

Curriculum Vitae

Joseph V. Tranquillo

Contact Information:

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Appointments and Experience:

- 2011 – Associate Professor of Biomedical Engineering and Electrical Engineering
Bucknell University Lewisburg, PA
- 2007 – Affiliate Professor of Neuroscience
Bucknell University, Lewisburg, PA
- 2007 – 2008 Adjunct Professor
Scientific Computing and Imaging Institute, Salt Lake City, UT
- 2005 – 2011 Assistant Professor of Biomedical Engineering
Bucknell University Lewisburg, PA
- 2005 – Assistant Professor of Electrical Engineering
Bucknell University, Lewisburg, PA
- 1997 – 1998 Associate in Research
Biomedical Engineering, Duke University, Durham, NC.

Education:

- 2004 – 2005 Department of Biomedical Engineering
Duke University, Durham, NC
Post-doctoral fellow
Advisor: Nenad Bursac, Associate Professor
Field: Experimental Cardiac Electrophysiology
- 1998 – 2004 Department of Biomedical Engineering
Duke University, Durham, NC
PhD, Center for Emerging Cardiovascular Technologies Fellow
Advisor: Craig Henriquez, Professor
Title: “Relationship between the monophasic action potential and
transmembrane action potential: A theoretical, experimental and
computational study.”
- 1993 – 1997 Department of Engineering
Trinity College, Hartford, CT
BS in Engineering. Graduation with honors
Advisor: Joseph Bronzino, Vernon D Roosa Professor of Applied Science

Teaching and Advising:

- COURSES (* course created by JVT)
- 2005 – (at Bucknell University, Lewisburg, PA)
Fundamentals of Biomedical Engineering (BMEG 210)
Introduction to Biomedical Engineering (BMEG 200)

Fundamentals of Biomedical Signals and Systems (BMEG 350) *
 Biomedical Engineering Capstone I (BMEG 401) *
 Medical Device Assessment and Development (BMEG 408)
 Neural Signals and Systems (BMEG 441, ELEC 411) *
 Electrical Engineering Fundamentals (BMEG 205, ELEC 105) *
 Exploring Engineering (ENGR 100)

2003 – 2005 (at Duke University Talent Identification Program, Durham, NC)
 Artificial Intelligence
 A Method to the Madness: Systems in the World

CURRICULUAR ADVISING

2008 – Biomedical Engineering Class of 2012
 2005 – 2007 Biomedical Engineering Class of 2008
 2006 Biomedical Engineering Class of 2009

SELECT UNDERGRADUATE RESEARCH ADVISING

2009 – Bucknell Presidential Fellow, Ariel Kniss
 “Game theory and the competition of inhibition and excitation in the brain”
 2009 Bucknell Physics Summer REU, Lauren Lazarus
 “Coupling as a variable for synchronization
 2009 – Bucknell Presidential Fellow, Meridith Joyce
 “Modeling of neural complexity”
 2008 Bucknell Physics Summer REU, Nate Crosby
 “Synchronization of bursting neurons
 2007 – 2009 Bucknell Presidential Fellow, Nate Crosby
 “Non-linear dynamics of epilepsy”
 2007 Bucknell Physics Summer REU, Pasha Hosseinbor
 “Non-linear classification of cardiac fibrillation

18 additional research students were advised from 2005-2011

THESIS ADVISING

1. Ariel Kniss, Math and Biology Undergraduate Honors Thesis “Applications of Spatial Game Theory to Neural Impulse Propagation” Defended April 2011.
2. Himadri Mukhopadhy, Electrical Engineering Masters of Science Thesis “The Resonate-and-fire neuron: Time dependent and frequency selective neurons in neural networks” Defended April 2010
3. Nathan Crosby, Biomedical Engineering Undergraduate Honors Thesis “Burst Switching and Transitions to Synchrony in Coupled Networks of Simulated Hindmarsh-Rose Neurons” Defended April 2009

TEACHING ENRICHMENT

2011 iPad in the Classroom Working Group
 2011 Engineering and Social Impact Summer Workshop
 2011 Participant in Design Days, Baltimore, MD
 2010 – Member of Bucknell Innovation Group (BIG)
 2010 IMPACT Workshop, Lewisburg, PA
 2010 Medical Device Design Conference, Minnesota, MN
 2009 Team Teaching Faculty Learning Group
 2008 National Instruments NI Week Conference, Austin, TX
 2008 Evaluating Teaching Faculty Learning Group
 2008 Patriot League STEM Conference, Easton, PA
 2006 National ABET workshop, St. Louis, MO
 2005 – Regular participation in Faculty Learning Series
 2005 Bucknell Writing Workshop
 2005 National Effective Teaching Institute, Chicago, IL

