20. Cameron Varano A, Rahimi A, Dukes MJ, **Poelzing S**, M McDonald S, Kelly DF. Visualizing virus particle mobility in liquid at the nanoscale. Chem Commun (Camb). 2015 Oct 29;51(90):16176-9
21. George SA, Sciuto KJ, Lin J, Salama ME, Keener JP, Gourdie RG, **Poelzing S,** Extracellular sodium and potassium levels modulate cardiac conduction in mice heterozygous null for the Connexin43 gene. Pflugers Arch. 2015 Mar 14.
22. Greer-Short A, **Poelzing S.** Distinguishing between overdrive excited and suppressed ventricular beats in guinea pig ventricular myocardium. Front Physiol. 2015 Feb 18;6:14
23. Veeraraghavan R, Lin J, Hoeker GS, Keener JP, Gourdie RG, **Poelzing S**. Sodium channels in the Cx43 gap junction perinexus may constitute a cardiac ephapse: an experimental and modeling study. Pflugers Arch. 2015 Jan 13.
24. Radwański PB, Brunello L, Veeraraghavan R, Ho HT, Lou Q, Makara MA, Belevych AE, Anghelescu M, Priori SG, Volpe P, Hund TJ, Janssen PM, Mohler PJ, Bridge JH, **Poelzing S**, Györke S. Neuronal Na+ channel blockade suppresses arrhythmogenic diastolic Ca2+ release. Cardiovasc Res. 2015 Apr 1;106(1):143-52
25. Hoeker GS, Hood AR, Katra RP, **Poelzing S**, Pogwizd SM. Sex Differences in β-Adrenergic Responsiveness of Action Potentials and Intracellular Calcium Handling in Isolated Rabbit Hearts. PLoS One. 2014 Oct 23;9(10): e111411

26. Janson CM, **Poelzing S,** Shah MJ, Combined Inhibition of Na+ and Ca2+ Channels: A Novel Paradigm for Treatment of Incessant Ventricular Arrhythmias in Anderson-Tawil Syndrome. Heart Rhythm Journal. 2013 Nov 7. pii: S1547-5271(13)01291-5
27. Radwanski PB, Greer-Short A, **Poelzing S** Inhibition of Na(+) Channels Amerliorates Arrhythmias in a Drug Induced Model of Andersen-Tawil Syndrome. *Heart Rhythm Journal.* 2013 Feb; 10(20): 255-63
28. Veeraraghavan R, Larsen AP, Torres NS, Grunnet M, **Poelzing S**. Potassium channel activators differentially modulate the effect of sodium channel blockade on cardiac conduction. *Acta Physiol*. 2013 Feb;207(2):280-9
29. Larsen AP, Sciuto KJ, Moreno AP, **Poelzing S**. The voltage sensitive dye di-4-ANEPPS slows conduction velocity in isolated guinea pig hearts. *Heart Rhythm Journal.* 2012 Sep;9(9):1493-500
30. Rigby JR, **Poelzing S.** A Novel Frequency Analysis Method for Assessing K(ir)2.1 and Na (v)1.5 Currents. *Ann Biomed Eng***.** 2012 Apr;40(4):946-54
31. Veeraraghavan R, Salama ME, **Poelzing S**, Interstitial Volume Modulates the Conduction Velocity- Gap Junction Relationship. Am J Physiolo Heart Circ Physiol. 2012 Jan 1;302(1):H278-86
32. Shinlapawittayatorn K, Dudash LA, Du XX, Heller L, **Poelzing S,** Ficker E, Deschenes I, A Novel Strategy Using Cardiac Sodium Channel Polymorphic Fragments to Rescue Trafficking Deficient SCN5A Mutations. Circ Genetics. 2011 Oct;4(5):500-9
33. Radwanski P, **Poelzing S**. NCX Is an Important Determinant for Premature Ventricular Activity in a Drug Induced Model of Andersen-Tawil Syndrome. Cardiovasc Res. 2011 Oct 1;92(1):57-66
34. Rigby JR, **Poelzing S.** Recapitulation of an Ion Channel Current IV Curve Using Frequency Components. J Vis Exp. 2011 Feb 8;(48)
35. Radwanski P, Veeraraghavan R, **Poelzing S**. Cytosolic Calcium Accumulation Underlies Ventricular Arrhythmias in Guinea Pig Model of Andersen-Tawil Syndrome. Heart Rhythm. 2010 Apr 7.
36. Larsen AP, Grunnet M, Olesen SP, **Poelzing S**. Pharmacological Activation of IKr Impairs Conduction in Guinea Pig Hearts. J Cardiovasc Electrophysiol. 2010 Feb 16
37. Strom M, Wan X, **Poelzing S,** Ficker E, Rosenbaum DS, Gap junction heterogeneity as mechanism for electrophysiologically distinct properties across the ventricular wall. Am J Physiol Heart Circ Physiol. 2009 Dec 24
38. Metcalf CS, **Poelzing** S, Little JG, Bealer SL. Status Epilepticus Induces Cardiac Myofilament Damage and Increased Susceptibility to Arrhythmias in Rat. Am J Physiol Heart Circ Physiol. 2009 Dec;297(6):H2120-7
39. **Poelzing S**, Smoot AF, Veeraraghavan R, Novel X-ray attenuation mechanism: Role of Inter-Atomic Distance. *Medical Physics*, 2008 Oct 35(10);4386-4395
40. Sandhu RK, Costantini O, Cummings JE, **Poelzing S,** Rosenbaum DS, Quan KJ. Intracardiac alternans compared to surface T-wave alternans as a predictor of ventricular arrhythmias in humans. Heart Rhythm. 2008 Jul;5(7):1003-8
41. Veeraraghavan R, **Poelzing S.** Mechanisms Underlying Increased Right Ventricular Conduction Sensitivity to Flecainide Challenge. *Cardiovasc Res.* 2008 Mar 1;77(4):749-56
42. Stinstra JG, **Poelzing S**, MacLeod RS, Henriquez CS, A Model for Estimating the Anisotropy of the Conduction Velocity in Cardiac Tissue Based on the Tissue Morphology. Computers in Cardiology, Durham 2007
43. **Poelzing S**, Veeraraghavan R. Heterogeneous Ventricular Chamber Response to Hypokalemia and Inward Rectifier Potassium Channel Blockade Underlies Bifurcated T-wave in Guinea Pig. Am J Physiol Heart Circ Physiol. 2007 Jun;292(6):H3043-51
44. **Poelzing S,** Forleo C, Samodell M, Dudash L, Sorrentino S, Anaclerio M, Troccoli R, Iacoviello M, Romito R, Guida P, Chahine M, Pitzalis M, Deschenes , SCN5A polymorphism restores trafficking of a Brugada syndrome mutation on a separate gene. Circulation 2006 Aug 1;114(5):368-76
45. Pajouh M, Wilson L, **Poelzing S**, Johnson N, Rosenbaum DS. IKs Blockade Reduces Dispersion of Repolarization in Heart Failure. *Heart Rhythm Journal*. 2005 Jul;2(7):731-8
46. **Poelzing S,** Rosenbaum DS. Optical measurements reveal nature of intercellular coupling across ventricular wall. *Am J Physiol Heart Circ Physiol.* 2005 Oct;289(4):H1428-35.
47. **Poelzing S**, Dikshteyn M, Rosenbaum DS. Transmural conduction is not a two way street. *J Cardiovasc Electrophysiol*, 2005 April;16(4);455
48. **Poelzing S,** Rosenbaum DS. Altered Connexin43 Expression in Failing Myocardium Produces Electrophysiologic Heterogeneities Across the Ventricular Wall. *Am J Physiol Heart Circ Physiol.* 2004 Oct;287(4):H1762-70
49. **Poelzing S,** Akar F, Baron, E, Rosenbaum DS. Heterogeneous Connexin43 Expression Produces Electrophysiologic Heterogeneities Across the Ventricular Wall. *Am J Physiol Heart Circ Physiol.* 2004. May;286(5):H2001-9

