

NENAD BURSAC

Duke University

Dept. of Biomedical Engineering
101 Science Drive
FCIEMAS, Room 1427
Durham, NC 27708

Phone: (919) 660-5510
Fax: (919) 684-4488
E-mail: nbursac@duke.edu
Lab website: <http://bursaclab.pratt.duke.edu/>

OCCUPATION

- 10/15- **Professor of Biomedical Engineering**
Dept. of Biomedical Engineering, Duke University, Durham, NC
- 07/11- **Associate Professor of Medicine**
Department of Cardiology, Duke University, Durham, NC
- 07/10-10/15 **Associate Professor of Biomedical Engineering**
Dept. of Biomedical Engineering, Duke University, Durham, NC
- 09/03-06/10 **Assistant Professor of Biomedical Engineering**
Dept. of Biomedical Engineering, Duke University, Durham, NC

EDUCATION

- 10/00-08/03 **Postdoctorate**
Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD
Advisors: Leslie Tung, PhD, Kam Leong, PhD
- 09/95-06/00 **Ph.D. in Biomedical Engineering**
Dept. of Biomedical Engineering, Boston University, Boston, MA
Research performed in laboratory of Dr. Robert Langer at MIT
GPA 3.96 / 4.00
Advisor: Solomon R. Eisenberg, PhD
Thesis Topic: Engineered Cardiac Tissue: A Novel In Vitro Model for Electrophysiological Studies of Cardiac Muscle
- 09/89-06/94 **B.S. (Engineering Diploma) in Electrical Engineering**
University of Belgrade, Belgrade, Yugoslavia.
Focus on Automatics and Control
GPA 9.82 / 10.00 (top 3 out of 850 students)
Advisor: Stevan Matausek, PhD
Thesis topic: Modeling of the Adaptive Control Systems in Industrial Plants

HONORS AND AWARDS

- 2015 AIMBE Fellow
- 2015 Plenary lecture at Muscular Dystrophy Association conference, Washington, DC
- 2014 Duke Engineering: Signature Research Highlights in Last 75 Years
- 2014 Rooney Family Distinguished Professorship
- 2014 Stansell Family Distinguished Research Award, Duke University
- 2014 President of North Carolina Tissue Engineering and Regenerative Medicine Society
- 2012-2016 Regular member, NIH BTSS review panel
- 2012-2014 Chair, AHA Bioengineering Study Session
- 2012-2013 Mendel Center Award
- 2009 Stem Cell Innovation Award, Duke University
- 2002 Trainee Abstract Award, AHA, Chicago

2002	BMES postdoctoral fellow merit award
2002	Honorably Mentioned Finalist, Young Investigator Award, NASPE, San Diego
2000-2003	Johns Hopkins BME Departmental Distinguished Postdoctoral Fellowship
2000-2002	American Heart Association Postdoctoral Fellowship
1999-2000	William B. Walsh Award for Excellence in Biomedical Engineering
1994-1995	Teaching Fellowship, Tufts University, Medford, MA
1990-1994	National Scholarship for Outstanding Young Students, Yugoslavia
1986-1994	National Awards, Olympiads in Mathematics, Physics and Control Systems, Yugoslavia

RESEARCH EXPERIENCE

Postdoctoral Fellowship

- 00-03 Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD
- Use cell micropatterning and optical mapping techniques to develop novel 2-D cardiac myocyte networks with controlled micro- and macrostructure
 - Apply optical mapping of impulse propagation to study induction, termination, and acceleration of “reentrant arrhythmias in the dish” by programmed electrical pacing
 - Investigate electrophysiological effects of genetic up- and down-regulation of potassium currents in cultures of cardiac myocytes
 - Develop 3-D polymer scaffolds with oriented microarchitecture to support anisotropic growth of engineered cardiac tissue for experimental studies and repair of cardiac damage
 - Study role of electrical stimulation in induction of hypertrophied cardiac cell phenotype, and in enhanced yield and differentiation of mouse embryonic stem cells into excitable cell lineages inside tissue engineering bioreactors

Research Assistantship

- 95-00 Department of Biomedical Engineering, Boston University, Boston, MA;
Massachusetts Institute of Technology and Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, Laboratory of Prof. Robert Langer
- Optimized structural and functional properties of three-dimensional engineered cardiac tissue by varying the biochemical and physical parameters of cultivation
 - Developed the experimental setup and data processing software for extracellular and intracellular studies of the mechanisms of impulse propagation in engineered cardiac tissues
 - Investigated use of engineered cardiac tissue constructs as a novel in vitro model system for pharmacological and electrophysiological studies of cardiac muscle
- 94-95 Department of Electrical Engineering, Tufts University, Medford, MA
New England Medical Center, Boston, MA; Laboratory of Prof. Vo Van Toi
- Conducted patient surveys and investigated effects of the drug use on the optical transfer function in humans

TEACHING EXPERIENCE

- 04- Duke University, Durham, NC
- Lectured BME 101L/201L/301L, Electrobiolology
 - Developed and lectured BME 248/578, Quantitative Cell and Tissue Engineering
 - Developed and lectured BME265/590/507, Cardiovascular Systems Engineering and Disease
 - Participated in lecturing PHARM 680, Molecular Cardiovascular Biology
 - Participated in lecturing MCB/CBI 208 Stem Cell Biology
 - Participated in lecturing EGR 10, Introduction to Engineering
 - Organized BME 311, Graduate Seminar Series
 - Directly supervised 31 undergraduate, 5 MS, 12 PhD, 2 MD, and 2 MD/PhD students, 10 postdoctoral fellows, 1 senior research scientist, 1 surgery fellow, and 3 laboratory technicians.
 - Graduated 6 PhD and 5 MS students

- Served as a committee member for additional 21 graduate students
- 00-03 Johns Hopkins University, Baltimore, MD
- Supervised 4 undergraduate and 3 graduate students in cardiac electrophysiology and tissue engineering projects
- 97-00 Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA
- Supervised a team of two undergraduate students in the cardiac tissue engineering project
- 94-95 Department of Electrical Engineering, Tufts University, Medford, MA
- Lectured, tutored and graded undergraduate electrical engineering lab courses, including introduction in programming languages, and biomedical instrumentation.
- 93-94 College of Electrical Engineering, University of Belgrade, Belgrade, Yugoslavia
- Tutored undergraduate courses, including advanced mathematics, linear electronics, control systems, and signal processing.

RECENT SERVICE

Member of BME Department Curriculum Committee; Neuroengineering, Biomechanics, Therapeutic Bioengineering, Molecular Bioengineering Faculty Search Committees; Duke IACUC member; President of North Carolina Tissue Engineering and Regenerative Medicine Society (NCTERMS); Co-chair of Tissue Engineering Track, BMES 2014 conference; Organizer of NCTERMS 2014 meeting; Co-director of Regeneration Next, a Duke University initiative in the field of tissue regeneration, 2015-; Advisory Board Member, NPJ Regenerative Medicine, 2016-; Co-organizer of Keystone Symposium on Engineering of Cells and Tissues as Platforms for Discovery and Therapy, 2017.

PROFESSIONAL AFFILIATIONS

Biomedical Engineering Society
 American Heart Association
 Cardiac Electrophysiology Society
 American Physiological Society

JOURNAL REVIEWER (Selected)

Nature; Nature Biotechnology; Nature Medicine; Nature Materials; Nature Methods; Nature Communication; Nature Protocols; Science; Science Translational Medicine; Science Advances, Journal of Clinical Investigation; JCI Insights; Circulation; Circulation Research; Advanced Materials; Advanced Functional Materials; ACS Nano; PNAS; Biomaterials; Stem Cells; FASEB Journal; Cardiovascular Research; Circulation Arrhythmias & Electrophysiology; Journal of Molecular and Cell Cardiology; Hearst Rhythm; Antioxidants & Redox Signaling; Biophysical Journal; Acta Biomaterialia; Stem Cells Translational Medicine; Scientific Reports; Tissue Engineering A,B, C; American Journal of Physiology (Heart and Circulatory Physiology).

GRANT REVIEWER (Selected)

NIH-NIBIB BTSS, standing member, 2012-2016.
 DARPA, ad-hoc reviewer, 2014.
 NIH-NIAMS Muscle and Exercise Physiology, 2014.
 American Heart Association grant review panel, 2007-2012.
 American Heart Association, Chair grant review panel, 2012-2014.
 NIH-NIBIB BTSS grant review panel, 2008-2012.
 NIH-NIAMS SBIR/STTR special emphasis panel, 2010.
 NIH-NHLBI SBIR/STTR special emphasis panel, 2009.
 NIH-NHLBI C-TRIP grant review panel, 2009.

NIH-NHLBI HLBP-1 program project grant review panel, 2010.
Singapore Stem Cell Consortium (SSCC) grant review panel, 2008-2009.
Lytmos/FDOH grant review panel, 2008.
NIH-NHLBI STTR/SBIR grant review panel, 2007.

INVITED SPEAKER

- 1) “Cardiac and Skeletal Muscle Engineering”, Duke-NUS meeting, Duke University, Durham, NC, January 4, 2017.
- 2) “Human Cardiac Tissue Engineering”, AHA Scientific Sessions, New Orleans, LA, November 15, 2016.
- 3) “Bioengineering Cardiac Regeneration”, The 17th Victor Chang International Symposium from Cardiovascular Development to Regenerative Medicine, Sydney, Australia, November 7, 2016.
- 4) “Striated Muscle Engineering and Repair”, Van Andel Research Institute, Grand Rapids, MI, May 11, 2016.
- 5) “Human Myocardial Patch for Heart Repair”, Cardiovascular Tissue Engineering Workshop and Symposium, NHLBI PCBC Consortia meetings, University of Alabama, Birmingham, AL, March 28, 2016.
- 6) “Engineering Patches and Fibroblasts for Cardiac Therapy“, Department of Biomedical Engineering, University of Alabama, Birmingham, AL, March 18, 2016.
- 7) “Engineered Skeletal Muscle as a Platform for Discovery and Therapy”, Department of Biomedical Engineering, University of Virginia School of Medicine, Charlottesville, VA, February 29, 2016.
- 8) “In Vitro Engineered Myocardium for Cardiac Repair” Transdifferentiation and Tissue Plasticity in Cardiovascular Rejuvenation Conference, London, UK, February 7, 2016.
- 9) “Hydrogel-based Engineering of Human Striated Muscles”, Materials Research Society Meeting, Boston, MA, December 3, 2015.
- 10) “Regenerative Therapies for Cardiac and Skeletal Muscle”, Department of Biomedical Engineering, Tulane University, New Orleans, LA, November 19, 2015.
- 11) “Engineered Myocardium as a Platform for Discovery and Therapy”, World Conference on Regenerative Medicine (Keynote speaker), Leipzig, Germany, October 22, 2015.
- 12) “In Vitro Functional Cardiogenesis in 3D”, NIH/NLBI Symposium on Cardiovascular Regenerative Medicine, NIH, Bethesda, MD, September 29, 2015.
- 13) “Human Cardiomimetics in a Dish”, Pfizer, Cambridge, MA, September 25, 2015.
- 14) “Human Contractile Engineered Muscle for Drug and Toxicity Studies”, 8th Annual conference on New Models for Predicting Drug Toxicity, Boston, MA, June 10, 2015.
- 15) “Functional Cardiogenesis in a 3D Fibrin-based Culture Environment”, CIRM Cardiovascular Tissue Engineering Conference, Stanford University, Stanford, CA, May 22, 2015.
- 16) “NRVM and hPSC-CM Tissue Patches and Bundles”, NIH/NHLBI/PCBC Cardiac Tissue Engineering Workshop, Stanford University, Stanford, CA May 21, 2015.
- 17) “Human Engineered Muscle for Drug and Toxicity Testing”, Frontiers Conference, Duke University, Durham, NC, May 18, 2015.
- 18) “Somatic and Stem Cell Engineering for Cardiac Repair”, Division of Cardiology, UCLA, Los Angeles, CA, May 12, 2015.
- 19) “Engineering of Functional Striated Muscles”, Department of Bioengineering, Rice University, Houston, TX, April 21, 2015.
- 20) “Excitable Tissue Engineering and Repair”, Department of Biomedical Engineering, George Washington University, Washington, DC, April 6, 2015.
- 21) “Bioengineered Human Muscle for Physiological Studies and Disease Modeling”, Society for Inherited Metabolic Disorders, 38th annual meeting, Salt Lake City, UT, March 29, 2015.