2004 – 2005 Preparing Future Faculty Program, Durham, NC

Technical Scholarship:

PEER-REVIEWED JOURNAL PUBLICATIONS

1. J. Tranquillo, N. Badie, C.S. Henriquez, N. Bursac, "Collision-based spiral acceleration in cardiac media: Roles of wavefront curvature and excitable gap", *Biophysical J.* 2010. 98:7 1119-1128.
2. J. Tranquillo, **M. Howes**, "Intrinsic inhomogeneities and the coexistence of spirals with different periods of rotation", *Physical Review E.* 2008. 78:051914.
3. J. Tranquillo, **A. Sunkara**, "Can we trust the transgenic mouse? Insights from computer simulations", *Lecture Notes in Computer Science Special Issue: Functional Imaging and Modeling of the Heart.* 2007. 4466: 210-219.
4. A. Grant, J. Tranquillo, "Action potential and QT prolongation not sufficient to cause Torsade de Pointes: Role of action potential triangulation", *J Cardiovasc Electrophysiol.* 2007. 18:204-5.
5. Z. Zhang, J. Tranquillo, N. Bursac, A. Grant, "Sodium channel kinetics changes that produce Brugada syndrome or progressive conduction system disease", *Amer J of Physiol.* 2007. 292: 399-407.
6. J. Tranquillo, **J. Hlavacek**, C.S. Henriquez, "An integrative model of mouse cardiac electrophysiology from cell to torso", *Europace.* 2005 Suppl 2 56-70.
7. J. Tranquillo, **D. Burwell**, C.S. Henriquez, "Analytical model of extracellular potentials in a tissue slab with a finite bath", *IEEE Trans on BME.* 2005. 52(2): 334-338.
8. J. Tranquillo, M.R. Franz, B.C. Knollmann, A. Henriquez, D.A. Taylor, C.S. Henriquez, "Genesis of the monophasic action potential: Role of the interstitial resistance and boundary gradients", *Amer J of Physiol.* 2004. 286(4): H1370-H1381.
9. D. Weinstein, J. Tranquillo, C.S. Henriquez and C. Johnson, "BioPSE case study: Modeling simulation and visualization of three dimensional mouse heart propagation", *J of Bioelectromag.* 2003. 5(1):314-315.
10. B.C. Knollmann, J. Tranquillo, S.G. Sirenko, C.S. Henriquez and M.R. Franz, "Microelectrode study of the genesis of the monophasic action potential by contact electrode technique", *J Cardiovasc Electrophysiol.* 2002. 13(12): 1246-1252.

JOURNAL PUBLICATIONS IN PREPARATION

1. J. Tranquillo, **N. Crosby** and **D. Medani**, "Burst switching as a mechanism of neural self-regulation" *Chaos.*

BOOKS

1. J. Tranquillo, "Matlab for Engineering and the Life Sciences", Morgan and Claypool, Synthesis Lectures in Engineering. 2011 (in press)
2. J. Tranquillo, "Quantitative neurophysiology", Morgan and Claypool, Synthesis Lectures in Biomedical Engineering. 2008. Updated 2009.

BOOK CHAPTERS

1. C.S. Henriquez, J. Tranquillo, D. Weinstein, E. Hsu and C.R. Johnson, "Three dimensional propagation in mathematical models: Integrative model of the mouse heart". in *Cardiac Electrophysiology: From Cell to Bedside*; 4th edition. Ed. Douglas Zipes and Jose Jalife. Saunders WB Co, Philadelphia, PA. 2004.
2. C.S. Henriquez and J. Tranquillo, "Modeling the impact of cardiac tissue structure on current flow and wavefront propagation", in *Quantitative Cardiac Electrophysiology*. Ed. Candido Cabo and David S. Rosenbaum. Marcel Dekker Inc, New York. 2002.

GRANTS AND PROTOCOLS (PI or Co-PI for all grants)

1. Bucknell Summer Scholarship, "The Muse in the System", Awarded 2011 for \$4000.
2. STTR Grant, "Rugged Automated Training System (RATS) for training small animals in explosive detection", Awarded 2011 for \$100,000.

