

Sharon George, PhD

Postdoctoral Scientist

Email: sharonag@email.gwu.edu

Education / Training:

Institution & Location	Dates Attended	Degree	Conferred (mm/yyyy)	Field of Study
Virginia Polytechnic Institute and State University, Blacksburg, VA	08/2012 – 05/2016	PhD	05/2016	Biomedical Engineering
University of Utah, Salt Lake City, UT	08/2011 – 07/2012	PhD	Transferred	Bioengineering
Anna University, Chennai, India	08/2007 – 05/2011	BE	05/2011	Biomedical Engineering

A. Personal Statement:

My research focusses on understanding molecular and electrophysiological substrates of heart diseases. Previously, I worked on identifying a new pathway of intercellular communication between cells and determined various factors that can modulate this phenomenon during disease. Currently, I am working on a project that aims to identify the effect of cancer chemotherapeutic agents on the heart and the mechanisms by which they result in heart failure. I work with animal and human heart disease models to understand various aspects of cardiac diseases and to determine possible therapeutic options.

B. Positions, Memberships and Honors:

Previous Positions and Employment:

- 05/2009 – 05/2009: Summer Intern, BME Department, Madras Medical Mission Hospital, Chennai, India
- 02/2010 – 02/2010: In-Plant Trainee, BME Department, Global Hospitals, Chennai, India
- 08/2010 – 05/2011: Tutor for High School Mathematics and Physics, Chennai, India
- 08/2011 – 07/2012: Graduate Research Assistant, Poelzing Lab, University of Utah, UT
- 08/2012 – 05/2016: Graduate Research Assistant, Poelzing Lab, Virginia Tech, VA
- 06/2016 – Present: Post-doctoral Scientist, Efimov Lab, The George Washington University, DC

Teaching Experience:

- Course: Fundamentals of Metabolic and Cardiovascular Sciences, Graduate level Program: Translational Biology, Medicine and Health - Virginia Tech

- Course: Principles and Practice of Biomedical Engineering
Program: Biomedical Engineering – George Washington University

Mentoring Experience:

- Undergraduate students: 8 students
- Medical students: 3 students
- Pre-doctoral students: 1 student

Community Outreach:

- Project Forum judge at Roanoke Valley Governor's School for Science and Technology - 2013
- Volunteer Tutor in After School Math Program at the Roanoke Academy of Math and Science – 2014, 2015 – Present.
- Volunteer Tutor at the Rescue Mission Ministries, Roanoke, VA – June, 2014 – Present
- Virginia Science Festival Volunteer – Oct, 2014.
- Project Forum judge at Roanoke Valley Governor's School for Science and Technology – 2015
- Western Virginia Regional Science Fair judge – 2015
- Virginia Science Festival Institute Coordinator – 2015
- Judge at DMV APS science meeting – 2016
- Judge at GWU Research Days – 2017

Professional Memberships:

- American Heart Association, 06/2013 – Present
- Biomedical Engineering Society, 06/2014 – Present
- SBES Undergraduate Mentorship Program – 2013 – 2016
- Virginia Tech – Science Connection Advisory Network – 2014 – 2016
- Biophysical Society – 2016 – Present
- GW Postdoc Association – SEAS Representative – 2016 - Present

Academic/Professional Honors received:

- Academic Topper – First Year, 2008
- Academic Topper (BME Dept), 2009
- Paul E Torgersen Research Excellence Award – 2014
- Travel Fund Program Award (VT) – 2015
- American Heart Association Pre-doctoral Fellowship – 2015-16
- David W Francis and Lillian Francis Scholarship Fund – 2015-16

C. Peer Reviewed Publications:

Papers:

- **Sharon A George**, Patrick J Calhoun, Robert G Gourdie, James W Smyth, Steven Poelzing. TNF α modulates Cardiac Conduction by Altering Electrical Coupling between Myocytes. *Front Physiol*, 2017. PMID: 28588504
- Amara Greer-Short, **Sharon A George**, Steven Poelzing, Seth H Weinberg. Revealing the Concealed Nature of Long-QT Type 3 Syndrome. *Circ Arrhythm Electrophysiol*, 2017. PMID: 28213505
- **Sharon A George**, Mohammad Bonakdar, Michael Zeitz, Rafael V Davalos, James W Smyth, Steven Poelzing. Extracellular Sodium dependence of the Conduction Velocity – Calcium Relationship: Evidence of Ephaptic Self-attenuation. *Am J Physiol Heart Circ Physiol*, 2016. PMID: 26945081
- Michael Entz II, **Sharon A George**, Michael J Zeitz, Tristan Raisch, James W Smyth, Steven Poelzing. Heart Rate and Extracellular Sodium and Potassium Modulation of Gap Junction Mediated Conduction in Guinea Pigs. *Front Physiol*, 2016. PMID: 26869934
- **Sharon A George**, Steven Poelzing. Cardiac Conduction in Isolated Hearts of Genetically Modified Mice - Connexin43 and Salts. *Progress in Biophysics and Molecular Biology*, 2015. PMID: 26627143
- **Sharon A George**, Katherine J Sciuto, Joyce Lin, Mohammed Salama, James Keener, Robert G Gourdie, Steven Poelzing. Extracellular Sodium and Potassium Levels Modulate Cardiac Conduction in Mice Heterozygous Null for the Connexin43 Gene. *Pflugers Archiv – European Journal of Physiology*, 2015. PMID: 25771952.

