CURRICULUM VITAE

PETER M. BRONK

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EDUCATION

Bachelor of Arts	Physics, September 1990 – June 1994. Williams College, Williamstown, MA Diploma - June 1994 with honors.
Doctor of Philosophy	Neuroscience, September 1996 – May 2002. University of Pennsylvania School of Medicine, Philadelphia, PA Diploma - May 2002.

POSTGRADUATE TRAINING

2002-2003	Research Associate Howard Hughes Medical Institute, University of Texas Southwestern Medical Center Dallas, TX Department of Neuroscience Laboratory of Professor Thomas C. Südhof
2004-2007	Postdoctoral Fellow University of Texas Southwestern Medical Center Dallas, TX Department of Neuroscience Laboratory of Professor Thomas C. Südhof
2008-2012	Postdoctoral Fellow Brandeis University, Waltham, MA Department of Biology Laboratory of Leslie C. Griffith
2013-2016	Postdoctoral Associate Brandeis University Neuroscience Program Laboratory of Leslie C. Griffith

HOSPITAL APPOINTMENTS

January 31, 2018 - Present	Research Scientist, Rhode Island Hospital, CVRC.

ACADEMIC APPOINTMENTS

April 1, 2020 – June 30, 2022	Instructor, Department of Medicine, The Warren Alpert Medical School of Brown University.
July 1, 2022 – Present	Assistant Professor of Medicine (Research), The Warren Alpert Medical School of Brown University

HONORS AND AWARDS

2002 Louis B. Flexner Student Prize for Outstanding Dissertation Research in the Neurosciences.
2002 Saul Winegrad, M.D. Award for Outstanding Dissertation.

MEMBERSHIP IN SOCIETIES

Society for Neuroscience: 2007 – 2017
Biophysical Society 2019-present
American Heart Association 2024-present

PUBLICATIONS LIST

ORIGINAL PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. Chernomordik LV, Leikina E, Frolov VA, **Bronk P**, Zimmerberg J. An early stage of membrane fusion mediated by the low pH confirmation of influenza Hemagglutinin depends upon membrane lipids. *J. Cell Biology* 1997 136(1): 81-93. PMID: 9008705.

2. Ranjan R, **Bronk P**, Zinsmaier KE. Cysteine-String Protein is required for calcium-secretion coupling of evoked neurotransmission in *Drosophila* but not for vesicle recycling. *J. Neurosci.* 1998 18(3): 956-964. PMID: 9437017.

3. Chernomordik LV, Frolov VA, Leikina E, **Bronk P**, Zimmerberg J. The pathway of membrane fusion catalyzed by influenza Hemagglutinin: restriction of lipids, hemifusion, and lipidic pore formation. *J. Cell Biology* 1998 140(6): 1369-1382. PMID: 9508770.

4. Nie Z, Ranjan R, Wenniger JJ, Hong S, **Bronk P**, Zinsmaier KE. Overexpression of Cysteine-String Proteins in *Drosophila* reveals interactions with Syntaxin. *J. Neurosci.* 1999 19(23): 10270-10279. PMID: 10575024.

5. Dawson-Scully K*, **Bronk P***, Atwood HL, Zinsmaier KE. Cysteine-String Protein increases the calcium sensitivity of neurotransmitter exocytosis in *Drosophila*. *J. Neurosci.* 2000 20(16): 6039-6047. PMID: 10934253.
   * Both authors contributed equally.

6. Frolov VA, Cho MS, **Bronk P**, Reese TS, Zimmerberg J. Multiple local contact sites are induced by GPI-linked influenza Hemagglutinin during hemifusion and flickering pore formation. *Traffic* 2000 1(8): 622-630. PMID: 11208150.

7. **Bronk P**, Wenniger JJ, Dawson-Scully K, Guo X, Hong S, Atwood HL, Zinsmaier KE. *Drosophila* Hsc70-4 is critical for neurotransmitter exocytosis *in vivo*. *Neuron* 2001 30(2): 475-488. PMID: 11395008.

8. Song W, Ranjan R, **Bronk P**, Dawson-Scully K, Marin L, Seroude L, Lin YJ, Nie Z, Atwood HL, Benzer S, Zinsmaier KE. Regulation of synaptic vesicle exocytosis by the presynaptic receptor Methuselah at *Drosophila* neuromuscular junctions. *Neuron* 2002 36(1): 105-119. PMID: 12367510.

9. **Bronk P**, Nie Z, Klose M, Dawson-Scully K, Zhang J, Robertson R, Atwood HL, Zinsmaier KE. The multiple functions of Cysteine-String Protein analyzed at *Drosophila* nerve terminals. *J. Neurosci.* 2005 25(9): 2204-14. PMID: 15745946.

10. Sun J, **Bronk P**, Lui X, Han W, Südhof TC. Synapsins regulate use-dependent synaptic plasticity in the calyx of Held by a Ca^{2+}/Calmodulin-dependent pathway. *PNAS* 2006 103(8): 2880-2885. PMID: 16481620.