3. Pittsburgh Supercomputing (IBN050003P), "Large scale simulations of cardiac electrophysiology", Awarded 2005 (Renewed yearly 2006-2008) for 20,000 CPU hours per year.
4. Pittsburgh Supercomputing Grant (IBN050003P), "Large scale simulations of neural electrophysiology", Awarded 2007 (Renewed yearly through present) for 20,000 CPU hours per year.
5. David T. Scadden Faculty Scholar Award, "Developing and emergent theory of creativity", Not funded 2009 for \$5000.
6. Bucknell Summer Scholarship, "A modular software package for the simulation of coupled neurons", Awarded 2009 for \$4000.
7. Research Corporation Cottrell Scholar Award, "A modular software suite for the simulation of coupled neurons", Not funded 2008 for \$42,680.
8. Bucknell Untenured Leave Proposal, Awarded 2007 for \$1000.
9. Bucknell Summer Scholarship, "Temperature dependence of Brugada syndrome", Awarded 2007 for \$4000.
10. Bucknell IACUC, "Parameter estimation and validation of simulated rodent cardiac electrophysiology", Approval for Mice and Rat 2005 (Renewed yearly 2006-2007).
11. Connecticut NASA Space Grant, "Design of a portable ECG monitor", Awarded 1996 for \$2000.

PEER-REVIEWED CONFERENCE PROCEEDINGS

1. T. Ning, J. Tranquillo, A. Grare, A. Saraf, "Computing correlation integral with the Euclidean distance normalized by the embedding dimension", *Proc. of International Conference on Signal Processing 2008*: p. 2708-2712, Presented at ICSP 10/08 Beijing, China.
1. J. Tranquillo, N. Bursac, "The role of restitution in pacing induced wave acceleration", *IEEE Trans on BME Suppl* 2006: p. 3919-3922, Presented at EMBC 9/06 New York, NY.
2. J. Tranquillo, C.S. Henriquez, "Factors that impact the MAP timecourse", *Heart Rhythm* 2004: 1(1) S189-S190, Presented at Heart Rhythm 5/04 San Francisco, CA.
3. J. Tranquillo, **P. Rosenstiel**, C.S. Henriquez, D.A. Taylor, "Using computer models to guide cell therapies", *Proc. of Keystone Symposium on Stem Cell Therapies* 2003: p. 134, Presented 4/2003 Steamboat Springs, CO.
4. B.C. Knollmann, J. Tranquillo, S.G. Sirenko, C.S. Henriquez, M.R. Franz, "Origin of the monophasic action potential: Which electrode?", *Pacing Clinic Electrophysiol* 2003: 26 996, Presented at NASPE 5/03 Washington, DC.
5. J. Tranquillo, M.R. Franz, B.C. Knollmann, C.S. Henriquez, "Monophasic action potentials in murine heart: A model study", *IEEE Trans on BME Suppl* 2002: p. 1415-1416, Presented at EMBC 10/02 Houston, TX.
6. J. Tranquillo, M.R. Franz, B.C. Knollmann, C.S. Henriquez, "3D bidomain modeling of the sources underlying a monophasic action potential", *Pacing Clinic Eletrophysiol* 2002: 25(4) 605, Presented at NASPE 5/02 San Diego, CA.
7. B.C. Knollmann, J. Tranquillo, C.S. Henriquez, M.R. Franz, "Direct evidence for monophasic action potential genesis by contact electrode technique", *Pacing Clinic Eletrophysiol* 2002: 25(4) 718, Presented at NASPE 5/02 San Diego, CA.
8. J. Tranquillo, T. Ning, "Chaotic behavior of respiration", *Proceedings of the Northeast Biomedical Engineering* 1997: p. 50-51, Presented 5/97 Durham, NH.
9. J. Tranquillo, T. Ning, "The correlation dimension as a measure of maturing theta rhythm", *Proc. of National Conference on Undergraduate Research* 1997: p. 1045-1046, Presented at NCUR 4/97 Austin, TX.
10. J. Tranquillo, T. Ning, J. Bronzino, "The correlation dimension in CA1: A promising measure of theta rhythm maturation", *Proc. of IEEE EMBS* 1996: 4:1571-1572, Presented at EMBS 11/96 Amsterdam, Netherlands.
11. T. Ning, J. Tranquillo, J. Bronzino, "Quadratic phase coupling of the maturing hippocampal EEG", *Proc. of IEEE EMBS* 1996: 4:1564-1565, Presented at EMBS 11/96 Amsterdam, Netherlands.
12. J. Tranquillo, T. Ning, J. Bronzino, "Maturation of non-linear interactions: Bispectral analysis of CA1 and the dentate gyrus", *Proc. of Northeast Biomedical Engineering Conference* 1996: p. 99-100, Presented 3/96. New Brunswick, NJ.