Patent Disclosures:

Sharon A George, Steven Poelzing. Saline Formulation for Acutely Preventing Sudden Cardiac Death During Metabolic Demand

Presentations:

Sharon George, Katherine J Sciuto, Mohammed Salama, Steven Poelzing. Modulation of Ephaptic Coupling in Cardiac Conduction during reduced Gap Junctional Coupling. International Gap Junction Conference, July 2013. *Oral Presentation*.

Sharon George, Katherine J Sciuto, Mohammed Salama, Steven Poelzing. Role of Ephaptic Coupling in Cardiac Conduction during reduced Gap Junctional Coupling. Translational Biology, Medicine and Health, Virginia Tech Carilion Research Institute, Oct 2013. *Poster Presentation*.

Sharon George, Katherine J Sciuto, Mohammed Salama, Steven Poelzing. Ephaptic

Coupling

– A Novel Therapy for Cardiac Arrhythmias. Paul E Torgersen Research Excellence Award Finals, Apr 2014. *Oral Presentation*.

Sharon George, Katherine J Sciuto, Mohammed Salama, Robert Gourdie, Steven Poelzing. Ephaptic Coupling and Gap Junctional Coupling – Two Aspects of Electrical Coupling between Cardiac Myocytes. Heart Rhythm Society's Annual Scientific Sessions. May 2014. *Poster Presentation*.

Sharon George, Katherine J Sciuto, Joyce Lin, Mohammed Salama, James Keener, Robert Gourdie, Steven Poelzing. Ephaptic Coupling and Its Complex Role in Maintaining Cardiac Conduction. Biomedical Engineering Society Annual Meeting, Oct 2014. *Oral Presentation*.

Sharon George, Katherine J Sciuto, Mohammed Salama, Robert Gourdie, Steven Poelzing. Ephaptic Coupling – A determinant of the Complex Cardiac Conduction Velocity and Gap Junction Relationship. School of Biomedical Engineering and Sciences Annual Symposium, Virginia Tech. May 2014. *Poster Presentation*.

Sharon A George, Steven Poelzing. Ephaptic Self-Attenuation in Mice Hearts: Experimental Evidence of Conduction Slowing Secondary to Reduced Perinexal Width and Sodium Driving Force. Gordon Research Conference – Cardiac Arrhythmia Mechanisms. March, 2015. *Poster Presentation*.

Sharon A George, Mohammad Bonakdar, Michael Zeitz, Rafael V Davalos, James Smyth, Steven Poelzing. Extracellular sodium dependence of the conduction velocity – calcium relationship:evidence for ephaptic self-attenuation. Biophysical Society Annual Meeting. Feb 2016. *Oral Presentation*.

Sharon A George, Morten Nielsen, Steven Poelzing. A Novel Target for Anti-Arrhythmic Therapy: Enhancement of Cardiac Conduction by Ionic Modulation of Ephaptic Coupling. Biophysical Society Annual Meeting. Feb 2016. *Poster Presentation*.

Sharon A George, Patrick Calhoun, Robert Giurdie, James Smyth, Steven Poelzing. Novel Calcium Therapy for Preserving Cardiac Conduction during Myocardial Inflammation. American Heart Association Scientific Sessions. Nov 2016. *Poster Presentation*

Sharon A George, Patrick Calhoun, Morten Nielsen, James Smyth, Robert Gourdie, Steven Poelzing. Ephaptic Coupling in Cardiac Diseases. Gordon Research Seminar and Conference – Cardiac Arrhythmia Mechanisms. Feb 2017. *Poster Presentations*.

Sharon A George, Patrick Calhoun, Morten Nielsen, James Smyth, Robert Gourdie, Steven Poelzing. Ephaptic Coupling in Cardiac Diseases. Gordon Research Conference – Cardiac Arrhythmia Mechanisms. Feb 2017. *Oral Presentation*.

D. Research Support:

- VTCRI Medical Research Scholar's Award – 2014-2015
- David W Francis and Lillian Francis Scholarship – 2015-2016
Ephaptic Coupling in Cardiac Conduction, Promoting Longer, Healthier and Safer Lives.
- American Heart Association – Predoctoral Fellowship – 2015-16
Modulation of Ephaptic and Gap Junctional Coupling by TNF alpha and its Effect on Cardiac Conduction