Reviews

1. Hoagland DT, Santos W, **Poelzing S**, Gourdie RG. The role of the gap junction perinexus in cardiac conduction: Potential as a novel anti-arrhythmic drug target. Prog Biophys Mol Biol. 2019 Jul;144:41-50.
2. George SG, **Poelzing S**, Cardiac conduction in isolated hearts of genetically modified mice - Connexin43 and salts. Prog Biophys Mol Biol. 2016 Jan;120(1-3):189-98.
3. Hoeker GS, **Poelzing S**, Moving beyond the reductionist approach-Time to put the pieces back together in a broken (infarcted) heart. Heart Rhythm. 2015 Jan;12(1):179-80

4. Veeraraghavan R, **Poelzing S**, Gourdie RG. Novel ligands for zipping and unzipping the intercalated disk: today's experimental tools, tomorrow's therapies? Cardiovasc Res. 2014 Nov 1;104(2):229-30
5. Veeraraghavan R, **Poelzing S**, Gourdie RG. Intercellular Electrical Communication in the Heart: A New, Active Role for the Intercalated Disk. Cell Commun Adhes. 2014 Jun;21(3):161-7
6. Veeraraghavan R, **Poelzing S**, Gourdie RG. Old cogs, new tricks: A scaffolding role for connexin43 and a junctional role for sodium channels? FEBS Lett. 2014 Apr 17;588(8):1244-1248.
7. Veeraraghavan R, Gourdie RG, **Poelzing S**, Mechanisms of Cardiac Conduction: A History of Revisions. Am J. Physiol Heart Circ Phys. 2014 Mar 1;306(5):H619-27.
8. Rhett JM, Veeraraghavan R, **Poelzing S**, Gouride RG. The perinexus: Sign-post on the path to a new model of cardiac conduction? Trends in Cardiovasc Med. 2013 Mar;11.
9. **Poelzing S**. Are electrophysiologically distinct M-Cells a characteristic of the wedge preparation? Heart Rhythm, 2009,6(7):1035-7
10. **Poelzing S**, Rosenbaum DS. The modulated dispersion hypothesis confirmed in humans. *Circulation, Arrhythmia and Electrophysiology*. 2009,2:100-101.
11. **Poelzing S,** Rosenbaum DS. Cellular mechanisms of Torsade de Points. In: The hERG cardiac potassium channel: structure, function, and long QT syndrome. John Wiley & Sons and the Novartis Foundation, Chichester, UK, 2005, pp. 204-224
12. **Poelzing S**, Rosenbaum DS. Nature, Significance and Mechanisms of Electrical Heterogeneities in Ventricle. *The Anatomical Record.* 2004 Oct;280A(2):1010-7

Book Chapters

Bealer SL, Metcalf CS, **Poelzing S**, Little JG, Brewster A, Anderson A. Cardiac Myocyte Damage, Electrocardiographic Dysfunction, and Ion Channel Remodeling in Rodent Models of Seizure Disorders. Sudden Unexplained Death in Epilepsy. *CRC Press 2015*

Invited Lectures

1. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited Speaker, Virginia Commonwealth University, March 5, 2020. *Speaker*
2. Whole Heart Electrophysiology to Fill Gaps in Conventional Theory. Ephaptic Coupling Conference, Virginia, May 7, 2019. *Speaker*
3. Electrolyte Disturbances as a Modulator of Cardiac Arrhythmias. HeartNet, Roanoke, Virginia, October 18, 2019
4. Cell-cell communication in modulating arrhythmias. Invited Speaker. European Society of Cardiology, Paris France, September 1, 2019.
5. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited Speaker. Washington University, St. Louis Missouri, December 6, 2018.
6. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited Speaker. American Physiological Society, Washington, D.C., October 8, 2018.
7. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited speaker. Rutgers University, New Brunswick, New Jersey, March 2018.
8. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited speaker. Rush University, Chicago, Illinois, February 2018.
9. Buffers and Biomedical Reproducibility: Lessons from the Heart. Invited speaker. Roanoke College, Salem, Virginia, February 2018.
10. Electrophysiological studies of ephaptic conduction. Invited speaker. American Heart Association, Anaheim, California, November 2017.
11. A New Light on an Old Mechianism of Cell-to-Cell Electrical Communication. Medtronic, Minneapolis, Minnesota, May 30, 2017.
12. A New Solution to an Old Idea of Cardiac Cell-toCell Communication. Invited speaker. University of Utah, March 2, 2017.
13. Reconsidering the Common: Fluids in Science and Practice. Invited Speaker for Surgery Fellows Symposium. Carilion Clinic. May 13, 2016
14. A New Light on an Old Mechanism of Cell-to-cell Electrical Communication. Invited speaker. SUNY Upstate Medical University, January 14, 2016
15. A New Light on an Old Mechanism of Cell-to-cell Electrical Communication. Invited speaker. University of Copenhagen, Nov 27, 2015
16. New Solutions. TEDx. Virginia Tech, Nov 16,2015
17. A New Light on an Old Mechanism of Cell-to-cell Electrical Communication. Invited speaker. Johns Hopkins University, Feb 6, 2015
18. Cardiac action potential conduction studied by voltage-sensitive dyes in isolated hearts.Copenhagen Meeting on Cardiac Arrhythmia. Copenhagen, Denmark 2014