PEER-REVIEWED CONFERENCE PRESENTATIONS

1. **S. M. Bost, M.A. Long**, F. Gilliam, K.A. Bieryla and **J. Tranquillo**, “Design and implementation of novel silicone cup attachment for ambulatory EEG”, Presented at BMES 2010. Austin, TX
2. **J. Tranquillo** and **H. Mukhopadhyay**, “A temporal backpropagation algorithm for the resonate and fire perceptron”, Presented at BMES 2010. Austin, TX
3. **J. Tranquillo** and **D. Medani**, “Dynamic self-regulation of neural impedance”, Presented at American Physical Society March Meeting 2010. Portland, OR.
4. **L. Lazarus** and **J. Tranquillo**, “System dynamics of non-diffusively coupled oscillators”, Presented at American Physical Society March Meeting 2010. Portland, OR.
5. **D. Medani, J. Tranquillo**, “Simulated self-regulation of neuronal input impedance”, Presented at BMES 2009. Pittsburgh, PA (**Student Oral Presentation, Won 3rd place in Undergraduate Research Session**).
6. **L. Lazarus, J. Tranquillo**, “Coupling type affects synchronization properties of biological oscillators”, Presented at BMES 2009. Pittsburgh, PA.
7. **J. Tranquillo**, “A modular software suite for the simulation of biological networks”, Presented at BMES 2009. Pittsburgh, PA.
8. **E. Foley, J. Tranquillo**, “Coupling induced bursting in a neuron-gial system”, Presented at BMES 2009. Pittsburgh, PA.
9. **J. Tranquillo, D. Medani**, “Burst switching as a mechanism for neural pathway self-regulation”, Presented at BMES 2009. Pittsburgh, PA.
10. **J. Tranquillo**, “The co-existence of spirals with multiple rates of rotation” Presented at American Physical Society March Meeting 2009. Pittsburgh, PA.
11. **N. Crosby** and **J. Tranquillo**, “Burst switching between incoherence and synchrony” Presented American Physical Society March Meeting 2009. Pittsburgh, PA.
12. **J. Tranquillo, N. Badie, N. Bursac**, “Negative curvature as a mechanism for the acceleration of multi-wave reentry”, Presented at BMES 2008. St. Louis, MO.
13. **N. Crosby, M. Stecker** and **J. Tranquillo**, “Epileptic synchronization in a simulated macaque cortical network”, Presented at BMES 2008. St. Louis, MO.
14. **B. Fulmer, D. Ebenstein, A. Paskert, S. Deitch, J. Tranquillo**, “Measurement of force feedback in laparoscopy: A step toward safer surgery?”, Presented at Mid-Atlantic American Urological Association Meeting 2008. Cambridge, MD.
15. **P. Hosseinbor, J. Tranquillo**, “Utilization of nonlinear analysis on electrograms in the classification of cardiac arrhythmias”, Presented at BMES 2007. Los Angeles, CA (**Student Oral Presentation**).
16. **E. Banerjee, J. Tranquillo**, “Monophasic action potential variation across the normal mouse heart”, Presented at BMES 2007. Los Angeles, CA.
17. **J. Tranquillo**, “A novel mechanism for the initiation and evolution of cardiac fibrillation” Presented at BMES 2007. Los Angeles, CA.
18. **J. Tranquillo, A. Sunkara** “Can we trust the transgenic mouse? Insights from computer simulations”, Presented at FIMH Conference 2007. Salt Lake City, UT.
19. **N. Badie, J. Tranquillo, N. Bursac**, “Micropatterned heart slice cultures for studies of intramural cardiac electrophysiology”, Presented at American Heart Association 2006. Chicago, IL.
20. **A. Sunkara** and **J. Tranquillo**, “Genetic mutations in cardiac ion channels have different effects on mice and humans” Presented at BMES 2006. Chicago, IL.
21. **M. Howes** and **J. Tranquillo**, “Spiral wave breakup to cardiac fibrillation is sensitive to the site of reentry initiation” Presented at BMES 2006. Chicago, IL (**Student Oral Presentation**)
22. **J. Tranquillo, N. Bursac**, “The role of restitution and ion currents in the acceleration of functional reentry”, Presented at BMES 2005. Baltimore, MD.
23. **J. Tranquillo, A. Grant, Z. Zhang, N. Bursac**, “DK1479 and DK1500 mutations result in Brugada syndrome”, Presented at BMES 2005. Baltimore, MD.
24. **J. Tranquillo**, “*in silico* transgenic mouse models: From ion channel to body surface”, Presented at the SIAM Conference on Dynamical Systems 2005. Snowbird, UT.
25. **N. Bursac, J. Tranquillo**, “Experimental and computational studies on complex spiral waves in 2D cardiac substrates”, Presented at American Physical Society March Meeting 2005. Los Angeles, CA.
26. **J. Tranquillo, J. Hlavacek, K. Sampson, C.S. Henriquez**, “Impact of APD dispersion on the mouse T-wave”, Presented at BMES 2004. Philadelphia, PA.