- 22) "Bioengineering Muscle Function, Regeneration, and Drug Response", MDA Scientific conference (Keynote speaker), Washington, DC, March 11, 2015.
- 23) "Tissue Engineering of Human Striated Muscles", Department of Biomedical Engineering, The University of Texas at Austin, Austin, TX, February 19, 2015.
- 24) "Engineering of Human Excitable Tissues", Department of Biomedical Engineering, Northwestern University, Chicago, IL, Nov 17, 2014.
- 25) "Fibrin-based Cardiac Tissue Engineering", American Heart Association Scientific Sessions, Chicago, IL, Nov 16, 2014.
- 26) "Bioengineering for Striated Muscle Repair" Yale Stem Cell Center, Yale University School of Medicine, New Haven, CT, Nov 11, 2014.
- 27) "Engineering of Functional Skeletal Muscle: From Rats to Humans", Department of Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, September 26, 2014.
- 28) "Cell and Tissue Engineering for Heart Repair", Cardiac Anesthesiology Grand Rounds, Duke University, Durham, NC, September 23, 2014.
- 29) "Human Heart Tissue Engineering for Physiological Studies and Cardiac Repair", 5th International Conference on Tissue Engineering, Koss, Greece, June 22, 2014.
- 30) "Bioengineering Cardiac Regeneration and Repair", Conference on Cardiac Biophysics and Excitable Media Self-organization, Moscow, Russia, May 28, 2014.
- 31) "Building a Mature Heart Muscle in a Dish", Department of Biomedical Engineering, University of California, Berkeley, CA, Dec 4, 2013.
- 32) "High-throughput Contractility Studies in Human Engineered Myocardium", UNC Chapel Hill, NC, Nov 16, 2013.
- 33) "Tissue-engineered Cardiac Mimetics for Experimental Studies and Regenerative Therapy", Emory University and Georgia Institute of Technology, GA, Nov 8, 2013.
- 34) "Engineering Human Somatic Cells for Electrophysiological Studies and Cardiac Repair", BMES conference, Seattle, WA, Sep 26, 2013.
- 35) "iPS Cell-Based Heart Muscle Engineering", BCVS AHA 2013 Scientific Sessions, Las Vegas, CA, July 24, 2013.
- 36) "Engineering Functional Myocardium from Stem Cells", Design of Medical Devices Conference, Minneapolis, MN, Apr 9, 2013.
- 37) "Engineering Cardiac Repair", Cardiovascular Research Center Seminars, Duke University, Durham, NC, Jan 16, 2013.
- 38) "Cardiomyocyte-Fibroblast Interactions in 3-D Engineered Cardiac Tissues", Cardiovascular Research Center Retreat, Duke University, Durham, NC, Jan, 12, 2013.
- 39) "Engineering of Excitable Networks", American Heart Association Scientific Sessions, Los Angeles, CA, Nov 5, 2012.
- 40) "Cardiac Patch from Scratch", The Ohio State University, Columbus, OH, October 19, 2012.
- 41) "Engineering a Highly Functional Skeletal Muscle", 11th New Jersey Symposium on Biomaterials Science, New Brunswick, NJ, October 9, 2012.
- 42) "Bioengineering for Cardiac Repair", University of Washington, Seattle, WA, June 13, 2012.
- 43) "Engineering Excitable Cells from Scratch", Conference on Instabilities and Control in Excitable Networks, Moscow, Russia, May 29, 2012.
- 44) "Functional Maturation of Engineered Cardiac Tissues", Southern Biomedical Engineering Conference, Houston, TX, May 5, 2012.
- 45) "Coaxing Myogenic Stem Cells into Highly Functional Engineered Tissues, CTW, Tissue Engineering and Regenerative Medicine, Columbus, OH, May 3, 2012.
- 46) "Tissue Engineering of Functional Skeletal Muscle", Experimental Biology Symposium, San Diego, CA, April 25, 2012.

- 47) "Cell Therapies for Myocardial Infarction and Arrhythmias", Cardiovascular Research Center Retreat, Durham, NC, January 14, 2012.
- 48) "Designer Cells to Study and Improve Cardiac Function", TRM Forum on Computer Simulation and Experimental Assessment of Cardiac Function, Lugano, Switzerland, December 5, 2011.
- 49) "Regulation of Fibroblast Function by Myocytes: Distal and Physical Contact", American Heart Association Scientific Sessions, Orlando, FL, November 15, 2011.
- 50) "Highly Functional Stem Cell-derived Cardiac Tissues", NHLBI Symposium on Cardiovascular Regenerative Medicine, Bethesda, MD, October 5, 2011.
- 51) "Electromechanically Functional Myocardium from Mouse Embryonic Stem Cells", TERMIS EU, Granada, Spain, June 8, 2011.
- 52) "Effects of Non-cardiomyocytes on Cardiac Function", Division of Cardiology, NYU Medical School, New York, NY, May 20, 2011.
- 53) "Controlling Engineered Tissue Structure and Function in 2 and 3 Dimensions", TWIns, Tokyo, Japan, March 3, 2011.
- 54) "Mesoscopic Hydrogel Molding for Generation of a Highly Functional Myocardial Patch", 10th Congress of Japanese Society for Regenerative Medicine, Tokyo, Japan, March 1, 2011.
- 55) "Somatic and Stem Cell Engineering Therapies for Excitable Tissue Repair", Biomedical Engineering Seminar, Johns Hopkins University, Baltimore, MD, January, 24, 2011.
- 56) "Engineering Functional Myocardium from Cardiac and Cardiovascular Progenitors", TERMIS-NA, Annual Conference and Exposition, San Diego, CA, December 6, 2010.
- 57) "How to Turn Fibroblasts into an Actively Conducting Tissue", iCeMS International Symposium, Kyoto, Japan, December 2, 2010.
- 58) "Engineering Excitable Tissues from Unexcitable Cells", Carolina Biophysics Symposium, Chapel Hill, NC, November 4, 2010.
- 59) "Coaxing Stem Cells into a Highly Functional Cardiac Tissue", 6th Annual Stem Cell Research & Therapeutics Conference, Boston, MA, May 28, 2010.
- 60) "Somatic Cell Therapies for Cardiac Repair", Heart Rhythm Society, Scientific Sessions Denver, CO, May 13, 2010.
- 61) "Engineering a Three-dimensional Structure: Are We There Yet?", American Heart Association Scientific Sessions, Orlando, FL, November 17, 2009.
- 62) "Roles of Tissue Structure and Heterocellular Interactions in Cardiac Electrical Function", Department of Physiology and Biophysics, Case Western University, Cleveland, OH, November 2, 2009.
- 63) "Stem Cells and Engineered Tissues for Functional Heart Repair", MetroHealth Medical Center, Case Western University, Cleveland, OH, November 3, 2009.
- 64) "Stem Cell-based Cardiac Therapies In Vitro: Interaction Begets Function", Cardiovascular Research Center Seminar Series, Massachusetts General Hospital, Boston, MA, September 22, 2009.
- 65) "Cardiac Cell and Tissue Engineering Using Stem Cells", Department of Biomedical Engineering, Northwestern University, Chicago, IL, May 21, 2009.
- 66) "Imaging Engineered Tissue Constructs", Heart Rhythm Society, Scientific Sessions, Boston, MA, May 16, 2009.
- 67) "Cardiac Cell and Tissue Engineering and Electrophysiology", Department of Biomedical Engineering, Washington University in St. Louis, St. Louis, MO, April 26, 2009.
- 68) "Engineering Cardiac Structure-Function Relationships in 2 and 3 Dimensions", March 26, Center for Arrhythmia Research, University of Michigan, Ann Arbor, MI, March 26, 2009.
- 69) "Cell and Tissue Engineering for Basic Cardiac Research and Therapeutic Applications", Biomedical Engineering Department, Cornell University, Ithaca, NY, March 11, 2009.
- 70) "Cell and Tissue Engineering Therapies for Heart Disease", Graduate Seminar Series, Duke University, Durham, NC, January 12, 2009.

- 71) "In Vitro Assays for Studying the Capacity of Donor Cells to Repair Cardiac Tissue Damage", AHA Scientific Sessions, New Orleans, LO, November 7, 2008.
- 72) "Cardiac Electrophysiology in a Dish", Cardiovascular Symposium, Duke University, NC, June 2, 2008.
- 73) "Using Cell and Tissue Engineering to Aid Stem Cell Therapies for Heart Disease", NYU Cardiology Grand Rounds, New York, NY, Mar 14, 2008.
- 74) "Designing a Cardiac Tissue Patch with Native Structure and Function", The Institute of Biological Engineering Annual Conference, Chapel Hill, NC, March 7, 2008.
- 75) "Towards Rational Design of Cardiac Cell Therapies", Miller School of Medicine, University of Miami, Miami, FL, January 31, 2008.
- 76) "Design of 2-D and 3-D Cardiac Tissues with Controllable Architecture and Function", Gordon's Research Conference on Cardiac Arrhythmia Mechanisms, Ventura, CA, Mar 20, 2007.
- 77) "Controlling the Engineered Cardiac Tissue Architecture and Function in Two and Three Dimensions", Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, Dec 4, 2006.
- 78) "Cardiomyoplasty: Prospect of Human Stem Cells", North Carolina Tissue Engineering Interest Group, Raleigh, Durham, NC, October 17, 2005.
- 79) "Experimental and Computational Studies on Complex Spiral Waves in 2-D Cardiac Substrates", American Physics Society, Los Angeles, CA, March 25, 2005.
- 80) "Cardiac Arrhythmias in Cell Cultures with Controllable Architecture, Weill Medical College, Cornell University, New York, NY, April 12, 2004.
- 81) "Engineering 2- and 3-Dimensional Cardiac Tissues with Anisotropic Architecture", North Carolina Tissue Engineering Interest Group, Raleigh, Durham, NC, September 30, 2004.
- 82) "Engineering the Synthetic Heart Tissues with Predefined Geometry and Function, Duke University Durham, NC, September 5, 2003.
- 83) "Engineering Synthetic 2- and 3-Dimensional Networks of Cardiac Cells with Predefined Architecture and Electrophysiological Function", Guidant, St. Paul, MN, April 17, 2003.
- 84) "Designing the 2- and 3-Dimensional Cardiac Cell Networks with Predefined Structure-Function Relationships", HST/MIT, Boston, MA, March 3, 2003.
- 85) "Engineering the 2- and 3-Dimensional Cardiac Muscle Tissues with Controlled Structure-Function Relationships", Duke University, Durham, NC. February 6, 2003
- 86) "Use of Engineered 3-D Cardiac Tissue to Study Electrophysiology of Cardiac Muscle", BMES Annual Meeting, Seattle, WA, October 13, 2000.
- 87) "Engineered Cardiac Tissues: Models for Electrophysiological Studies", Langer's Seminar Series, Massachusetts Institute of Technology, Cambridge, MA, May 23, 2000.
- 88) "Engineered Cardiac Tissue: Model System for Functional Studies of Cardiac Muscle", Advanced Tissue Sciences, La Jolla, CA. March 24, 2000.
- 89) "Cardiac Muscle Tissue Engineering", Department of Biomedical Engineering, Johns Hopkins University, February 7, 2000.