19. The Space In Between: Bridging the Gap Junction by an Ephapse. David S. Rosenbaum Symposium. Cleveland, Ohio. 2013
20. Propagation of the impulse-Connexins and Fibrosis.Danish Cardiovascular Research Academy. Sandbjerg. Denmark 2011
21. Targeting Gap Junctions to Restore Intercellular Coupling. Heart Rhythm Society. Denver 2010,
22. Sodium Channel Mutations and Arrhythmogenesis. Gordon Research Conference: Cardiac Arrhythmia Mechanisms, Barga Italy 2009
23. Connexins in Heart Failure, American Heart Association. New Orleans 2008
24. What is Different About the Outflow Tract. Heart Rhythm Society, San Francisco 2008
25. Regulation and Function of Gap Junctions in the Heart. Heart Rhythm Society, Denver 2007
26. Mechanisms of preferential cardiac disease manifestation in right-precordial leads. A Tale of Two Ventricles, Panum Institute, Copenhagen, Denmark 2007.
27. Gap Junction Remodelling as a Mechanism for Promoting Electrophysiological Heterogeneity: Substrate Remodelling, Hearth Rhythm Society, Denver 2007
28. Altered Conduction and Arrhythmias in Heart Failure. American Heart Association, Chicago 2006

Presentations

1. Wu X, Gourdie RG, Weinberg SH, Poelzing S. Increased Extracellular Sodium And Intercalated Disc Separation Exacerbates The Cardiac Long-qt Type 3 Phenotype. Hearth Rhythm Society. May 2020. *Oral Presentation*
2. Poelzing S, Keener, JP, McGahan K. A New Mechanism of Cellular and Tissue Automaticity. Biophysical Society. San Diego. February 2020. *Oral Presentation*
3. Hoeker GS, Poelzing S. Cardioprotective Effects of Rotigaptide are Dependent on Perfusate Ionic Composition During Ischemia/Reperfusion. Biophysical Society. San Diego. February 2020. *Poster*
4. Nowak MB, King DR, Poelzing S, Weinberg SH. Age Dependent Regulation of Cardiac Sodium Channel Gain of Function. Biophysical Society. San Diego. February 2020. *Poster*
5. Lin J, Poelzing S, George SA, Greer-Short A, Kay MW. Exploring the Effects of Conduction Reserve and Ephaptic Coupling in Cardiac Cells. Biophysical Society. San Diego. February 2020. *Oral Presentation*
6. Padget R, North M, King DR, Calhoun P, Barrett S, Poelzing S, Smyth J. Employing a Cardiotropic Mouse Adenovirus to Model Acute Viral Myocarditis and Investigate Mechanisms of Arrhythmogenesis. American Society for Cell Biology. Washington DC. December 2019. *Poster*
7. King DR, Hoeker GS, Poelzing S. Perfusate Composition – does it matter? Virginia Tech Muscle Symposium, April 2019. *Oral Presentation* –King, 1st place award for best oral presentation.
8. Hoeker GS, James CC, Tegge A, Smyth J, **Poelzing S.** Modulating Cardiac Conduction Slowing and Block During No-Flow Ischemia Through Changes in Perfusate Sodium and Calcium Composition. Biophysical Society, 63st Annual Meeting 2019, Baltimore, MD March 2019. *Poster*
9. King DR, Padget R, Perry JB, Smyth JW, Brown DA, Poelzing S. Perfusate composition modulates cardiac contractile properties before, during, and following an ischemic insult. Gordon Research Conference in Cardiac Arrhythmia Mechanisms, April 2019. *Poster*
10. Hoeker GS, James CC, Tegge A, Smyth J, **Poelzing S.** Attenuating loss of cardiac conduction during no flow ischemia through changes in perfusate sodium and calcium composition. Gordon Research Conference: Cardiac Arrhythmia Mechanisms, Luca, Italy, March-April 2019. *Poster*
11. King DR, Hoeker GS, **Poelzing S.** What's in name? That which we call Kreb's or Tyrode by any other name…would it be the same? Gordon Research Conference: Cardiac Arrhythmia Mechanisms, Luca, Italy, March-April 2019. *Poster*
12. King DR, Padget R, Perry JB, Smyth JW, Brown DA, Poelzing S. Perfusate composition modulates cardiac contractile properties before, during, and following an ischemic insult. Gordon Research Seminars in Cardiac Arrhythmia Mechanisms, April 2019. *Oral Presentation.*
13. Nowak MB, King DR, Poelzing S, Weinberg SH. Age dependent regulation of cardiac sodium channel gain of function. Gordon Research Conference in Cardiac Arrhythmia Mechanisms, April 2019. *Poster*
14. Nowak MB, King DR, Poelzing S, Weinberg SH. Age dependent regulation of cardiac sodium channel gain of function. Biophysical Society Annual Meeting, March 2019*. Poster*
15. Raisch TB, **Poelzing S.** Osmotically Narrowing the Perinexus Improves Cardiac Conduction. American Heart Association. November 2018. *Poster*
16. **Poelzing S.** Connexins and ephaptic coupling: When and how? Heart Rhythm Society, Boston, May 2018. *Oral Presentation*
17. Hoeker GS, James CC, Barrett SH, Smyth J, **Poelzing S**. Combined Effects of Gap Junctional and Ephaptic Coupling Therapies on Conduction and Arrhythmogenesis During Ischemia/Reperfusion. Biophysical Society, San Francisco, CA, February 2018. *Oral Presentation and Abstract*
18. Entz MW, **Poelzing S**. Novel Method to Suppress Conduction Velocity Changes Due to Potassium. American Heart Association, Anaheim, CA, November 2017. *Poster*