27. K. Sampson, S. Roberts, J. Tranquillo, J. Pormann, C.S. Henriquez, "Action potential duration (APD) dispersion in the mouse heart: A computer model of the impact of electrotonic coupling", Presented Keystone Symposia 2003. Santa Fe, NM.
28. J. Tranquillo, M.R. Franz, B.C. Knollmann, C.S. Henriquez. "Monophasic action potentials in murine heart: A model study", Presented at BMES-IEEE 2002. Houston, TX.
29. J. Tranquillo, "MRI to model", Presented at IEEE Computer Visualization 2002. Boston, MA.
30. J. Tranquillo, A. Bhimani, R. Emani, D.A. Taylor, C.S. Henriquez, "*in vivo* pace mapping of the rabbit heart: Experimental and modeling studies", Presented BMES 2001. Durham, NC.

INVITED PRESENTATIONS

1. "PLAY!", Invited Talk in IMPACT Class. Lewisburg, PA 3/8/2011
2. "The Muse in the System" Bucknell University Faculty Learning Series 1/28/11 and 2/4/2011
3. "Where are the switches on this thing?" Bucknell University Mathematics Seminar Series. 9/2/2010. Lewisburg, PA.
4. "Emergent creativity", Bucknell University Communications Workshop. 8/29/09. Lewisburg, PA.
5. "Form and function in biology", Bucknell University Physics Seminar Series. 7/2/09. Lewisburg, PA.
6. "Creative complexity", Bucknell University Institute for Leadership Technology and Management guest lecture. 6/24/09. Lewisburg, PA.
7. "Creativity on the edge", Bucknell University Management Capstone. 4/4/09. Lewisburg, PA
8. "Biomedical simulations", Physics 301 Computer Simulation class, '07, '08, '09, '10, '11. Lewisburg, PA.
9. "When small changes have a global impact", Focus the Nation, Bucknell University 1/31/08. Lewisburg, PA.
10. "Don't know much about epilepsy", Bucknell University Physics Seminar Series. 7/05/07. Lewisburg, PA.
11. "Cardiac biophysics and biomedical design: Geisinger-Bucknell interactions", Geisinger Cardiology Department Seminar Series. 5/21/07. Danville, PA.
12. "Epilepsy: through the eyes of an engineer", Geisinger Neurology Department Seminar Series. 5/22/07. Danville, PA.
13. "What can we learn from models?", Geisinger Cardiology Retreat. 4/11/07. Danville, PA.
14. "The Role of Computer Models in Biomedical Research", Temple University Electrical and Computer Science Seminar Series. 3/23/07. Philadelphia, PA.
15. "Electrical currents and potentials in the heart", Bucknell University Physics Seminar Series 6/8/06. Lewisburg, PA.
16. "Biophysics of the electric heart", Bucknell University Physics Seminar Series. 7/7/05. Lewisburg, PA
17. "Multi-scale simulations of electrical activity in the heart", University of Minnesota Biomedical Engineering Seminar Series. 4/4/05. Minneapolis, MN.
18. "Multi-scale modeling of electrical activity in the heart", Bucknell University Engineering Seminar Series. 3/8/05. Lewisburg, PA.
19. "Growing 2D heart slices *in vitro*". Center for Biomolecular and Tissue Engineering Chalk Talk Series. 10/21/04. Durham, NC.
20. "Integrative computer modeling of murine cardiac electrophysiology", Eastern Carolina University Department of Internal Medicine Seminar. 1/9/04. Greenville, NC.
21. "Extracellular detection and quantification of inhomogeneities in the mouse heart", Biomedical Engineering Seminar Series. 1/31/03. Durham, NC.
22. "Large-scale computer models of electrical propagation in cardiac tissue: Applications to cellular cardiomyoplasty", Scientific Computing and Imaging Institute Seminar Series. 8/20/2001. Salt Lake City, UT.
23. "The electrical safety of cellular cardiomyoplasty", Center for Emerging Cardiovascular Technologies Seminar Series. 11/13/00. Durham, NC.

STUDENT GRANTS (J. Tranquillo as faculty adviser for all proposals)

1. **D. Medani**, "A graphical user interface for a neural network simulation software suite", Bucknell Program for Undergraduate Research. 2009 (Funded)
2. **E. Foley**, "The impact of gap junctions on synchronization capabilities in networks of neurons", Bucknell Program for Undergraduate Research. 2009 (Funded)

3. **N. Crosby**, “Asymmetric neuronal coupling and bursting behavior”, Bucknell Program for Undergraduate Research. 2008 (Funded, declined for Physic REU Program)
4. **E. Banerjee**, “Creating a spatial map of action potentials in the mouse heart”, Bucknell Program for Undergraduate Research. 2007 (Funded)
5. **M. Howes**, “The role of inhomogeneities in the development of cardiac arrhythmias”, Bucknell Program for Undergraduate Research. 2006 (Funded)
6. **A. Sunkara**, “Similarities and differences of electrical impulses in the hearts of mice and humans”, Bucknell Program for Undergraduate Research. 2006 (Funded)