PUBLICATIONS

- 1) Liao, B., Jackman, C.P., Li, Y., **Bursac, N.** (2017) "Developmental Stage-dependent Effects of Cardiac Fibroblasts on Function of Stem Cell-derived Engineered Cardiac Tissues", *accepted in Scientific Reports*.
- 2) Gokhale, T., Kirkton, R.D., **Bursac, N.**, Henriquez, C.S. (2016) "Modeling an Excitable Biosynthetic Tissue with Inherent Variability for Paired Computational-Experimental Studies", *accepted in PLOS Computational Biology*.
- 3) Li, Y., Dal-Pra, S., Mirotsov, M., Jayawardena, T.M., Hodgkinson, C.P., **Bursac, N***, Dzau, V.J*. (2016) "Tissue-engineered 3-dimensional (3D) Microenvironment Enhances the Direct

- Reprogramming of Fibroblasts into Cardiomyocytes by MicroRNAs”, *Scientific Reports*, Vol. 6, 38815. *, equally contributing.
- 4) Nguyen, H., Kirkton, R.D., Bursac, N. (2016) “Engineering Prokaryotic Channels for Control of Mammalian Tissue Excitability”, *Nature Communications*, Vol. 7, 13132.
 - 5) Jackman, C.P., Carlson, A.C., **Bursac, N.** (2016) “Dynamic Culture Yields Engineered Myocardium with Near-adult Functional Output”, *Biomaterials*, Vol. 111:66-79.
 - 6) Shadrin, I.Y., Khodabukus, A., **Bursac, N.** (2016) “Striated Muscle Function, Regeneration, and Repair”, *Cell Mol Life Sci*, Vol. 73(22):4175-4202.
 - 7) Ogle, B.M., **Bursac, N.**, Domian, I., Huang, N.F., Menasché, P., Murry, C.E., Pruitt, B., Radisic, M., Wu, J.C., Wu, S.M., Zhang, J., Zimmermann, W.H., Vunjak-Novakovic, G. (2016) “Distilling complexity to advance cardiac tissue engineering”, *Sci Transl Med*, Vol. 8(342):13.
 - 8) Cheng, C.S., Ran, L., **Bursac, N.**, Kraus, W.E., Truskey, G.A. (2016) "Cell Density and Joint MicroRNA-133a and MicroRNA-696 Inhibition Enhance Differentiation and Contractile Function of Engineered Human Skeletal Muscle Tissues", *Tissue Eng Part A*. Vol. 22(7-8):573-83.
 - 9) Juhas, M., Ye, J., **Bursac, N.** (2016) "Design, Application, and Evaluation of Engineered Skeletal Muscle", *Methods*. Vol. 99:81-90.
 - 10) Zhang, H., Sun, A.Y., Kim, J.J., Graham, V., Finch, E.A., Nepliouev, I., Zhao, G., Li, T., Lederer, W.J., Stiber, J.A., Pitt, G.S., **Bursac, N.**, Rosenberg, P.B. (2015) "STIM1-Ca²⁺ Signaling Modulates Automaticity of the Mouse Sinoatrial Node", *Proc Natl Acad Sci U S A*. Vol. 112(41):E5618-27
 - 11) **Bursac, N.**, Juhas, M., Rando, T.A. (2015) "Synergizing Engineering and Biology for Treatment and Modeling of Skeletal Muscle Injury and Disease", *in press, Ann. Rev. Biomed. Eng.* Vol. 17:217-42.
 - 12) Shadrin, I.*, Yoon, W.*, Shepherd, N., Li, L., and **Bursac, N.** (2015) "Rapid Fusion between Mesenchymal Stem Cells and Cardiomyocytes Yields Non-contractile Electrically Active Hybrid Cells", *Scientific Reports*. Vol. 5:12043. *, equally contributed.
 - 13) Madden, L., Juhas, M., Kraus, W, Truskey, G, and **Bursac, N.** (2015) "Bioengineered Human Myobundles Mimic Clinical Response of Skeletal Muscle to Drugs", *eLIFE*. Vol. 4:e04885.
 - 14) Jackman, C.P., Shadrin, I.Y., Carlson, A.L., **Bursac, N.** (2015) "Human Cardiac Tissue Engineering: From Pluripotent Stem Cells to Heart Repair", *Curr Opin Chem Eng*. Vol. 7:57-64.
 - 15) Wang, L., Liu, Z., Yin C., Asfour, H., Chen, O., Li, Y., **Bursac, N.**, Liu, J., Li, Q. (2015) “Stoichiometry of Gata4, Mef2c and Tbx5 Influences the Efficiency and Quality of iCM Reprogramming”, *Circ. Res*. Vol. 116(2):237-44.
 - 16) Juhas, M., **Bursac, N.** (2014) "Roles of Adherent Myogenic Cells and Dynamic Culture in Engineered Muscle Function and Maintenance of Satellite Cells", *Biomaterials*. Vol. 35(35):9438-46.
 - 17) Nguyen, H., Badie, N., McSpadden, L.C., Pedrotty, D.M., and **Bursac, N.** (2014) "Quantifying Electrical Interactions between Cardiomyocytes and Other Cells in Micropatterned Cell Pairs", *Methods in Molecular Biology*. Vol. 1181:249-62.
 - 18) **Bursac, N.** (2014) "Cardiac Fibroblasts in Pressure Overload Hypertrophy: The Enemy within?", *J Clin Invest*. Vol. 124(7):2850-3.
 - 19) Cheng, C.S., Davis, B., Madden, L., **Bursac, N.**, and Truskey, G.A. (2014) "Physiology and Metabolism of Tissue Engineered Skeletal Muscle", *Exp Biol Med (Maywood)*. Vol. 239(9):1203-14.
 - 20) Hsiai, T., Li, S, **Bursac, N.** (2014) “Introduction to Special Issue on Tissue Engineering and Regenerative Medicine”, *Annals of BME*. Vol. 42(7):1355-6.
 - 21) Juhas, M., Engelmayr, Jr. G.C., Fontanella, A.N., Palmer, G.M., and **Bursac, N.** (2014) "Biomimetic Engineered Muscle with Capacity for Vascular Integration and Functional Maturation *In Vivo*", *Proc Natl Acad Sci U S A*. Vol.111(15):5508-13.
 - 22) Bian, W., Liau, B., Badie, N., Himmel, H.D. IV, **Bursac, N.** (2014) "Robust T-tubulation and Maturation of Cardiomyocytes Using Tissue-Engineered Epicardial Mimetics", *Biomaterials* Vol. 35(12):3819-28.
 - 23) Bian, W., Jackman, C.P., and **Bursac, N.** (2014) "Controlling the Structural and Functional Anisotropy of Engineered Cardiac Tissues", *Biofabrication* Vol. 10;6(2):024109.

- 24) Farah, B., Madden, L., Songtao Li, S., Nance, S., Bird, A., **Bursac, N.**, Yen, P.M., Young, S.P., Koeberl, D.D. (2014) "Adjunctive β 2-Agonist Treatment Reduces Glycogen Independently of Receptor-Mediated Acid α -Glucosidase Uptake in the Limb Muscles of Mice With Pompe Disease", *FASEB J.* Vol. 28(5):2272-2280.
- 25) Rangarajan, S., Madden, L., **Bursac, N.** (2014) "Use of Flow, Electrical, and Mechanical Stimulation to Promote Engineering of Striated Muscles", *Annals of BME.* Vol. 42(7):1391-405.
- 26) Kirkton, R.D., Badie, N., **Bursac, N.** (2013) "Spatial Profiles of Electrical Mismatch Determine Vulnerability to Conduction Failure across a Host-Donor Cell Interface", *Circulation, A&E*, Vol. 6(6): 1200-7.
- 27) Truskey, G.A., Achneck, H., **Bursac, N.**, Chang, V., Cheng, C.S., Fernandez, C., Hong, S., Jung, Y., Koves, T., Kraus, W., Leong, K., Madden, L., Reichert W.M., Zhao, X. (2013) "Design Considerations for an Integrated Microphysiological Muscle Tissue for Drug and Tissue Toxicity Testing", *Stem Cell Research & Therapy*, 4 Supplem 1:S10.
- 28) Christoforou, N., Liau, B., Chakraborty, S., Chellapan, M., **Bursac, N.**, Leong, K.W. (2013) "Induced Pluripotent Stem Cell-Derived Cardiac Progenitors Differentiate to Cardiomyocytes and Form Biosynthetic Tissues ", *PLoS ONE*, Vol. 8(6):e65963.
- 29) Juhas, M., **Bursac, N.** (2013) "Engineering Skeletal Muscle Repair", *Current Opinion in Biotechnology*, vol. 24(5):880-6.
- 30) Jiang, W., Zhang, D., **Bursac, N.**, Zhang, Y. (2013) "WNT3 is a Biomarker Capable of Predicting Definitive Endoderm Differentiation Potential of hESCs", *Stem Cell Reports*, Vol. 1:46-52.
- 31) Christoforou, N., Chellappan, M., Adler, A.F., Kirkton, R.D., Wu, T., Addis, R.C., **Bursac, N.**, Leong, K.W. (2013) " Transcription Factors MYOCD, SRF, Mesp1 and SMARCD3 Significantly Enhance the Cardio-inducing Effect of GATA4, TBX5, and MEF2C During Direct Cellular Reprogramming", *PLoS ONE*, Vol. 8(5):e63577.
- 32) Zhang, D., Shadrin, I., Lam, J., Xian, H-Q., Snodgrass, R., and **Bursac, N.** (2013) "3D Tissue-engineered Cardiac Patch for Advanced Functional Maturation of Human ESC-derived Cardiomyocytes", *Biomaterials*, Vol. 34(23):5813-20.
- 33) Kirkton R.D., **Bursac, N.**, (2012) "Genetic Engineering of Somatic Cells to Study and Improve Cardiac Function", *Europace*, Suppl. 5:v40-v49.
- 34) McSpadden, L.C., Nguyen H., **Bursac, N.**, (2012) "Size and Ionic Currents of Unexcitable Cells Coupled to Cardiomyocytes Distinctly Modulate Cardiac Action Potential Shape and Pacemaking Activity in Micropatterned Cell Pairs", *Circulation, A&E.* Vol.5(821-830).
- 35) Esch, G., Muller-Borer, B., Aldina, R., Yoon, W., Fox, R., **Bursac, N.**, Hiller, S., Maeda, N., Shepherd, N., Hutson, M., Jin, J., Anderson, P.A.W., Kirby, M.L., and Malouf, N. (2012) " Calcium dependent CAMTA1in Adult Stem Cell Commitment to a Myocardial Lineage", *Plos One*, Vol. 7(6):e38454.
- 36) **Bursac, N.** (2012) "Colonizing the Heart from The Epicardial Side", *Stem Cell R&T.* Vol. 3(2):15.
- 37) Piacentino, V., Bolanos, M., Schroeder, J., Messina, E., Jones, E., Krol, A., **Bursac, N.**, Devi, G., Mao, L., Samulski, J.R., Milano, C.A., Bowles, D.A. (2012) "XIAP Mediated Attenuation of Apoptosis Using a Novel Cardiac Enhanced Adeno-associated Viral Vector", *Human Gene Therapy.* Vol. 23(6):635-46.
- 38) Bian, W.B., Juhas, M., Pflieger, T.W., **Bursac, N.** (2012) "Local Tissue Geometry Determines Contractile Force Generation of Engineered Muscle Networks", *Tissue Engineering A.* Vol. 18(9-10):957-67.
- 39) Scull, J.A., McSpadden, L.C., Badie, N., Himel IV, H.D., **Bursac, N.** (2012) " Single-detector Simultaneous Optical Mapping of V_m and $[Ca^{2+}]_i$ in Cardiac Monolayers ", *Annals of Biomedical Engineering*, Vol. 40(5):1006-17.
- 40) Liau, B., Zhang, D., **Bursac, N.** (2012) "Functional Cardiac Tissue Engineering", *Regenerative Medicine*, Vol. 7(2):187-206.