19. Veeraraghavan R, Hoeker GJ, Wan X, Deschenes I, **Poelzing S**, Gourdie RG. Sodium Channel Auxiliary Subunit β1 - mediated Cell Adhesion - A Novel Target for Antiarrhythmic Therapy. Heart Rhythm Society, Chicago, May 10, 2017. *Featured Poster*
20. Larsen TR, Kinney N, Varghese RT, Poelzing S, Garner HR, AlMahameed ST. Whole Exome Sequencing Reveals Response Signature in Patients Undergoing Dofetilide Initiation. Heart Rhythm Society, Chicago, May 11, 2017. *Poster*
21. Veeraraghavan R, Hoeker GS, **Poelzing S**, Gourdie RG. The Sodium Channel Auxiliary Subunit β1 Is Structurally Critical For Cardiac Conduction: Evidence From the Single Molecule Scale to the Whole Organ. Biophysical Society. New Orleans, Feb 13, 2017 *Poster*
22. Hoeker GS, **Poelzing S**. Attenuation of Conduction Slowing During Global Ischemia in Guinea Pig Heart Through Increased Extracellular Calcium. Biophysical Society. New Orleans, Feb 14, 2017 *Poster*
23. Greer-Short A, Raisch TR, Entz II M, Weinberg SH, Barrett S, **Poelzing S**. LQT3-Associated Arrhythmias are Revealed and APD Prolonged in Edamatous Hearts. Gordon Cardiac Arrhythmia Mechanisms. Ventura, Feb 7, 2017 *Poster*
24. George SA, Calhou P, Nielsen MS, Smyth J, Gourdie RG, **Poelzing S**. Ephaptic Coupling in Cardiac Diseases. Gordon Cardiac Arrhythmia Mechanisms. Ventura, Feb 7, 2017 *Poster* and *Oral*
25. Veeraraghavan R, Hoeker GS, **Poelzing S**, Gourdie RG. The Proarrhythmic Impact of Inhibiting the Cell Adhesion Functions of the Sodium Channel Auxiliary Subunit NaVβ1. Gordon Cardiac Arrhythmia Mechanisms. Ventura, Feb 7, 2017 *Poster*
26. Veeraraghavan R, Hoeker GS, **Poelzing S**, Gourdie, RG. Acute Inhibition of Sodium Channel Beta Subunit (β1) – Mediated Adhesion is Highly Proarrhythmic. AHA Scientific Sessions, New Orleans, 2016 *Poster*.
27. George S, Calhoun, P, Gourdie RG, Smyth J, **Poelzing, S**. Novel Calcium Therapy for Preserving Cardiac Conduction During Myocardial Inflammation. AHA Scientific Session, New Orleans, 2016 *Poster*.
28. Entz M II, **Poelzing S**. Extracellular Calcium Modulates the Conduction Velocity-Extracellular Potassium Relationship. Biomedical Engineering Society, Minneapolis, 2016 *Poster*
29. Raisch T, **Poelzing S**. An Automated Method for Quantifying Intermembrane Distances using Image Dilation and Spatial Gradients. Biomedical Engineering Society, Minneapolis, 2016 *Poster*
30. Yanoff MS, Raisch TB, Farooqui MA, Larsen TR, Wilkerson LJ, Baker JW, Arnold WS,. AlMahameed ST, **Poelzing S**. Intercalated Disk Extracellular Microdomain Expansion in Patients with Atrial Fibrillation. Heart Rhythm Society, San Francisco, 2016 *Poster.*
31. Hoeker GJ, Jespersen T, **Poelzing S**. Electrophysiologic effects of the novel IK1 inhibitor PA-6 are modulated by extracellular potassium. Heart Rhythm Society, San Francisco, 2016 *Poster.*
32. Larsen TR, Farooqui MA, Yanoff MS, Raisch TB, Wilkerson LJ, Baker JW, Arnold WS, **Poelzing S,** AlMahameed ST. Atrial Intercalated Disk Extracellular Microdomain Expansion Predicts Postoperative Atrial Fibrillation in Patients Undergoing Cardiac Surgery. Heart Rhythm Society, San Francisco, 2016 *Poster.*
33. Greer-Short A, **Poelzing S**, Weinberg SH. Using mathematical modeling to unmask the concealed nature of long QT-3 syndrome. Biology and Medicine Through Mathematics Conference, Richmond, 2016 *Oral*
34. George SA, Nielsen MS, **Poelzing S**. Novel Target For Antiarrhythmic Therapy: Enhancement of Cardiac Conduction By Ionic Modulation of Ephaptic Coupling. Biophysical Society, Los Angeles, 2016 *Poster*
35. **Poelzing S**, Greer-Short A, Jessup DK, Weinberg SH. Ephaptic Self-Attenuation Conceals Early Afterdepolarizations Associated with Long QT-3 Syndrome. Biophysical Society, Los Angeles, 2016 *Poster*
36. George SA, Bonakdar M, Zeitz M, Davalos R, Smyth J, **Poelzing S.** Biophysical Society, Los Angeles, 2016 *Oral*
37. Veeraraghavan R, Lin J, Keener JP, **Poelzing S,** Gourdie RG. Super Resolution Studies of Sodium Channels Within Intercalated Disk Microdomains Suggest Novel Arrhythmia Mechanism. American Heart Association. Orlando, 2015 *Oral*
38. Abdullah O, Gomez AD, Merchant S, Stedham O, Heidinger M, **Poelzing S,** Hsu E. Myocardial Microcirculation Induces Anisotropic Diffusion-Like Magnetic Resonance Contrast. American Heart Association. Orlando, 2015. *Poster*
39. Abdullah O, Gomez AD, Merchant S, Stedham O, Heidinger M, **Poelzing S,** Hsu E. Intravoxel Incoherent Motion and Arterial Spin Labeling MRI of Isolated Perfused Hearts. Proceedings of ISMRM, 2015.
40. Greer-Short A, **Poelzing S**, Sleep to Waking versus Waking to Exercise: Resting State Impact on Risk of Sudden Cardiac Death. Biomedical Engineering Society. Tampa Bay 2015. *Poster*
41. Entz MW, Zeitz M, Smyth J, **Poelzing S**, Gap Junctional Coupling Modulates the Ephaptic Coupling-Conduction Velocity Relationship. Gordon Conference-Cardiac Arrhythmias. Italy 2015. *Poster*
42. George SA, **Poelzing S**, Ephaptic Self-Attenuation in Mice Hearts: Experimental Evidence of Conduction Slowing Secondary to Reduced Perinexal Width and Sodium Driving Force. Gordon Conference-Cardiac Arrhythmias. Italy 2015. *Poster*
43. Greer-Short A, **Poelzing S**, Parasympathetic to Sympathetic Stimulation: Higher Arrhythmia Risk than Sympathetic Stimulation Alone. Gordon Conference-Cardiac Arrhythmias. Italy 2015. *Poster*