Engineering Pedagogy:

PEER REVIEWED CONFERENCE PAPERS

1. J. Tranquillo “A Semester-long Student-Driven Computational Project”, To be Presented at ASEE 2011. Vancouver, BC
2. J. Tranquillo, D. Cavanagh, “Preparing students for senior design with a rapid design challenge”, Presented at ASEE 2009. Austin, TX.
3. J. Tranquillo, “Kinesthetic learning in the classroom”. Presented at ASEE 2008. Pittsburgh, PA.
4. J. Tranquillo, D. Ebenstein, J. Baish, W. King, D. Cavanagh, “Integrating external mentors in BME senior design”, Presented at ASEE 2008. Pittsburgh, PA.
5. J. Tranquillo, D. Cavanagh, “A project-driven approach to biomedical signals and systems”, Presented at ASEE 2007. Honolulu, HI.
6. J. Tranquillo, D. Cavanagh, “Building engineering communication skills through a sequence of short assignments”, Presented at ASEE 2007. Honolulu, HI.
7. D. Cavanagh, J. Tranquillo, D. Ebenstein, “A four year progression of open-ended projects in an undergraduate biomedical engineering curriculum”, Presented at ASEE 2007. Honolulu, HI.
8. D. Ebenstein, J. Tranquillo, D. Cavanagh, “Developing student design and professional skills in an undergraduate biomedical engineering curriculum”, Presented at ASEE 2007. Honolulu, HI.
9. J. Tranquillo, “Qualitative, quantitative, open-ended design: A progression in laboratory/lecture learning”, Presented at ASEE 2006. Chicago, IL.

PEER REVIEWED CONFERENCE PRESENTATIONS

1. J. Tranquillo, “The Muse in the System” Presented at the 2011 OPEN Innovation Conference. Washington DC.
2. J. Tranquillo, “Can engineer be taught to be creative?” Presented at BMES 2010. Austin, TX
3. D. Ebenstein, J. Tranquillo, E. Kennedy, D. Cavanagh, “Teaching engineering tools through open-ended student-selected projects” Presented at Patriot League Conference on Exploring Alternative Pedagogies 2009. Lewisburg, PA.
4. D. Cavanagh, J. Tranquillo, D. Ebenstein, “Enhancing biomedical engineering courses with an integrated lecture-lab approach”, Presented at Patriot League Conference on Exploring Alternative Pedagogies 2009. Lewisburg, PA.
5. J. Tranquillo, “Stand up and think: Kinesthetic learning during lecture”, Presented at Patriot League Conference on Exploring Alternative Pedagogies 2009. Lewisburg, PA.
6. D. Ebenstein, E. Kennedy, J. Tranquillo, D. Cavanagh, “A cell culture-based biocompatibility module for biomedical engineers”, Presented at BMES 2009. Pittsburgh, PA.
7. J. Tranquillo, “A project based approach toward building audience awareness in biomedical engineering courses”, Presented at BMES 2008. St. Louis, MO.
8. J. Tranquillo, “A first experience with external senior design mentors”, Presented at BME-IDEA Design Workshop 2007. Los Angeles, CA.
9. J. Tranquillo, “Stand up and think: Kinesthetic learning during lecture”, Presented at BMES 2007. Los Angeles, CA.
10. J. Tranquillo, D. Cavanagh, “Integration of novel teaching techniques into a biosignals and systems design project”, Presented at BMES 2006. Chicago, IL.
11. J. Tranquillo, “Biomedical engineering at Bucknell: An interactive engineering education experience for undergraduates”, Presented at BEACON Medi 2005. Hartford, CT.

INVITED WORKSHOPS

1. J. Tranquillo "Can Students Be Taught To Be Creative?", Symposium on Engineering and Liberal Education 2011. Schenectady, NY
2. J. Tranquillo, B. Engelhardt, "Trying alternative pedagogies as an untenured faculty member", Patriot League Conference on Exploring Alternative Pedagogies 2009. Lewisburg, PA
3. J. Tranquillo, D. Cavanagh, "Experiential design challenge", BME-IDEA Workshop 2009. Pittsburgh, PA.
4. J. Tranquillo, J. Hunter, "Interdisciplinary Speed Dating: Finding a Match", 2010 Faculty Workshop. Lewisburg, PA.
5. J. Tranquillo, J. Hunter, "Designing an Interdisciplinary Team-Taught Course", Susquehanna University Faculty Workshop 2010, Sielensgrove, PA.