- 41) Badie, N., Scull, J.A., Klinger, R.Y., Krol, A., **Bursac, N.** (2012) "Conduction Block in Micropatterned Cardiomyocyte Cultures Replicating The Structure of Ventricular Cross-sections", *Cardiovascular Research*, Vol. 93(2):263-71.
- 42) Bian, W.B., **Bursac, N.** (2012) "Soluble Mini-agrin Enhances Contractile Function of Engineered Skeletal Muscle", *FASEB J.* Vol. 26(2):955-65.
- 43) Liao, B., Christoforou, N., Leong, K.W., **Bursac, N.** (2011) "Pluripotent Stem Cell-Derived Cardiac Tissues with Advanced Structure and Function", *Biomaterials*, Vol.32(35), p. 9180-9187.
- 44) Wang, C., Hennessey, J.A., Kirkton, R.D., Wang, C., Graham V., Puranam R.S., McNamara, J.O., Rosenberg, P.B., **Bursac, N.**, and Pitt, G.S. (2011) "Fibroblast Growth Factor Homologous Factors Regulate Na⁺ Channels and Conduction Velocity in Rodent Heart", *Circulation Research*, Vol. 109(7), p. 775-782.
- 45) Kirkton R.D., **Bursac, N.** (2011) "Engineering Biosynthetic Excitable Tissues from Unexcitable Cells for Electrophysiological and Cell Therapy Studies", *Nature Communications*, Vol. 2, p. 300-308.
- 46) Lin, N., Badie, N., Yu, L., Abraham, D., Cheng, H., **Bursac, N.**, Rockman, H.A., Wolf, M.J. (2011) "A Method to Measure Myocardial Calcium Handling in Drosophila", *Circulation Research*, Vol. 108(11), p. 1306-15.
- 47) Hinds, S., Bian, W., Dennis, R.G., **Bursac, N.** (2011) The Role of Extracellular Matrix Composition in Structure and Function of Bioengineered Skeletal Muscle", *Biomaterials*, Vol. 32, p. 3575-83.
- 48) Shaked, N.T., Satterwhite, L.L., **Bursac, N.**, Wax, A. (2010) "Whole-cell-analysis of Live Cardiomyocytes Using Wide-field Interferometric Phase Microscopy", *Biomed Opt Express*, Vol. 1(2), p. 706-719.
- 49) Christoforou, N., Oskouei, B.N., Estes, P., Hill, C.M., Zimmet, J.M., Bian, W., **Bursac, N.**, Leong, K.W. Hare, J.M., Gearhart, J.D. (2010) "Implantation of Mouse Embryonic Stem Cell-derived Cardiac Progenitor Cells Preserves Function of Infarcted Murine Hearts", *Plos One*, Vol. 5(7), p. e11536.
- 50) Shaked, N.T., Zhu, Y., Badie, N., **Bursac, N.**, Wax, A. (2010) "Reflective Interferometric Chamber for Quantitative Phase Imaging of Biological Sample Dynamics", *Journal of Biomedical Optics*, Vol. 15(3), p. 030503.
- 51) Tranquillo, J.V., Badie, N., Henriquez, C.S., **Bursac, N.** (2010) "Collision-based Spiral Acceleration in Cardiac Media: Roles of Wavefront Curvature and Excitable Gap", *Biophysical Journal*, Vol. 98(7), p. 1119-1128.
- 52) Jong, M.K., **Bursac, N.**, Henriquez, C.S. (2010) "A Computer Model of Engineered Cardiac Monolayers", *Biophysical Journal*, Vol. 98(9), p. 1762-1771.
- 53) **Bursac, N.**, Kirkton, R.D., McSpadden, L., Liao, B. (2010) "Characterizing Functional Stem Cell-Cardiomyocyte Interactions", *Regenerative Medicine*, Vol. 5(1), p. 87-105.
- 54) Badie, N., Satterwhite, L., **Bursac, N.** (2009) "A Method to Replicate the Microstructure of Heart Tissue Cross-sections Using DTMRI-based Cell Micropatterning", *Annals of Biomedical Engineering*, Vol. 37(12), p. 2510-2521.
- 55) Bian, W., Liao, B., Badie, N., **Bursac, N.** (2009) "Mesoscopic Hydrogel Molding to Control the 3D Geometry of Bioartificial Muscle Tissues", *Nature Protocols*, Vol. 4(10), p. 1522-1534.
- 56) McSpadden, L.C., Kirkton, R.D., **Bursac, N.** (2009) "Electrotonic Loading of Anisotropic Cardiac Monolayers by Unexcitable Cells Depends on Connexin Type and Expression Level", *American Journal of Physiology (Cell Physiol)*, Vol. 297(2), p. C339-351.
- 57) Pedrotty, D.M., Klinger, R.Y., Kirkton, R.D., **Bursac N.** (2009) "Cardiac Fibroblast Paracrine Factors Alter Ion Channel Expression and Electrical Propagation of Neonatal Rat Cardiomyocytes in Vitro", *Cardiovascular Research*, Vol. 83(4), p. 688-697.
- 58) Badie, N., **Bursac, N.** (2009) "Novel Micropatterned Cardiac Cell Cultures with Realistic Ventricular Microstructure", *Biophysical Journal*, Vol. 96(9), p. 3873-3885.
- 59) **Bursac N.** (2009) "Cardiac Tissue Engineering Using Stem Cells", *IEEE Engineering in Medicine and Biology Magazine*, Vol. 28(2), p. 80-86.

- 60) Bian, W., **Bursac, N.** (2009) "Engineered Skeletal Muscle Tissue Networks with Controllable Architecture", *Biomaterials*, Vol. 30(7), p. 1401-1412.
- 61) Liao, I-C., Liu, J.B., **Bursac, N.**, Leong, K.W. (2008) "Effect of Electromechanical Stimulation on the Maturation of Myotubes on Aligned Electrospun Fibers", *Cellular and Biomolecular Engineering*, Vol. 1(2-3), p. 133-145.
- 62) Bian, W., **Bursac, N.** (2008) "Tissue Engineering of Functional Skeletal Muscle: Challenges and Recent Advances", *IEEE Engineering in Medicine and Biology Magazine*, Vol. 27(5), p. 109-113.
- 63) Pedrotty, D.M., Badie, N., Klinger, R., Kardashian, A., Hinds, S., **Bursac, N.** (2008) "Structural Coupling between Cardiomyocytes and Non-cardiomyocytes: Quantitative Comparisons Using a Novel Micropatterned Cell Pair Assay", *American Journal of Physiology (Heart and Circ Physiol)*, Vol. 295(1), p. H390-H400.
- 64) Kirkton, R.D., **Bursac, N.** (2008) "Genetic Engineering and Stem cells: Combinatorial Approaches for Cardiac Cell Therapy", *IEEE Engineering in Medicine and Biology Magazine*, Vol. 27(3), p. 85-88.
- 65) Klinger, R., **Bursac, N.** (2008) "Cardiac Cell Therapy In Vitro: Reproducible Assays for Comparing the Efficacy of Different Donor Cells", *IEEE Engineering in Medicine and Biology Magazine*, Vol. 27(1), p. 72-80.
- 66) **Bursac, N.** (2007) "Stem Cell Therapies for Heart Disease: Why Do We Need Bioengineers?", *IEEE Engineering in Medicine and Biology Magazine*, Vol. 26(4), p. 76-79.
- 67) **Bursac, N.**, Loo, Y., Leong, K.W., Tung, L. (2007) "Novel Anisotropic Engineered Cardiac Tissues: Studies of Electrical Propagation", *Biochemical and Biophysical Research Communications*, Vol. 361(4), p. 847-853.
- 68) Zhang, Z.S., Tranquillo, J., Naplioueva, V., **Bursac, N.**, Grant, A.O. (2007) "Sodium Channel Kinetics Changes that Produce Brugada Syndrome or Progressive Cardiac Conduction System Disease", *American Journal of Physiology (Heart and Circulatory Physiology)*, 292(1), p. H399-407.
- 69) Tranquillo, J.V., **Bursac, N.** (2006) "The Role of Restitution in Pacing Induced Spiral Wave Acceleration", *Conf Proc IEEE Eng Med Biol Soc.* Vol. 1, p. 3919-3922.
- 70) Sathaye, A., **Bursac, N.**, Sheehy, S., Tung, L. (2006) "Electrical Pacing Stabilizes Developmental Changes in Action Potential and Conduction Velocity of Cultured Neonatal Rat Ventricular Myocyte Monolayers", *Journal of Molecular and Cellular Cardiology*, Vol. 41(4), p. 633-641.
- 71) **Bursac, N.**, Tung, L. (2006) "Acceleration of Functional Reentry by Rapid Pacing in Uniformly Anisotropic Monolayers of Cardiac Myocytes: Formation of Novel Multi-Wave Functional Reentries", *Cardiovascular Research*, Vol. 69(2), p. 381-390.
- 72) Pedrotty, D., **Bursac, N.**, "Cardiomyoplasty: Prospect of Human Stem Cells" (2005), *IEEE Engineering in Medicine and Biology Magazine*, Vol. 24(3), p. 125-127.
- 73) Kong, CR., **Bursac, N.**, Tung, L. (2005) "Mechanoelectrical Excitation by Fluid Jets in Monolayers of Cultured Cardiac Myocytes. *J Appl Physiol*, Vol. 98(6), p. 2328-2336.
- 74) **Bursac, N.**, Aguel, F., Tung, L. (2004) "Multi-arm Spirals in a Two-Dimensional Cardiac Substrate", *Proceedings of National Academy of Science*, Vol. 101(43), p. 15530-15534.
- 75) **Bursac, N.**, Papadaki, M., White, J.A., Eisenberg, S.R. Vunjak-Novakovic, G., Freed, L.E. (2003) "Cultivation in Rotating Bioreactors Promotes Maintenance of Cardiac Myocyte Electrophysiology and Molecular Properties", *Tissue Engineering*, Vol. 9(6), p. 1243-1253.
- 76) Iravanian, S., Nabutovsky, Y., Kong, C., Saha, S., **Bursac, N.**, Tung, L. (2003) "Functional Reentry in Monolayers of Neonatal Rat Cardiac Cells", *American Journal of Physiology (Heart and Circ Physiol)*, Vol. 285(1), p. H449-456.
- 77) **Bursac, N.**, Parker, K., Iravanian, S., Tung, L. (2002) "Cardiomyocyte Cultures with Controlled Macroscopic Anisotropy: A Model for Functional Electrophysiological Studies of Cardiac Muscle", *Circulation Research*, Vol. 91, p. e45-e54.
- 78) **Bursac, N.**, Loo, Y., Irby, M.E., Leong, K.W., Tung, L. (2002) "Polymer Scaffolds for Anisotropic Growth of Engineered Cardiac Tissue", in *Biomedical Engineering: Recent Developments.* p. 141-142. Vossoughi, J. (Editor).