44. Veeraraghavan R, Ongstad EL, **Poelzing S**, Gourdie RG. Superresolution Microscopic Localization of Scn5a and Scn1b Subunits of the Sodium Channel Complex Within Intercalated Disk Microdomains: Implications for Ephaptic Coupling. Gordon Conference-Cardiac Arrhythmias. Italy 2015. *Poster*
45. Veeraraghavan R, Lin J, Keener JP, **Poelzing S**, Gourdie RG. Superresolution Mircoscopy Reveals Sodium Channel Localization within Intercalated Disk Microdomains: Implications for Ephaptic Coupling. Biophysical Society. Baltimore 2015. *Poster*
46. **S Poelzing**, M Entz, SH Weinberg. Acute Modulation of Sodium Channel Biophysical Properties using High-Frequency Stimulation. Biophysical Society, Baltimore 2015. *Oral*
47. Veeraraghavan R, Lin J, Keener JP, **Poelzing S**, Gourdie RG. Anisotropic Conduction Slowing During Sodium Channel Blockade: A Role For Ephaptic Coupling? Cardiac EP Society. Chicago 2014
48. Veeraraghavan R, Lin J, Keener J, Gourdie RG, **Poelzing S.** A Novel Role for Inward-rectifier Potassium Channels in Ephaptic Coupling. Heart Rhythm Society. San Francisco, California 2014. *Featured Poster*
49. George S, Sciuto K, Salama M, Gourdie RG, **Poelzing S.** Ephaptic Coupling and Gap Junctional Coupling - Two Aspects of Electrical Coupling between Cardiac Myocytes. Heart Rhythm Society. San Francisco, California 2014. *Poster*
50. Veeraraghavan, R, Lin J, Keener J, **Poelzing S**, Gourdie RG. Sodium Channels in the Cx43 Gap Junction Perinexus May Constitute a Cardiac Ephapse: An Experimental and Modeling Study. Heart Rhythm Society. San Francisco, California 2014. *Poster*
51. Radwanski PR, Brunello L, Veeraraghavan R, Ho HT, Belevych A, Priori SG, Volpe P, Janssen P, Bridge J, **Poelzing S**, Gyorke S. Neuronal Na+ Channels Contribute to the Arrhythmogenic Diastolic Ca2+ Release Through the Microdomain Na+/Ca2+ Signaling. Heart Rhythm Society. San Francisco, California 2014. *Young Investigator Competition*
52. Greer-Short A, Heidinger M, **Poelzing S**. The Latency-Spontaneous Beat Relationship: Two Mechanisms at Play? Biomedical Engineering Society. Seattle, Washington 2013. *Poster.*
53. George S, Greer-Short A, Sciuto KJ, Salama ME, **Poelzing S**. Modulation of Ephaptic Coupling in Cardiac Conduction during reduced Gap Junctional Coupling. International Gap Junction Conference. Charleston, South Carolina 2013. *Oral Presentation.*
54. Veeraraghavan R, Rhett M, **Poelzing S**, Gourdie RG. Experimental Evidence that the Cx43 Gap Junction Perinexus Functions as a Cardiac Ephapse. International Gap Junction Conference. Charleston, South Carolina 2013. *Oral Presentation.*
55. Veeraraghavan R, Lin J, Keener JP, Gourdie RG, **Poelzing S.** Sodium Channel Blockade Reveals Anisotropic Conduction Dependence on Ephaptic Coupling. Heart Rhythm Society. Denver 2013, *Poster*
56. Larsen AP, Pedersen R, **Poelzing S.** Effect of Acute Hyperglycemia on Cardiac Conduction. Biophysical Society. Philadelphia 2013, *Poster*
57. Abdullah O, Gomez AD, Merchant S, Stedham O, Heidinger M, Poelzing S, Hsu E, Effects of Perfusion on Cardiac MR Diffusion Measurements, ISMRM, 2012.
58. Veeraraghavan R, Lin J, Keener JP, **Poelzing S**. A Novel Role For Ephaptic Coupling in Cardiac Conduction: An Experimental and Modeling Study. Biophysical Society.San Diego 2012. *Oral Presentation*
59. Veeraraghavan R, **Poelzing S**. Interstitial Volume Modulates the Cardiac Conduction Velocity- Gap Junction Relationship. International Gap Junction Conference. Ghent, Belgium. 2011, *Poster*
60. Sciuto KJ, Larsen AP, Moreno AP, **Poelzing S**. Di-4-ANEPPS Slows Cardiac Conduction Velocity. Biophysical Society, Baltimore 2011, *Poster*
61. Veeraraghavan R, Larsen AP, **Poelzing S**. Pharmacological IKs Activation Slows Cardiac Conductions and Exacerbates the Effect of INa Blockade. Biophysical Society, Baltimore 2011, *Poster*
62. Rigby JR, **Poelzing S**. Recreating the Ion Channel IV Curves Using Specific Frequency Components. Biophysical Society, Baltimore 2011, *Poster*
63. Radwanski PB, **Poelzing S,** SERCA2a Inhibition Paradoxically Increases Triggered Activity During Calcium Overload, Gordon Conference, 2010: Cardiac Regulatory Mechanisms, *Poster*
64. Veeraraghavan R, **Poelzing S.** Myocardial Edema Sensitizes Conduction to Gap Junction Uncoupling. Heart Rhythm Society, Denver 2010, *Poster*
65. Ribgy JR, **Poelzing S.** Characteristic Frequency Analysis of Inward Rectifier Kir2.1. Biophysical Journal, vol. 98, issue 3, pg. 332a. 2010 *Poster*
66. Veeraraghavan R, **Poelzing S.** Edema: A Missing Link in the Conduction Velocity-Gap Junction Relationship. Biophysical Journal, vol. 98, issue 3, pg. 95a. 2010 *Poster*
67. Radwanski PB, Veeraraghavan R, **Poelzing S,** SERCA2a/NCX Ratio Determines Regional Propensity for Triggered Activity During Calcium Overload, American Heart Association, Orlando 2009, *Oral Presentations*
68. Radwanski PB, Veeraraghavan R, **Poelzing S,** Heterogeneous Ca2+ Cycling Underlies Bidirectional Ventricular Arrhythmias During Conditions of Ca2+ Overload, Heart Rhythm Society, Orlando 2009, *Poster*