INVITED PRESENTATIONS

1. J. Tranquillo, "The Geisinger-Bucknell Partnership: Finding Problems – Designing Solutions" Geisinger Research Days, 2011. Danville, PA
2. J. Tranquillo, J. Hunter, "Building integrated perspectives courses", Bucknell Faculty Learning Series 2009. Lewisburg, PA.
3. J. Tranquillo, "Why I include undergraduates in my research", Faculty Publication Reception 2009. Lewisburg, PA.
4. G. Schneider, J. Tranquillo, X. Meng, "Report from the evaluation teaching community", Bucknell Faculty Learning Series 2008. Lewisburg, PA.
5. J. Tranquillo, "What is biomedical engineering?", Student for a Day Family Day Lecture 2008. Lewisburg, PA.
6. J. Tranquillo, "... but my students won't like it and it seems like a lot of work: Overcoming the obstacles of challenge-based learning", BME Summit 2008. Chicago, IL.
7. J. Tranquillo, R. Rothman, E. Durden, "Twenty-first century skills and tools: Present and future teaching and learning", Bucknell Faculty Learning Series 2008. Lewisburg, PA.
8. J. Tranquillo, "Problem based learning: A war story", How to Engineer Engineering Education Workshop 2007, 2008 and 2009. Lewisburg, PA.
9. J. Tranquillo, V. Zimmerman, "Stand up and think", Bucknell Faculty Learning Series 2007. Lewisburg, PA.
10. J. Tranquillo, "The academic job search", Duke University Graduate Student Chalk Talk Series 2007. Durham, NC.
11. J. Tranquillo, "Supporting the teacher-scholar model", Panelist and presenter for Library and Information Technology Workshop 2006 and 2008. Lewisburg, PA.
12. J. Tranquillo, "Biomedical engineering 210: fundamentals of biomedical engineering", Bucknell Teaching and Learning Center Engaged Learning Session 2006. Lewisburg, PA.
13. J. Tranquillo, "The anatomy of biomedical engineering", Elon Engineering Week, 2003. Elon, NC.
14. J. Tranquillo, "Getting a Ph.D.: What's in it for me?", Trinity College Career Day 2002. Hartford, CT.

GRANTS AND PROTOCOLS (PI or Co-PI for all grants)

1. Bucknell Summer Curricular Grant, "Redesign of the Fundamentals of Biomedical Engineering Course", Awarded 2010 for \$4000.

Professional Activities:SOCIETIES

2008 –	American Physical Society Member
2005 –	American Society of Engineering Education Member
2004 –	Heart Rhythm Member
1998 –	Biomedical Engineering Society Member.
1995 –	IEEE Engineering in Medicine and Biology Member

CONSULTING

2010 –	Small Business Development Center Consultant
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2004 – 2006 Expert witness for Plaintiff in patent law case (Embrex vs. Breuil)
 2008 – Trinity College Engineering Advisory Council

PATENTS

1. G. Gerhard, **E. Andreozzi**, **M. Kalman**, **E. Thiel**, **J. Tranquillo**, “Lid for a multiwell microplate in cell culture assembly”, Patent Number WO2008134748-A1.

Service:

UNIVERSITY

2011 – William Bucknell Society Event Participant in New York City
 2011 – Judge for IMPACT Class Presentations
 2010 – Member of Bucknell Innovation Group (BIG)
 2010 – Faculty Development Committee
 2009 – University Lectureship Committee
 2009 – Forum Speaker Selection Committee
 2009 – Brain, Mind and Culture Faculty Reading Group (Founder and Leader)
 2009 – Focus Year 2010-2011 Organizer (“Emerging Minds”)
 2009 Management Tenure Track Search Committee External Member
 2009 Math Tenure Track Search Committee External Member (2 searches)
 2009 Participation in Intellectual Property Meetings with External Consultants
 2009 Interviewer for Bucknell Sponsored Research Director
 2008 – Bucknell High Performance Computing Founder
 2008 – Bucknell Improvisation Intensive Ensemble Member (Dancer and Musician)
 2006 – 2007 Academic Planning Group
 2006 Co-authored three proposals to the Academic Planning Group
 2006 Catholic Campus Ministry Theology on Tap
 2006 Christmas Candle Lighting Ceremony Reader
 2006 FACT Orientation Workshop Panelist
 2006 – Founder and Leader of Bucknell Improvisational Movement Group
 2006 – 2007 Catholic Campus Ministry Trumpet player for special occasions
 2006 – 2007 Faculty representative from Engineering for Football recruiting
 2006 – Pre-med Advisory Committee
 2006 – Multiple master classes in Dance Department
 2005 – 2008 Aikido (Budokai) Club Advisor
 2005 – 2006 Chair and Organizer for First Year Faculty Working Group