- 79) Kong, C., Parker, K.K., Sathaye, A., **Bursac, N.**, Entcheva, E., Tung L. (2002) "2,3-butanedione monoxime (BDM) Alters Wavefront Propagation and Functional Anisotropy in Micropatterned Neonatal Rat Cardiac Myocytes", in *Biomedical Engineering: Recent Developments*. p. 259-260. Vossoughi, J. (Editor).
- 80) Aljuri, A.N., **Bursac, N.**, Marini, R., Cohen, R.J. (2001) "System Identification of Dynamic Closed-Loop Control of Total Peripheral Resistance by Arterial and Cardiopulmonary Baroreceptors", *Acta Astronautica* Vol. 49 (3-10), p. 167-170.
- 81) Papadaki, M.*, **Bursac, N.***, Langer, R., Merok J., Vunjak-Novakovic, G., Freed, L.E., (2001) "Tissue Engineering of Functional Cardiac Muscle: Molecular, Structural and Electrophysiological Studies", *American Journal of Physiology (Heart and Circ Physiol)*, Vol. 280(1), p. H168-178 (*equally contributing authors).
- 82) Carrier, R., Papadaki, M., **Bursac, N.**, Langer, R., Vunjak-Novakovic, G., Freed, L. (1999) "Cardiac Tissue Engineering: Cell Seeding, Cultivation Parameters, and Tissue Construct Characterization", *Biotechnology and Bioengineering*, Vol. 64(5), p. 580-589.
- 83) **Bursac, N.***, Papadaki, M.*, Cohen, R.J., Schoen, F.J., Eisenberg, S.R., Carrier, R., Vunjak-Novakovic, G., Freed, L.E. (1999) "Cardiac Muscle Tissue Engineering: Towards an *In Vitro* Model for Electrophysiological Studies", *American Journal of Physiology, (Heart and Circ Physiol 46)*, Vol. 277, p. H433-444. (*equally contributing authors).
- 84) Shadrin, I.Y., Carlson, A.L., Juhas. M., Allen, B.W., Qian Y., **Bursac, N.** (2016) "Cardiopatch: Platform for Engineering Large, Mature Heart Tissues from Human Pluripotent Stem Cells", *in review*.
- 85) Bassat, E., Mutlak, Y.E., Genzelinakh, A., Shadrin, I.Y., Baruch-Umansky, K., Yifa, O., Kain, D., Rajchman, D., Leach, J., Riabov, D., Udi, Y., Sarig, R., Sagi, I., Martin, J.F., **Bursac, N.**, Cohen, S., Tzahor, E. (2017) "The Extracellular Matrix Protein Agrin Promotes Heart Regeneration in Mice", *in review*.
- 86) Polstein, L.R., Juhas, M., Hanna, G., **Bursac, N.**, and Gersbach, C.A. (2017) "An Engineered Optogenetic Switch for Spatiotemporal Control of Gene Expression, Cell Differentiation, and Tissue Morphogenesis", *submitted*.

BOOK CHAPTERS

- 1) Nguyen, H., Badie, N., McSpadden, L.C., Pedrotty, D.M., **Bursac, N.** (2014) "Quantifying Electrical Interactions between Cardiomyocytes and Other Cells in Micropatterned Cell Pairs" in *Methods in Molecular Biology*, Radisic, M., and Black, L.D. (editors)
- 2) Engelmayr, G., Zhang, D., **Bursac, N.** (2013) "Maturation of Functional Cardiac Tissue Patches" in *Cardiac Regeneration and Repair, Volume II: Biomaterials and Tissue Engineering*, Li, R-K., and Weisel, R.D. (editors).
- 3) Bian, W., Juhas, M., **Bursac N.** (2013) "Functional Skeletal Muscle Tissue Engineering" in *Tissue and Organ Regeneration: Advances in Micro and Nanotechnology*, Zhang, L.J., Khademhosseini, A., and Webster, T. (editors).
- 4) **Bursac N.**, Kim, J. (2013) "Cardiac Fibroblasts and Arrhythmogenesis" in *Cardiac Electrophysiology: From Cell to Bedside*, Zipes, D.P. and Jalife, J. (editors) 5th edition.
- 5) **Bursac, N.** (2006) "Cardiac Tissue Engineering: Matching Native Architecture and Function to Develop Safe and Efficient Therapy", *The Biomedical Engineering Handbook, Tissue Engineering and Artificial Organs*, Bronzino, J.D. (editor) 3rd edition, Chapter 56, p. 1-24.
- 6) Tung, L., **Bursac, N.**, Aguel, F. (2004) "Rotors and Spiral Waves in Two Dimensions", *Cardiac Electrophysiology: From Cell to Bedside*, Zipes, D.P. and Jalife, J. (editors) 4th edition, p. 336-344

CONFERENCE PRESENTATIONS

- 1) Nguyen, H., Bursac, N. "Engineering Prokaryotic Sodium Channels for Generation and Control of Mammalian Tissue Excitability", AHA Scientific Sessions, New Orleans, LA, 2016.
- 2) Juhas, M., Qian, J., Bursac, N. "Muscle-macrophage Tissues for Improved Muscle Regeneration In

- Vitro and In Vivo”, BMES Annual Meeting, Minneapolis, MN, 2016.
- 3) Weinberg, S.H., Bjergaard, S.S., Bursac, N. “Intercalated Disk Localization of the Inward Rectifier Current (IK1) Modulates Cardiac Conduction”, BMES Annual Meeting, Minneapolis, MN, 2016.
 - 4) Bjergaard, S.S., Hoffman, B., Bursac, N. “Ion Channel Expression and Distribution are Modulated by Phosphorylation of Focal Adhesion Kinase”, BMES Annual Meeting, Minneapolis, MN, 2016.
 - 5) Rao, L., Bursac, N. “Generation of functional skeletal muscle tissues from human pluripotent stem cells (hPSCs)”, BMES Annual Meeting, Minneapolis, MN, 2016.
 - 6) Wang, J., Juhas, M., Khodabukus, A., Bursac, N. “Engineered Human Skeletal Muscle Tissues with Maintained Satellite Cell Pool”, BMES Annual Meeting, Minneapolis, MN, 2016.
 - 7) Shadrin, I.Y., Carlson, A.L., Bursac, N. “Maturation and Vascularization of Tissue-engineered Human Myocardium”, Weinstein Conference on Cardiovascular Development and Regeneration, Durham, NC 2016.
 - 8) Jackman, C., Ganapathi, A., Asfour, H., and Bursac, N. “Heart Repair via Epicardial Implantation of Tissue-engineered Cardiac Patch: Studies of Electrical Function and Integration”, Weinstein Conference on Cardiovascular Development and Regeneration, Durham, NC 2016.
 - 9) Juhas, M. and Bursac, N. “Engineering Self-regenerative Muscle Tissue”, RegenerationNEXT Community Meeting, Durham, NC, 2016.
 - 10) Madden, L.R., Jackman, C.P., Wang, J., Kraus, W.E., Truskey, G.A., Bursac, N. “Novel In Vitro Exercise Model of Engineered Human Skeletal Muscle”, TERMIS World Conference, Boston, MA, 2015.
 - 11) M. Juhas, J. Ye, and N. Bursac. “Engineering Regenerative Skeletal Muscle Tissues”, TERMIS World Conference, Boston, MA, 2015.
 - 12) Jackman C, Bursac N. “Hypertrophy of Neonatal Cardiomyocytes in 3D Engineered Cardiac Tissue Induced by Activation of mTOR Signaling”. AHA Scientific Sessions, Orlando, FL, 2015.
 - 13) Shadrin IY, Carlson AL, Bursac N. “Early 3D Culture Promotes Functional Maturation of hPSC-derived Cardiomyocytes”, BMES Annual Meeting, Tampa, FL, 2015.
 - 14) Nguyen, H., Kirkton, R., Bursac, N. “Engineering Primary Human Fibroblasts with Customizable Electrical Phenotypes”, BMES Annual Meeting, Tampa, FL, 2015.
 - 15) Li, Y.*, Dal-Pra, S.*, Jayawardena, T., Hodgkinson, C.P., Mirotsov, M., Dzau, V.J.*, Bursac, N*. “3D Tissue-engineered Microenvironment Enhances Efficiency of Direct Cardiac Reprogramming”, BMES Annual Meeting, Tampa, FL, 2015.
 - 16) Sengupta-Bjergaard, S. Hoffman, B., Bursac, N. “Focal Adhesion Size Correlates With Membrane Ion Channel Distribution and Expression”, BMES Annual Meeting, Tampa, FL, 2015.
 - 17) Asfour, H., Gokhale, T., Henriquez, C.S., Bursac, N. “Acellular Microheterogeneities Affect Macroscopic Conduction in Excitable Media”, Biophysical Society Annual Meeting, Baltimore, MD, 2015.
 - 18) Li, Y., Asfour, H., Mao, L., Rockman, H., Bursac, N. “Cardiac Fibroblasts from Failed Hearts Have Altered Phenotype that Directly Impairs Cardiomyocyte Function”, Keystone Symposia, Cell Biology of the Heart: Beyond the Myocyte-Centric View, Copper Mountain, CO, 2015.
 - 19) Asfour, H., Verma, S., Henriquez, C.S., Bursac, N. "Effects of Acellular Microheterogeneities on Macroscopic Impulse Conduction in Regimes of Normal and Reduced Excitability", BMES Annual Meeting San Antonio, TX, 2014.
 - 20) Carlson, A., Shadrin, I., Bursac, N. "Human Pluripotent Stem Cell Derived Cardiac Tissues for Drug Development and Disease Modeling", BMES Annual Meeting San Antonio, TX, 2014.
 - 21) Sengupta, S., Hoffman, B., Bursac, N. "Cell Size and Shape as Determinants of Ion Channel Distribution and Function", BMES Annual Meeting San Antonio, TX, 2014.
 - 22) Jackman, C., Bursac, N. "Electrically Stimulated Heart Microbundles as a 3D Model of Neonatal to Adult Cardiac Tissue Maturation", BMES Annual Meeting San Antonio, TX, 2014.
 - 23) Li, Y., Asfour, H., Mao, L., Rockman, H., Bursac, N. "Molecular and Functional Roles of Cardiac Fibroblasts in Pressure-overload Induced Heart Failure", BMES Annual Meeting San Antonio, TX, 2014.
 - 24) Bursac, N. (SPEAKER) "Highly Functional Engineered Skeletal Muscle Tissues: From Rat to