69. Radwanski PB, Veeraraghavan R, **Poelzing S,** Heterogeneous Calcium Handling Modulates Spatio-Temporal Presentation Initiation of Premature Beats During Conditions of Calcium Overload, American Heart Association, New Orleans 2009, *Poster*
70. Veeraraghavan R, Stinstra J, **Poelzing S**, Edema Increases Conduction Anisotropy Heterogeneously Between the Left and Right Ventricles. Heart Rhythm Society, San Francisco 2008, *Poster*
71. Radwanski P, Veeraraghavan R, Munger M, **Poelzing S**. Pininacidil Reduces Interventricular Heterogeneities and Arrhythmia Susceptibility During Loss of Inward Rectifier Potassium Channel Function. American College of Clinical Pharmacology, Philedelphia 2008, *Poster*
72. Stinstra JG, **Poelzing S,** MacLeod RS, Henriquez CS, A Model for Estimating the Anisotropy of the Conduction Velocity in Cardiac Tissue Based on the Tissue Morphology. Computers in Cardiology, Durham 2007
73. **Poelzing S**, Veeraraghavan R, Heterogeneous Ventricular Chamber Response to Gap Junction Blockade. Gap Junction Conference, Denmark 2007, *Poster*
74. Veeraraghavan R, **Poelzing S**, Interventricular Nav1.5 Heterogeneities Underlie Conduction Heterogeneities in the Brugada Syndrome. Heart Rhythm Society, Denver 2007, *Poster*
75. Dudash L, **Poelzing S**, Deschenes I. Gene Therapy using Fragments of SCN58 H558R Polymorphism Restores Function of a Brugada Syndrome Mutation. American Heart Association, Chicago 2006, *Oral Presentation*
76. **Poelzing S,** Veeraraghavan R. Interventricular Heterogeneities Underlie Electrophysiologic Manifestations in Andersen-Tawil Syndrome (LQT7). American Heart Association, Chicago 2006, *Oral Presentation*
77. **Poelzing S,** Samodell M, Deschenes I. The H558R Polymorphism Rescues the R282H Brugada Syndrome Mutation Through Alpha Subunit Interactions. American Heart Association, Dallas, 2005, *Oral Presentation*
78. Dikshteyn M, **Poelzing S**, Rosenbaum, DS. Heterogeneous Connexin43 Expression Underlies Electrophysiologic Heterogeneities in the Heart. Gap Junction Conference, Whistler, British Columbia, 2005, *Oral Presentation*
79. **Poelzing S**, Rosenbaum, DS. Heterogeneous Connexin43 Expression Produces Electrophysiologic Heterogeneities Across the Ventricular Wall. Heart Rhythm Society, New Orleans, 2005, *Oral Presentation*
80. Dikshteyn M, **Poelzing S**, Rosenbaum, DS. Heterogeneous Connexin43 Expression Underlies Regional Dispersion of Repolarization and Increased Susceptibility to Arrhythmias. Heart Rhythm Society, New Orleans, 2005, *Oral Presentation*
81. Jeyaraj DD, Wilson LD, **Poelzing S**, Wan X, Rosenbaum DS. Segmental versus transmural remodeling as electrophysiological basis for T-wave memory. Heart Rhythm Society, New Orleans, 2005, *Oral Presentation*
82. Sandhu R, Costantini O, Cummings J, Dettmer M, **Poelzing S**, Rosenbaum DS, Quan KJ. Regional Intracardiac Alternans Underlies T Wave Alternans in Humans. Heart Rhythm Society, New Orleans, 2005, *Oral Presentation*
83. **Poelzing S,** Samodell M, Deschenes I. SCN5A Polymorphism Rescues Brugada Syndrome Mutation. Biophysical Society, Long Beach, 2005, *Poster*
84. **Poelzing S**, Forleo C, Sorrentino S, Anaclerio M, Troccoli R, Iacoviello M, Romita R, Guida P, Samodell M, Deschenes I, PitzalisM . SCN5A Polymorphism Rescues Brugada Syndrome Mutation. American Heart Association, New Orleans, 2004, *Oral Presentation*
85. Deschenes I, Armoundas A, Jones SP, **Poelzing S**, Tomaselli G, Functional link between Na channels and Ito revealed by Posttranscriptional Gene Silencing of NavB1 in Cardiac Myocytes, American Heart Association, New Orleans, 2004, *Oral Presentation*
86. **Poelzing S**, Rosenbaum DS. Heterogeneous Connexin43 Expression Produces Electrophysiologic Heterogeneities Across the Ventricular Wall. North American Society for Pacing and Electrophysiology, Washington D.C., 2003, *Oral Presentation*
87. Pajouh M, Wilson LD, **Poelzing S**, Johnson NJ, Rosenbaum DS. IKs Blockade Reduces Dispersion of Repolarization in Heart Failure. North American Society for Pacing and Electrophysiology, Washington D.C., 2003, *Oral Presentation*
88. **Poelzing S**, Baron E, Rosenbaum DS. New Evidence for Heterogeneous Connexin43 Expression in Ventricular Myocardium. North American Society for Pacing and Electrophysiology, San Diego, 2002, *Oral Presentation*
89. **Poelzing S,** Roth BJ, Rosenbaum DS. Novel Use of Optical Mapping to Measure Cell-to-Cell Coupling Across the Transmural Wall. North American Society for Pacing and Electrophysiology, San Diego, 2002, *Poster*
90. Akar F, **Poelzing S**, Rosenbaum D, Direct Measurement of Cell-to-Cell Coupling in the Intact Heart: A Novel Approach of High Resolution Optical Mapping. American Heart Association, Atlanta, 1999. *Poster*

D. RESEARCH SUPPORT

Current:

F31 HL147438 (PI: King) 04/01/19-3/31/21
National Institutes of Health (NIH) – National Heart, Lung, and Blood Institute (NHLBI)
Hypernatremic Perfusion Decreases Mechanical and Mitochondrial Recovery Following an Ischemic Insult
Role: Sponsor

R01 HL141855 (Co-PI: Gourdie/Poelzing) 07/01/18-2/01/23
National Institutes of Health (NIH) – National Heart, Lung, and Blood Institute (NHLBI)
The role of the Sodium Channel Beta Subunit in Cardiac Conduction
Role: Co-PI

R01 HL138003 (Co-PI: Poelzing/Weinberg) 07/01/18-2/01/23
National Institutes of Health (NIH) – National Heart, Lung, and Blood Institute (NHLBI)
Signaling in Inherited and Acquired Sodium Channel Gain of Function
Role Co-PI