ENGINEERING COLLEGE

2010 – Ad-hoc committee on Mooney addition to Dana Engineering
 2010 – PDL Steering Committee
 2010 – Instructional Facilities Committee Chair
 2010 – Breakiron 263 Redesign Task Force
 2008 – Instructional Facilities Committee
 2007 – Engineers Without Borders Advisor
 2006 – 2007 Engineering Long Range Planning Committee
 2006 – 2007 Chemical Engineering Tenure Track Faculty Search Committee External Member
 2005 – 2006 Engineering College Curriculum Committee

BIOMEDICAL ENGINEERING DEPARTMENT

2009 May Plan Author (May 2009, 3 day workshop)
 2008 Bucknell BME ABET Accreditation Week
 2008 Wrote draft of Criterion 5 for Bucknell BME ABET self-study
 2008 – 2009 Biomedical Engineering Tenure Track Faculty Search Committee Member
 2007 ABET Trip to Western New England
 2007 Biomedical Engineering Administrative Assistant Search Committee
 2007 Biomedical Engineering Technical Assistant Search Committee

2007	Geisinger Summer Design Exposition
2007	Developed Standard Operating Procedures for BME labs
2007 –	Developed Laptop Procedures for BME labs and monitor laptops
2007	Developed W2 protocol for BME Senior Design (BMEG 401 and 402)
2007	Developed department-wide Student travel policy
2006	Organized Bucknell Student Trip to BMES 2006 conference in Chicago
2006	BME faculty representative for the BME ENGR 100 BEAA talk
2006 – 2007	Biomedical Engineering Tenure Track Faculty Search Committee Member
2006 – 2007	Co-organized Bucknell-Geisinger seminar series
2006 –	BMEG 350 class used by admissions as an example engineering course
2005 – 2007	Biomedical Engineering Society Advisor
2005 –	BME Library Representative
2005 – 2006	Biomedical Engineering Tenure Track Faculty Search Committee Member
2005 – 2006	Organize program-wide lunches
2005	BME ABET Accreditation Week

BIOMEDICAL ENGINEERING

2011 –	Reviewer for W.H Freeman and Company Publishers
2011	Moderator for ASEE 2010 BED session
2011	Reviewer for ASEE 2011
2011	Evaluator for National Biomedical Teaching and Outstanding Educator Awards
2010	Moderator for BMES 2010 Education Track
2010	Moderator for ASEE 2010 BED session
2009 – 2010	Reviewer for ASEE 2010 BED
2009 –	Reviewer for Journal of Modern Physics
2009 –	Reviewer for Biological Physics
2009	Track Chair for BMES 2009 Undergraduate Research Session
2009	Reviewer for BMES 2009 Undergraduate Research Session
2009	Reviewer for BMES 2009 Education Track
2009	Judge for BMES 2009 Undergraduate Research Awards
2009	Developed Standard Operating Procedures for Undergraduate Research Track
2009	Moderator for BMES 2009 “Design and Laboratory Instruction” Session
2009	Co-Organizer for BME Body of Knowledge (BOK) Workshop
2008	Co-Moderator for 3 rd BME Summit “Challenge and Inquiry-based Learning”
2008 – 2009	Reviewer for ASEE 2009 BED
2008	Moderator for ASEE 2008 “Novel Courses in BME”
2007 – 2008	Reviewer for ASEE 2008 BED
2008	Co-organizer for BMES 2008 Undergraduate Sessions
2007	Co-organizer for BMES 2007 Undergraduate Sessions
2007	Chair of four BMEG 2007 undergraduate research sessions
2007	NSF working group: “Assessing Innovative Design in BME Education”
2007 –	Reviewer for Neuromuscular Disorders
2007 –	Elected Member-at-Large, Biomedical Engineering Division of ASEE
2006	Chair for Humanities and Neuroscience Conference (Bucknell University)
2006 –	Reviewer for IEEE Trans on Neural Systems and Rehabilitation
2005 –	BMESource.org site editor
2005 –	Reviewer for Engineering in Medicine and Biology Conference
2004 –	Reviewer for IEEE Trans on Biomedical Engineering Journal
2004	Reviewer for National Center for Replacement, Refinement and Reduction
2001	Student Chair for 2001 BMES conference. Durham, NC

Honors and Awards:

2010	<u>ASEE BED National Teaching Award</u> – for national contributions to BME
2004	<u>Elected Member</u> to Heart Rhythm Society.
1997	<u>Phi Beta Kappa</u> academic honor society.

1997 Sigma Xi scientific research honor society. Nominated Member.
1997 President's Fellow Selected by Trinity engineering department as the top student.
1997 Senior Achievement Award one of 5 honored for outstanding service to Trinity.