- Human", BMES Annual Meeting San Antonio, TX, 2014.
- 25) Juhas, M., Ye, J., Engelmayr, G., Bursac, N. "Engineering Skeletal Muscle Tissues Capable of Regeneration", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 26) Jackman, C., Bursac, N. "Dynamic Culture Increases Cardiomyocyte Hypertrophy and Contractile Force Generation in Engineered Cardiac Tissues", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 27) Li, Y., Asfour, H., Mao, L., Rockman, H., Bursac, N. "Cardiac Fibroblasts from Failing Hearts Weaken The Contractile Function of Engineered Cardiac Tissues", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 28) Madden, L., Carlson, A., Koeberl, D., Bursac, N. "Evaluating Clinical Therapies Using a Human *In Vitro* Model of Pompe Disease Skeletal Muscle", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 29) Shadrin, I., Carlson, A., Bursac, N. "Maturation and Vascularization of Human Pluripotent Stem Cell Derived Cardiac Patch", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 30) Nguyen, H., Kirkton, R., Bursac, N., "Generation of Actively Conducting 3D Human Fibroblast Tissues for Cardiac Therapy", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 31) Carlson, A., Shadrin, I., Rao, L., Bursac, N. "Human Pluripotent Stem Cell-Derived Cardiac Microtissues for Drug Discovery and Disease Modeling", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 32) Madden, L., Juhas, M., Kraus, W., Truskey, G., Bursac, N., "Functional Maturation of Engineered Human Skeletal Muscle", NCTERMS, 16th Annual conference, Durham, NC, 2014.
 - 33) Juhas, M., Engelmayr, G.C., Bursac, N. "Bioengineered Skeletal Muscle with Functional Stem Cell Pool and Capacity for Vascular Integration and Functional Maturation *In Vivo*", American Society of Gene & Cell Therapy 17th Annual Meeting, Washington, DC, 2014.
 - 34) Madden, L., Koeberl, D., Bursac, N. "Tissue Engineered Human Skeletal Muscle as a Pre-Clinical Model for AAV Treatment of Pompe Disease", American Society of Gene & Cell Therapy 17th Annual Meeting, Washington, DC, 2014.
 - 35) Shadrin, I., Carlson, A., Bursac, N. "Human Pluripotent Stem Cell-Derived Cardiac Tissue Patch for Use in Cell-Based Cardiac Therapy", American Society of Gene & Cell Therapy 17th Annual Meeting, Washington, DC, 2014.
 - 36) Nguyen, H., Kirkton, R., Bursac, N. "Gene Therapy for Heart Disease Using Electrically Active Fibroblasts", American Society of Gene & Cell Therapy 17th Annual Meeting, Washington, DC, 2014.
 - 37) Christoforou, N., Liao, B., Chakraborty, S., Chellapan, M., Bursac, N., Leong, K.W. "Assembling Functional Biosynthetic Tissues with Induced Pluripotent Stem Cell-Derived Cardiac Progenitor Cells", TERMIS-AM, Atlanta, GA, 2013.
 - 38) Nguyen, H., Kirkton, R., Bursac, N. "Genetic Engineering of Actively Conducting Human Fibroblasts", Heart Rhythm Society Annual Scientific Sessions, San Francisco, CA, 2013.
 - 39) Li, Y., Liao, B., Kirkton, R., Asfour, H., Bursac, N. "Age-dependent Effects of Cardiac Fibroblasts on the Function of 3D Engineered Cardiac Tissues ", NCTERMS Annual Meeting, Winston-Salem, NC, 2013.
 - 40) Juhas, M., Engelmayr, G.C., Bursac, N. "Myogenic Potential, Vascular Integration, and Functional Maturation of Bioengineered Skeletal Muscle", NCTERMS Annual Meeting, Winston-Salem, NC, 2013.
 - 41) Jackman, C., Bursac, N. "Mechanical Stretch Induces Cardiomyocyte Alignment and Functional Electrical Anisotropy in Engineered Cardiac Muscle Patches", NCTERMS Annual Meeting, Winston-Salem, NC, 2013.
 - 42) Juhas, M., Engelmayr, G.C., Fontanella, A.N., Palmer, G.M., and Bursac, N. "Engineered Skeletal Muscle with Capacity for Vascular Integration and Functional Maturation *in Vivo*", EMBO Workshop – Molecular Mechanisms of Muscle Growth and Wasting in Health and Disease, Ascona, Switzerland, 2013.
 - 43) Madden, L., Cheng, C.S., Kraus, W.E., Truskey, G.A., Bursac, N. "Tissue-engineering of Functional Human Skeletal Muscle" BMES Annual Meeting, Seattle, WA, 2013.

- 44) Cheng, C.S., Madden, L., Kraus, W.E., Bursac, N., and Truskey, G.A. "MicroRNA-133a and MicroRNA-696 Joint Inhibition Increases Specific Force Output of Tissue- Engineered 3D Human Skeletal Muscle Constructs", BMES Annual Meeting Seattle, WA, 2013.
- 45) Li, Y., Liao, B., Kirkton, R., Bursac, N. "Cardiac Fibroblasts Alter the Structure and Function of 3D Engineered Cardiac Tissues in an Age-dependent Manner", BMES Annual Meeting, Seattle, WA, 2013.
- 46) Zhang, D., Shadrin, I., Lam, J., Xian, H., Snodgrass, R., Bursac, N."Human Embryonic Stem Cell-Derived Tissue-engineered Cardiac Patch with Advanced Structure And Function", ISSCR Annual meeting, Boston, MA, 2013.
- 47) Zhang, D., Lam, J., Liao, B., Snodgrass, R., Bursac, N."Human Embryonic Stem Cell-Derived Cardiac Tissue Patch with Advanced Structure And Function", AHA Scientific Sessions, Los Angeles, CA, 2012.
- 48) Shadrin, I., Yoon, W., Shepherd, N., Li, L., and Bursac, N. "Rapid Formation of Hybrid Cells via Fusion of Mesenchymal Stem Cells with Cardiomyocytes", BMES Annual Fall Meeting, Atlanta, GA, 2012.
- 49) Jackman, C., Zhang, D., Bursac, N. "Engineered Myocardial Tissue Patches with Functional Properties Comparable to Native Adult Ventricles", BMES Annual Fall Meeting, Atlanta, GA, 2012.
- 50) Juhas, M., Bursac, N. "Engineering Skeletal Muscle Tissue Replicating Structure and Function of Native Muscle", BMES Annual Fall Meeting, Atlanta, GA, 2012.
- 51) Christoforou, N., Chellappan, M., Wu, T., Adler, A., Kirkton, R., Chakraborty, S., Bursac, N., Leong, K.W. "Engineering the Reprogramming of Human and Mouse Cells Towards the Cardiac Cell Lineage", Keystone Symposium on Cardiovascular Development and Regeneration, Taos, NM, 2012.
- 52) Christoforou, N., Liao, B., Bursac, N., Leong K.W. " Engineering An Electromechanically Functional 3D Biosynthetic Tissue Using Embryonic or Induced Pluripotent Stem Cells", World Congress of Cardiology Scientific Sessions, Dubai, UAE, 2012.
- 53) Bursac, N. (SPEAKER), Yoon, W., Shepherd, N., Malouf, N., Kirby, M.L. "Human Mesenchymal Stem Cells Spontaneously Fuse with Neonatal Rat Ventricular Cardiomyocytes In Vitro at Unexpectedly High Rate", TERMIS-NA, Huston, Tx, 2011.
- 54) Juhas, M., Bursac, N. "Engineered Muscle with Significantly Improved Force Production", TERMIS-NA, Huston, Tx, 2011.
- 55) Kirkton, R.D., Bursac, N. "Roles of Action Potential Duration Gradient in Remote Conduction Block: In vitro Studies in Micropatterned Heterocellular Strands", AHA Scientific Sessions, Orlando, FL, 2011.
- 56) McSpadden, L., Bursac, N. "Size and Ionic Currents of Unexcitable Cells Coupled to Cardiomyocytes Distinctly Modulate Cardiac Action Potential Shape and Pacemaking Activity", AHA Scientific Sessions, Orlando, FL, 2011.
- 57) Bursac, N. (SPEAKER), Liao, B., Christoforou, N., Leong, K.W. "Electromechanically Functional Myocardium from Mouse Embryonic Stem Cells", TERMIS-EU, Granada, Spain, 2011.
- 58) Christoforou, N., Liao, B., Chakraborty, S., Chellapan, M., Bursac, N., Leong, K.W. "Assembly of an Electromechanically Functional 3D Biosynthetic Tissue Using Mouse Embryonic or Induced Pluripotent Stem Cell-derived Cardiac Progenitor Cells", ISSCR Meeting, Toronto, Canada, 2011.
- 59) Wang, C., Hennessey, J.A., Kirkton, R.D., Wang, C., Bryson, V., Rosenberg, P.B., Bursac, N., and Pitt, G.S. "FGF13 is a Regulator of the Cardiac Voltage-gated Sodium Channel Na_v1.5" Biophysical Society Annual Meeting, Baltimore, MD, 2011.
- 60) Bian, W., Liao, B., Badie, N., Bursac, N. "Tissue Engineering of Large Functional Cardiac Patches with Realistic Human Fiber Orientations" TERMIS-NA, Orlando, FL, 2010.
- 61) McSpadden, L., Bursac, N. "Unexcitable Cell Size Independently Modulates Cardiomyocyte Pacemaker Activity in Micropatterned Cell Pairs" Cardiac Electrophysiological Society Meeting, Chicago, IL, 2010.
- 62) Christoforou, N., Liao B., Leong K.W., Bursac N. "Engineering a Highly Functional 3D Cardiac Tissue Patch from Embryonic Stem Cell-derived Cardiogenic Cells", Cardiac Electrophysiological Society Meeting, Chicago, IL, 2010.