1R01HL102298 Poelzing (PI) 01/01/11-11/30/20
National Institutes of Health-NHLBI
Extracellular Space as Modulator of Gap Junction-Conduction Velocity Relationship
Role: PI

F31 HL140873 (PI: Raisch) 12/12/17- 12/12/20
National Institutes of Health (NIH) – National Heart, Lung, and Blood Institute (NHLBI)
Extracellular Spaces and Cardiac Conduction
Role: Sponsor

F31 HL140909 (PI: James) 12/12/17 – 9/11/20
National Institutes of Health (NIH) – National Heart, Lung, and Blood Institute (NHLBI)
Altered translation initiation in regulation of gap junction coupling
Role: Co-Sponsor

R01HL132236 (PI: Smyth) 07/01/17-06/30/22
National Institutes of Health -NHLBI
Translation Initiation in Cardiac Intercellular Communication and Stress-Induced Remodeling
Role: Co-Investigator

R25NS105141 (PI: Fox) 01/01/18-12/31/23
National Institutes of Health-NINDS
Virginia Tech Carilion Research Institute Translational Neurobiology Summer Undergraduate Research Fellowship (*neuro*SURF)
Role: Program Faculty

DP7OD018428 Van Wart, Friedlander (PI) 09/20/13-08/31/18
National Institutes of Health
Mentorship and Development Program for Biomedical Trainees
Role: Key Personnel-Other

R01HL56728-10A2 Gourdie (PI) 1/01/15-12/31/20
National Institutes of Health-NHLBI
Patterning of gap junctions in the arrhythmic heart
Role: Collaborator

Pending:

1R21HL133460-01 1/01/19-12/31/18
National Institutes of Health
Arrhythmia Mechanisms of Concealed Intercalated Disc Diseases

Completed:

Carilion Clinic Poelzing(Co-I) 06/01/14-05/31/15
Research Acceleration Program_ No Cost Extension
"Role of Cell-to-Cell Coupling in Atrial Fibrillation Management: A Pilot Study"
This pilot study seeks to correlate post-operative atrial fibrillation occurrence with indices of ephaptic coupling.

Treadwell Foundation. Poelzing (PI) **07/01/09-06/30/13**
"Molecular Mechanisms of Regional Ventricular Delayed Afterdepolarization Propensity in ATS1"
This work focused on investigating cellular mechanisms which lead to heterogeneous delayed after depolarization propensity in a pharmacological model of ATS1.

R21-HL094828. Poelzing (PI) **09/01/09-08/30/11**
National Institutes of Health
"Ion Channel Characterization using Current Voltage Resonance Spectroscopy"
The purpose of this project is to determine whether unique resonant frequencies exist within ion channels. Once identified, the unique resonant ion channel frequencies will be used to simultaneous quantify the cardiac sodium channel and inward rectifier potassium currents.

Treadwell Foundation. Poelzing (PI) **07/01/05-06/30/08**
"Molecular Mechanisms of Brugada Syndrome as a Right Ventricular Disease"
This work focuses on investigating cellular mechanisms which predispose the right ventricle to increased arrhythmogenesis compared to the left ventricle.

Medtronic. Poelzing (PI) **07/01/06-06/30/07**
"Novel Therapeutics Diastolic Heart Failure"
The goals of this work were to develop a proof of concept for a novel therapeutic device in order to treat diastolic heart failure.

Heart Rhythm Society Post-Doctoral Fellowship. Poelzing (PI) **07/01/03-06/30/05**
"Mechanisms of Arrhythmogenesis in Heart Failure: Role of Connexin43 Remodeling."
This work focused on the functional consequences of heterogeneous gap junction distribution across the ventricular wall in a canine model of pacing induced heart failure.

American Heart Association Pre-Doctoral Fellowship. Poelzing (PI) **07/01/02-06/30/04**
"Role of Gap Junction Remodeling on the Mechanism of Ventricular Arrhythmias in the Failing Heart"
This work focused on elucidating the distribution and functional consequences of gap junction distribution across the ventricular wall in normal and failing myocardium.

E. PATENTS

Awarded:
US Patent 8808668 August 19, 2014
X-ray attenuating compositions and methods

Pending:
Application No. 62/583,216. Electrolyte Solution to Enhance Electrochemical Function. King, Poelzing. Nov 2018
Oscillating Field Modulation of Ion Channel Function. Poelzing, Rigby
Premature Ventricular Excitation Classification Algorithm for Predicting Spontaneous Arrhythmias. Greer-Short, Poelzing
Pharmacologic Targeting of Cell Adhesion to Modulate Conduction. Gourdie, Veeraraghavan, Poelzing
Saline Formulation for Acutely Preventing Sudden Cardiac Death During Metabolic Demand. George, Poelzing
Optimized Intravenous Solution as Adjuvant Pharmacotherapy. Poelzing

F. COMMUNITY CONTRIBUTIONS

Lub Dub: A Hearty Podcast. Big Lick of Science, 10/18/19
http://abiglickofscience.libsyn.com/lub-dub-a-hearty-podcast
Organizer and Chair of the first "International Ephaptic Coupling Conference." Roanoke Virginia 5/5/19-5/8/19
Science Fair Judge, Roanoke City Schools, 2019-Present
Engineering Expo Judge for BCAT Center for Engineering. 05/17/19
BCAT Invited Speaker, "Pathways to Biomedical Engineering." Salam City Schools, Virginia 11/1/18
American Heart Association Affiliate, Lunch Speaker. Hotel Roanoke, Roanoke, Virginia. 8/31/17.
Lab Tour for the American Heart Association Affiliate. VTCRI, Roanoke, Virginia. 6/2/17.
American Heart Association Affiliate, Lunch Speaker. Hotel Roanoke, Roanoke, Virginia. 3/30/17.
Virginia Science Festival Exhibit Organizer. 2014
Science Museum of Western Virginia Summer Camp Cardiovascular activity leader, 2014

Virginia Junior Academy of Science. Judge. Virginia Tech. May 2013.
High School Outreach. Invited to speak to Math and Science Clubs at Hillcrest High School. Midvale UT, Jan 2012
Consultant with the Utah Museum of Natural History, Salt Lake City UT, 2010-2012
Speaker for the Utah Society of Environmental Educators, Salt Lake City UT. 2009
Salt Lake Valley Science and Engineering Fair Judge, Salt Lake City, UT, 2008-2012
Science Pub Invited Speaker, American Chemical Society, Salt Lake City, UT 2008
Consultant and grant Collaborator with The Leonardo, Salt Lake City, UT 2007-2010
Pre-Science Fair Invited Speaker, Oakdale Elementary School, Sandy UT 2006
Science Fair Judge, Madeleine Choir School's Science Fair, Salt Lake City, UT 2007

G. UNIVERSITY CONTRIBUTIONS

BEAM Promotion and Tenure Committee. 2019-Present
BEAM Report to the Provost 2019
TBMH Graduate Program Coordinator and Public Relations, Chair of search committee 2019
TBMH Graduate Program Coordinator, Chair of search committee 2019
TBMH Associate Director, Chair of search committee 2019
Health Sciences Education Assistant Vice-President, Chair of search committee 2019
FBRI Cardiovascular Search Committee Member for 4 positions. 2019
TBMH Diversity and Inclusion committee member. 2019
TBMH and BEAM Recruiting at JMU, UVA, and ODU 2019
BEAM Undergraduate Admissions Committee 2018-Present
BEAM Department Head Search Committee 2018-Present
HNFE Cardiovascular Search Committee 2018-Present
VT Cardiovascular Group Meeting. Chair. Virginia Tech, 2017-2019
VT Cardiovascular NIH T32. Co-Director. Virginia Tech, 2017
NeuroSURF. Applicant Review, Mentor, lecturer. 2017-Present
MoVIS. Applicant Reviewer, Mentor, lecturer. 2017-Present
Historically Black Undergraduate College Recruitment, Faculty Representative, Virginia Tech, 10/2017
BEAM Collaboration/Innovation Seminar Series, Mock Grant Reviewer, 5/5/2017
BIOLOGY Junior Faculty NIH Mentoring. 11/18/2016
Co-director of Translational Biology, Medicine, and Health. Virginia Tech, 2016-Present
Translational Biology, Medicine, and Heath. Methods and Logic discussion leader. 2016-Present
BEAM Qualifying Exam Member. 2013, 2015, 2018
Translational Biology, Medicine, and Health. Virginia Tech, Qualifying Exam Committee, 2015-Present
BEAM Faculty Recruitment Committee. Virginia Tech.2015
Translational Biology, Medicine, and Health. Virginia Tech, Admissions Committee, 2014-Present
Translational Biology, Medicine, and Health. Virginia Tech, Curriculum Committee, 2014-Present
Translational Biology, Medicine, and Health. Virginia Tech, Track Director, 2014-Present
Biomedical Engineering Society, Faculty representative for VT-BEAM. 2014-2017
VTCRI Faculty Recruitment Committee. Virginia Tech. 2012-Present
University Teaching Awards Committee. University of Utah. 2011-2012
Invited Lecturer- PHTX 7500. University of Utah. 4/20/11
Cardiovascular, Hypertension and Diabetes Symposium. Chair. University of Utah. 3/17/2011-3/18/2011
Bioengineering Student Leader Club Co-creator and advisor. University of Utah 2010-2012
Invent and TechTitans. University of Utah. Invited Judge 2010-2012
Students of Biomedical Engineering faculty advisor. University of Utah.2008-2012
Invited Lecturer- BIOL 3960. “Molecular Pathways of Environmental Pesticides”, University of Utah. 04/24/2007
Invited Lecturer- Biomedical Engineering Society lunch with a professor. University of Utah 08
Comparative Medicine Outreach Program, University of Utah, 2007-2012
College of Engineering Teaching Workshop. University of Utah.11/15/2007

H. VIRGINIA TECH CARILION SCHOOL OF MEDICINE CONTRIBUTIONS

Written Prospectus Evaluator, M1 students, 2013-Present
Research Rotation Evaluator, M2 students, 5/24/2017
Oral Presentations Evaluation, M2 students, 4/24/2017
Research Rotation Evaluator, M1 students, 3/31/2017

I. STUDY SECTION MEMBER

National Institutes of Health. EMNR, 2020 Ad Hoc

Swiss National Science Foundation, 2018 Ad Hoc
National Institutes of Health, ESTA Permanent Member. 2014-Present
National Institutes of Health, ESTA (2011, 2012) Ad Hoc
National Institutes of Health, SEP (2013, 2014, 2018)
National Institutes of Health, CVRS-K Special Emphasis Panel (2013)
American Heart Association (2009-2014)
Canadian Institutes of Health Research (2007)

J. EXTERNAL SERVICE

Biophysical Society. Large-scale Molecular Simulations, Session Chair. Baltimore, Maryland. 2015
Biomedical Engineering Society, Scientific Sessions, Abstract Reviewer. 2014-Present
International Gap Junction Conference Organizer. 2013 Meeting
American Journal of Physiology: Heart Circulatory Physiology: Editorial Board Member. 2012-Present
Heart Rhythm Society, Abstract Reviewer. 2013-Present
Cardiostim. Preparation Committee for Scientific Program. 2012
Cardiostim. The Intercalated Disc and Arrhythmogenic Cariomyopathies, Session Chair. Nice, France. 2012.
Biophysical Journal, Reviewer
Circulation. Reviewer
Circulation Research. Reviewer
Frontiers in Cardiac Electrophysiology. Editorial Board Member 2010-Present
Heart Rhythm Journal, Reviewer
Journal of Molecular Medicine, Reviewer

K. COLLABORATORS

Søren-Peter Olesen, University of Copenhagen. 2007-Present
Morten Grunnet, Neurosearch, University of Copenhagen, 2007-Present
Steven Bealer, University of Utah, 2007-Present
Matthew Movsesian, University of Utah, 2011-Present
James Keener, University of Utah, 2009-Present
Morten Schak Nielsen, University of Copenhagen. 2013-Present
Thomas Jespersen, University of Copenhagen. 2014-Present

L. Professional Development in Teaching

Optimizing the Practice of Mentoring: Working Effectively with your Graduate Student Advisees.
CIMER
January 2018

DiversityEdu Course
Virginia Tech
Blacksburg, VA
2017

Educational Approaches to Best Prepare Students for Industry, Conference Attendance
Biomedical Engineering Society
1.5 credit hours
Minneapolis, Minnesota
October 7, 2016

ABET Workshop, Workshop
Accreditation Board for Engineering and Technology, Inc.
1.5 credit hours
Tampa, Florida
October 8, 2015

Effective Use of Technology in the BME Classroom, Conference Attendance
Biomedical Engineering Society
1.5 credit hours

Steven Poelzing, Ph.D.

San Antonio, Texas
October 23, 2014