- 63) Piacentino, V., Bolanos, M., Schroder J., Messina E., Jones E., Krol A., Bursac N., Devi G., Mao L., Samulski R.J., Milano C., Bowles D. "X-Linked Inhibitor of Apoptosis Protein (XIAP)-Mediated Attenuation of Apoptosis Using a Novel Cardiac Enhanced Adeno-Associated Viral Vector", AHA Scientific Sessions, Chicago, IL, 2010.
- 64) Bian, W., Liao, B., Badie, N., Bursac, N. "Engineering of Functional Cardiac Tissue Patch with Realistic Myofiber Orientations", AHA Scientific Sessions, Chicago, IL, 2010.
- 65) Kirkton, R.D., Bursac, N. "Engineered Somatic Cells for Cardiac Repair", AHA Scientific Sessions, Chicago, IL, 2010.
- 66) Bian, W., Bursac, N. "Contractile Force of Engineered Skeletal Muscle Depends on Myofiber Density and Local Alignment", BMES Annual Fall Meeting, Austin, TX, 2010.
- 67) Liao, B., Christoforou, N., Leong, K., Bursac, N. "Embryonic Stem Cell-Derived Cardiomyocytes Require Supporting Cells to Form 3D Functional Myocardium", BMES Annual Fall Meeting, Austin, TX, 2010.
- 68) Bian, W., Bursac, N. "Soluble Mini-agrin Increases Contractility of Engineered Skeletal Muscle Tissues", BMES Annual Fall Meeting, Austin, TX, 2010.
- 69) Himmel, D.H., Badie, N., Henriquez, C.S., Bursac, N. "Effects of Microheterogeneities on Impulse Propagation in the Cardiac Monolayer", BMES Annual Fall Meeting, Austin, TX, 2010.
- 70) Hinds, S., Bian, W., Bursac, N. "Force Generation in Engineered Muscle Tissues is Significantly Affected by Cell-matrix Interactions", BMES Annual Fall Meeting, Austin, TX, 2010.
- 71) Liao, B., Christoforou, N., Leong, K., Bursac, N. (SPEAKER) "Stem Cell-derived 3-dimensional Heart Tissues with Advanced Electromechanical Function", International Conference on Stem Cell Engineering, Boston, MA, 2010.
- 72) Liao, B., Christoforou, N., Leong, K., Bursac, N. "Multipotent mESC-derived Cardiovascular Progenitors, but not Cardiomyocytes, Generate Highly Functional 3-D Engineered Cardiac Tissues" Birth, Life, and Death of the Cardiac Myocyte Conference, Napa Valley, CA, 2010.
- 73) Kirkton, R.D., Bursac, N. "Designer Excitable Cells and Tissues for Antiarrhythmic Therapies", Heart Rhythm Society, Scientific Sessions, Denver, CO, 2010.
- 74) Kirkton, R.D., Bursac, N. (SPEAKER) "Somatic Cell Therapies for Cardiac Repair", Heart Rhythm Society, Scientific Sessions Denver, CO, 2010.
- 75) Kirkton, R.D., Bursac, N. "Engineering Excitable Tissues: Induction of Membrane Excitability and Impulse Conduction in Unexcitable Cells", Cardiac Electrophysiological Society Meeting, Orlando, FL, 2009.
- 76) Bursac, N. (SPEAKER) "Cardiac Fibroblasts Strongly Affect Cardiac Action Potential Propagation by Paracrine Rather than Coupling Mechanisms", AHA Scientific Sessions, Orlando, FL, 2009.
- 77) McSpadden, L., Kirkton, R., Bursac, N. "Cell therapies for arrhythmias: genetically engineered coupling determines the effect on anisotropic cardiac conduction", AHA Scientific Sessions, Orlando, FL, 2009.
- 78) Bian, W., Bursac, N. "Large 3-dimensional Tissue Engineered Cardiac Patch with Controlled Electrical Anisotropy", AHA Scientific Sessions, Orlando, FL, 2009.
- 79) Liao, B., Bursac, N. "Electromechanically Functional Cardiac Tissue Constructs Engineered from Embryonic Stem Cells", AHA Scientific Sessions, Orlando, FL, 2009.
- 80) Bursac, N. (SPEAKER) "Engineering a Three-dimensional Structure: Are We There Yet?", AHA Scientific Sessions, Orlando, FL, 2009.
- 81) Liao, B., Bian, W., Christoforou, N., Bursac, N. "Engineering a Functional Embryonic Stem Cell-Derived Cardiac Progenitor Patch", BMES Annual Fall Meeting, Pittsburgh, PA, 2009.
- 82) Hinds, S., Bian, W., Bursac, N. "Optimized Cell/gel Composition for Engineering of Functional Skeletal Muscle Bundles", BMES Annual Fall Meeting, Pittsburgh, PA, 2009.
- 83) McSpadden, L., Kirkton, R., Bursac, N. "Electrotonic loading of anisotropic cardiac monolayers by unexcitable cells", BMES Annual Fall Meeting, Pittsburgh, PA, 2009.
- 84) Bian, W., Liao, B., Bursac, N. "Engineering Functional Anisotropy of Myocardial Tissue by Hydrogel Micromolding", BMES Annual Fall Meeting, Pittsburgh, PA, 2009.

- 85) McSpadden, L., Scull, J., Bursac, N. “Novel Method for Simultaneous Optical Mapping of V_m and $[Ca^{2+}]_i$ in Cardiac Monolayers”, BMES Annual Fall Meeting, Pittsburgh, PA, 2009.
- 86) Badie, N., Bursac, N. “Mechanisms of Rapid Pacing-Induced Conduction Block in Realistic Micropatterned Ventricular Cross-sections”, BMES Annual Fall Meeting, Pittsburgh, PA, 2009.
- 87) Bursac, N. (SPEAKER) “Imaging Engineered Tissue Constructs”, Heart Rhythm Society, Scientific Sessions, Boston, MA, 2009.
- 88) Bursac, N. (PRESENTER) “Aligned, Electrically Conducting and Contractile Embryonic Stem Cell-Derived Cardiac Tissue Patches”, Keystone Symposium on Cardiac Disease: Development, Regeneration, and Repair, Asheville, NC, 2009.
- 89) Bursac, N. (SPEAKER) “Microfabricated Cardiac Tissue Patch with Tunable Structure and Function”, TERMIS-NA, Annual Conference and Exposition, San Diego, CA, 2008.
- 90) Bursac, N. (SPEAKER) “Structural and Functional Interactions of Stem Cells and Cardiomyocytes”, TERMIS-NA, Annual Conference and Exposition, San Diego, CA, 2008.
- 91) Bian, W., Bursac, N. “Aligned and Differentiated Skeletal Muscle Tissues with Controllable Architecture and Function”, TERMIS-NA, Annual Conference and Exposition, San Diego, CA, 2008.
- 92) Badie, N., Bursac, N. “Micropatterned Ventricular Slice: Role of Realistic Tissue Microstructure in Impulse Conduction”, AHA Scientific Sessions, New Orleans, LO, 2008.
- 93) Klinger, R.Y., Bursac, N. “In vitro Cellular Implantation Assay to Quantitatively Compare the Ability of Different Donor Cells to Electrically Conduct within Cardiac Tissue”, AHA Scientific Sessions, New Orleans, LO, 2008.
- 94) Bursac, N. (SPEAKER) “In Vitro Assays for Studying the Capacity of Donor Cells to Repair Cardiac Tissue Damage”, AHA Scientific Sessions, New Orleans, LO, 2008.
- 95) Liau, I-C., Liu, J.B., Bursac, N., Leong, K.W. (2008) “Synchronized Electrical and Mechanical Stimulation Improves Myotube Maturation on Aligned Nanofibers”, International Conference of Mechanics in Medicine and Biology, St. Louis, MO, 2008.
- 96) Bian, W., Bursac, N. “Functional Skeletal Muscle Tissue Networks Made of Aligned and Differentiated Myofibers”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 97) Kirkton, R., Bursac, N. “Genetic Engineering of Electrically Excitable Cells for Experimental Studies and Tissue Repair”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 98) Klinger, R., Bursac, N. “In vitro Assay to Study Electrical Propagation of Different Donor Cells within Cardiac Cell Network”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 99) McSpadden, L., Kirkton, R., Bursac, N. “Smooth Muscle Actin-Negative Fibroblasts Alter Cardiac Conduction via Cx45 Coupling with Myocytes”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 100) Badie, N., Bursac, N. “Micropatterned Ventricular Slice: Role of Realistic Tissue Microstructure in Impulse Conduction”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 101) Bursac, N. (SPEAKER) “Reproducible In Vitro Assays to Study Functional Interactions of Stem Cells and Cardiomyocytes”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 102) Bursac, N. (SPEAKER) “Engineering 2-D and 3-D Cardiac Muscle Tissues Based on MRI-measured Cardiac Fiber Directions”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 103) Tranquillo, J.V., Badie, N., Bursac, N. “Negative Curvature as a Mechanism of the Multi-wave Reentry Acceleration”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 104) Liau, I-C., Liu, J.B., Bursac, N., Leong, K.W. (2008) “Effect of Electromechanical Stimulation on the Maturation of Myotubes on Aligned Electrospun Fibers”, BMES Annual Fall Meeting, St. Louis, MO, 2008.
- 105) Christoforou, N., Oskouei, B.N., Hill, C.M., Bian, W., Bursac, N., Leong, K.W., Hare, J., Gearhart, J.D. “Engraftment, Differentiation and Functional Improvement of Cardiac Output Following Transplantation of Mouse Embryonic Stem Cell-derived Cardiac Progenitor Cells in the Infarcted Myocardium”, International Society for Stem Cell Research Meeting, Philadelphia, PA, 2008.
- 106) Bian, W., Bursac, N. “Micromolded 3D Cardiac Network Patches with Controllable Anisotropy for Cardiac Repair”, American Heart Association Scientific Sessions, Orlando, FL, 2007.

- 107) Pedrotty, DM., Klinger, R., Bursac, N. "Paracrine Factors from Cardiac Fibroblasts Slow Conduction Velocity and Prolong the Action Potential Duration of Cardiomyocytes", American Heart Association Scientific Sessions, Orlando, FL, 2007.
- 108) Bian, W., Bursac, N. "Micromolding of a Functional Cardiac Patch for Heart Repair", NIH Symposium on Cardiovascular Regenerative Medicine, Bethesda, MD, 2007.
- 109) Scull, J., Bursac, N. "Novel Method for Simultaneous Optical Mapping of V_m and $[Ca^{2+}]_i$ in Cardiac Monolayers", BMES Annual Fall Meeting, Los Angeles, CA, 2007.
- 110) Bian, W., Bursac, N. "Micromolded Aligned Skeletal Muscle Tissue Networks", BMES Annual Fall Meeting, Los Angeles, CA, 2007.
- 111) Pedrotty, DM., Kardashian AA, Badie N, Klinger RY, Bursac N. "Cardiac and Donor Cell Interactions in Micropatterned Cell Pairs", BMES Annual Fall Meeting, Los Angeles, CA, 2007.
- 112) Bian, W., Bursac, N. "Micromolding of a 3D Cardiac Network Patch with Controllable Anisotropy", BMES Annual Fall Meeting, Los Angeles, CA, 2007.
- 113) Bursac, N. (SPEAKER) "Design of 2-D and 3-D Cardiac Tissues with Controllable Architecture and Function", Gordon's Research Conference on Cardiac Arrhythmia Mechanisms, Ventura, CA, 2007.
- 114) Bian, W., Bursac, N. "Aligned Skeletal Muscle Tissue Networks with Controllable Porosity and Thickness Engineered by 3D Hydrogel Micromolding", 11th annual Hilton Head workshop on tissue engineering, Hilton Head, SC, 2007.
- 115) Badie, N., Bursac, N. "Micropatterned Heart Slice Cultures for Studies of Intramural Cardiac Electrophysiology", AHA Scientific Sessions, Chicago, IL, 2006.
- 116) McSpadden, L., Yim, E., Leong, K., Bursac, N. "Tissue Engineered 2-Dimensional Model of Cardiac Fibrosis", BMES Annual Fall Meeting, Chicago, IL, 2006.
- 117) Holden, M.L., Ying, Y., Bursac, N., Henriquez, C. "Large-Scale Modeling of Discrete Neonatal Cardiac Tissue Using a Variable Spatial Grid", BMES Annual Fall Meeting, Chicago, IL, 2006.
- 118) Badie, N., Jiang, Y., Hsu, E., Bursac, N. "Tissue Engineered Two-Dimensional Heart Slice", BMES Annual Fall Meeting, Chicago, IL, 2006.
- 119) Tranquillo, J., Bursac, N. "The Role of Restitution in Pacing Induced Spiral Wave Acceleration", IEEE EMBS Meeting, New York, NY, 2006.
- 120) Pedrotty, D., McSpadden, L., and Bursac, N. "Paracrine Factors from Stem Cells Improve Electrical Conduction in Cardiac Tissue", AHA Scientific Sessions, Dallas, TX, 2005.
- 121) Pedrotty, D., Bian, W., and Bursac, N. "Cellular Cardiomyoplasty: Investigating Direct Functional Interactions Between Host and Donor Cells", North Carolina Tissue Engineering Interest Group, Raleigh, Durham, NC, 2005.
- 122) Ko, K., McSpadden, L., Scull, J., Badie, N., Bursac, N. "In Vitro Model for Infarct Scar: Optical Mapping of Impulse Propagation", BMES Annual Fall Meeting, Baltimore, MD, 2005.
- 123) Tranquillo, J., Grant, A.O., Zhang, Z.S., Bursac, N. "DK1479 and DK1500 Mutations Result in Brugada Syndrome", BMES Annual Fall Meeting, Baltimore, MD, 2005.
- 124) Tranquillo, J., Capone, A., Bursac, N. "The Role of Restitution and Ion Currents in the Acceleration of Functional Reentry", BMES Annual Fall Meeting, Baltimore, MD, 2005.
- 125) Wang, T., Bursac, N. "Engineering a 3-dimensional Cardiac Tissue Construct with Controlled Anisotropy", BMES Annual Fall Meeting, Baltimore, MD, 2005.
- 126) Pedrotty, D., McSpadden, L., Scull, J., Bursac, N. "Cellular Cardiomyoplasty: Investigating Functional Interactions between Host and Donor Cells", BMES Annual Fall Meeting, Baltimore, MD, 2005.
- 127) Bursac, N. (SPEAKER), Tranquillo, J. "Experimental and Computational Studies on Complex Spiral Waves in 2-D Cardiac Substrates", American Physics Society Annual Meeting, Los Angeles, CA, 2005.
- 128) Bursac, N. (SPEAKER), Aguel, F., Tung, L. "Accelerated Spirals in 2-Dimensional Cultures of Cardiac Myocytes", Conference on Oscillations and Waves in cells and cell networks, Cargese, France, 2004.
- 129) Bursac, N. (PRESENTER), Loo, Y., Irby, M.E., Leong, K., Tung, L. "Electrophysiological Studies in Anisotropic 3D Cardiac Cultures", NASPE Conference, Washington DC, 2003.

- 130) Kong, C.R., Bursac, N., Tung, L. "Mechanoelectrical Excitation in Cultured Monolayers of Cardiac Cells, NASPE Conference, Washington DC, 2003.
- 131) Sathaye, A., Bursac, N., Sheehy, S., Tung, L. "Long Term Pacing Induces Action Potential and Wavelength Prolongation in Cultured Neonatal Rat Ventricular Cell Monolayers", NASPE Conference, Washington DC, 2003.
- 132) Bursac, N. (SPEAKER), Tung, L. "Novel Stable Functional Reentry Patterns Induced by Rapid Pacing in Uniformly Anisotropic Cardiomyocyte Cultures", AHA Scientific Sessions, Chicago, 2002.
- 133) Tung, L., Kong C., Bursac, N., Fasciano, R.W., Riemer, T.L. "Mechanically Induced Changes in Excitability and Arrhythmogenesis", 3rd International Workshop on Cardiac Mechano-Electric Feedback and Arrhythmias, Oxford, Great Britain, 2002.
- 134) Bursac N. (SPEAKER), Loo, Y., Irby, M.E., Leong, K., Tung, L. "Polymer Scaffolds for Anisotropic Growth of Engineered Cardiac Tissue", Southern BMES Conference, Washington DC, 2002.
- 135) Kong C, Parker K.K, Sathaye, A., Bursac, N., Entcheva, E., Tung L. "2,3-butanedione monoxime (BDM) alters wavefront propagation and functional anisotropy in micropatterned neonatal rat cardiac myocytes", Southern BMES Conference, Washington DC, 2002.
- 136) Bursac, N. (SPEAKER), Iravanian, S., Parker, K., Tung, L. "Anisotropic Reentry in Cultured Cardiac Myocytes", Finalist presentation Young Investigator Award Competition, NASPE Conference, San Diego, CA, 2002.
- 137) Iravanian, S., Nabutovsky, Y., Bursac, N., Sumita, S., Tung, L. "Optical Maps of Reentrant Activity in Cultured Monolayers of Neonatal Rat Cardiac Myocytes ", AHA Scientific Sessions, Anaheim, CA, 2001.
- 138) Bursac, N. (SPEAKER), Iravanian, S., Tung, L. "Anisotropic Cultures of Cardiac Myocytes", BMES Annual Fall Meeting, Durham, NC, 2001.
- 139) Iravanian, S., Nabutovsky, Y., Bursac, N., Saha, S., Tung, L. "Contact Fluorescence Imaging of Reentry in Cultured Monolayers of Neonatal Rat Cardiac Cells", BMES Annual Fall Meeting, Durham, 2001.
- 140) Bursac, N. (SPEAKER), Papadaki, M., White, J.A., Eisenberg, S.R., Freed, L.E. "Use of Engineered 3-D Cardiac Tissue to Study Electrophysiology of Cardiac Muscle", BMES Annual Fall Meeting, Seattle, WA, 2000.
- 141) Bursac, N. (PRESENTER), Papadaki, M., White, J.A., Vunjak-Novakovic, G., Eisenberg, S.R., Freed, L.E. "Engineered Cardiac Tissues: A Novel Model System for In Vitro Studies of Cardiac Muscle", Science Day, Boston University, Boston, MA, 2000.
- 142) Aljuri, A.N., Bursac, N., Marini, R., Cohen, R.J. "System Identification of Dynamic Closed-loop Control of Total Peripheral Resistance by Arterial and Cardiopulmonary Baroreceptors", 13th Humans in Space Symposium, IAA and GASMA, Fira, Santorini, Greece, 2000.
- 143) Bursac, N. (SPEAKER), Papadaki, M., Langer, R., Eisenberg, S.R., Vunjak-Novakovic, G., Freed, L.E. "Three-dimensional Environment Promotes in Vitro Differentiation of Cardiac Myocytes", BMES-EMBS 1st Joint Conference, Atlanta, GA, 1999.
- 144) Papadaki, M., Bursac N., Gupta, P., Langer, R., Vunjak-Novakovic, G., Freed, L.E. "Towards a Functional Tissue Engineered Cardiac Muscle", BMES-EMBS 1st Joint Conference, Atlanta, GA, 1999.
- 145) Papadaki, M., Bursac, N., Langer, R., Vunjak-Novakovic, G., Freed, L.E. "Towards a Functional Tissue Engineered Cardiac Muscle: Effects of Cell Culture Substrate and Medium Concentration", Annual Meeting of the Society of Biomaterials, Providence, RI, 1999.
- 146) Bursac, N. (SPEAKER), Papadaki, M., Cohen, R.J., Schoen, F.J., Eisenberg, S.R., Carrier, R., Vunjak-Novakovic, G., Freed, L.E. "Cardiac Muscle Tissue Engineering: An Electrophysiological Study", BMES Annual Fall Meeting, Cleveland, OH, 1998.
- 147) Papadaki M., Bursac, N., Langer, R., Schoen, F.J., Carrier, R., Vunjak-Novakovic, G., Freed, L.E. "Engineered Three-dimensional Cardiac Muscle: Structural, Biochemical and Functional Assessment", American Institute for Chemical Engineers Meeting, Miami, FL, 1998.

- 148) Carrier, R.L., Bursac N., Papadaki, M., Langer, R., Vunjak-Novakovic, G., Freed, L.E. "Bioreactor Design Affects the Structural, Biochemical, and Metabolic Properties of Engineered Cardiac Tissue", American Institute for Chemical Engineers Meeting, Miami, FL, 1998.
- 149) Papadaki M., Bursac, N., Langer, R., Schoen, F.J., Vunjak-Novakovic, G., Freed, L.E. "In Vitro Reconstitution of Three-dimensional Cardiac Muscle: Composition and Functional Evaluation", North Sea Biomaterials Meeting, The Hague, Netherlands, 1998.
- 150) Carrier, R.L., Papadaki, M., Bursac N., Langer, R., Rupnick, M., Schoen, F.J., Vunjak-Novakovic, G., Freed, L.E. "Investigation of the Influence of Bioreactor Design on the Structural, Biochemical, and Metabolic Properties of Engineered Cardiac Muscle", American Institute for Chemical Engineers Meeting, Los Angeles, CA, 1997.
- 151) Freed, L.E., Bursac, N., Carrier, R., Martin, I., Papadaki, M., Vunjak-Novakovic, G., "Three-dimensional Cultures of Skeletal and Cardiac-Like Tissues", American Society for Cell Biology Meeting, 1997.
- 152) Carrier, R.L., Bursac N., Vunjak-Novakovic, G., Langer, R., Rupnick, M., Freed, L.E. "Cardiac Tissue Engineering: Influence of Cell Source and Bioreactor Conditions", World Congress of the International Society for Artificial Organs, Providence, RI, 1997.
- 153) Van Toi V, Abraham H, Bursac N. "Post-LSD Hallucinosi s Is Associated with Decrease in Flicker-Fusion Sensitivities", Investigative Ophthalmology and Visual Science (supp), 37(3):3300, 1996.