11. **Bronk P**, Deák F, Wilson MC, Liu X, Südhof TC, Kavalali ET. Differential effects of SNAP-25 deletion on Ca^{2+}-dependent and Ca^{2+}-independent neurotransmission. *J. Neurophysiology* 2007 98: 794-806. PMID: 17553942.

12. Sharma M, Burré J, **Bronk P**, Zhang Y, Xu W, Südhof TC. CSPα knockout causes neurodegeneration by impairing SNAP-25 function. *EMBO J.* 2011 31(4): 829-841. PMID: 22187053.

13. Ni L, **Bronk P**, Chang EC, Lowell AM, Flam JO, Panzano VC, Theobald DL, Griffith LC, Garrity PA. A gustatory paralogue controls rapid warmth avoidance in *Drosophila*. *Nature* 2013 Aug 29; 500(7464): 580-4. PMID: 23925112.

14. **Bronk P,** Kuklin EA, Gorur-Shandilya S, Liu C, Wiggin TD, Reed ML, Marder E, Griffith LC. Regulation of Eag by Ca^{2+}/Calmodulin controls presynaptic excitability in *Drosophila*. *J. Neurophysiology* 2018 May 1; 119(5): 1665-1680. PMID: 29364071.

15. Hamilton S, Terentyeva R, Kim TY, **Bronk P**, Clements RT, O-Uchi J, Csordas G, Choi BR, Terentyev D. Pharmacological modulation of mitochondrial Ca^{2+} content regulates sarcoplasmic reticulum Ca^{2+} release via oxidation of the ryanodine receptor by mitochondria-derived reactive oxygen species. *Front. Physiol.* 2018 Dec 21; 9:1831. PMID: 30622478.

16. Hamilton S, Polina I, Terentyeva R, **Bronk P**, Kim TY, Roder K, Clements RT, Koren G, Choi BR, Terentyev D. PKA phosphorylation underlies functional recruitment of sarcolemmal SK2 channels in ventricular myocytes from hypertrophic hearts. *J. Physiol.* 2020 Jul; 598(14):2847-2873. PMID: 30771223.

17. **Bronk P**, Kim TY, Polina I, Hamilton S, Terentyeva R, Roder K, Koren G, Terentyev D, Choi BR. Impact of I_{SK} voltage and Ca^{2+}/Mg^{2+}-dependent rectification on cardiac repolarization. *Biophys. J*. 2020 Aug 4; 119(3):690-704. Epub 2020 Jun 27. PMID:32668235.

18. Hwang J, Kim TY, Terentyev D, Zhong M, Kabakov A, **Bronk P**, Arunachalam K, Belardinelli L, Rajamani S, Kunitomo Y, Pfeiffer Z, Lu Y, Peng X, Odening K, Qu Z, Karma A, Koren G, Choi BR. Late I_{Na} blocker GS967 suppress polymorphic VT in a transgenic rabbit model of long QT type 2. *Circ. Arrhythm. Electrophysiol*. 2020 Aug; 13(8). Epub 2020 Jul 6. PMID: 32628505.

19. Gupta A, Fei Y, Kim TY, Xie A, Batai K, Greener I, Tang H, Juneman E, Indik JH, Shi G, Christensen J, Gupta G, Hillery C, Kansai M, Parikh DS, Zhou T, Yuan JX, Kanthi Y, **Bronk P**, Koren G, Kittles R, Duarte JD, Garcia J, Machado RF, Dudley S, Choi BR, Desai AA. IL-18 mediates sickle cell cardiomyopathy and ventricular arrhythmias. *Blood*. 2021 Mar 4;137(9):1208-1218. PMID: 33181835.

20. Kabakov, AY, Segun E, Lu Y, Roder K, **Bronk P**, Baggett B, Turan NN, Moshal KS, and Koren G. Three-week old rabbit ventricular myocytes as a novel system to study cardiac excitation and EC coupling. *Front. Physiol*. 2021 Nov. 18. PMID: 34867432.

21. Soepriatna AH, Navarrete-Welton A, Kim TY, Daley MC, **Bronk P**, Kofron CM, Mende U, Coulombe KLK, Choi BR. Action potential metrics and automated data analysis pipeline for cardiotoxicity testing using optically mapped hiPSC-derived 3D cardiac microtissues. *Plos One*. 2023 Feb. 6. PMID: 36745602.

22. Baggett BC, Murphy KR, Sengun E, Mi E, Cao Y, Turan NN, Lu Y, Scofield L, Kim TY, Kabakov AY, **Bronk P**, Qu Z, Camelliti P, Dubielecka P, Terentyev D, Del Monte F, Choi BR, Sedivy J, Koren G. Myofibroblast senescence promotes arrhythmic remodeling in the aged infarcted rabbit heart. *Elife*. 2023 May 19. PMID: 37204302.

23. Kim TY, Kabakov AY, Terentieva R, Terentyev D, **Bronk P**, Lu YC, Tran CT, Odening KE, Peng X, Baczkó I, Varro A, Bösze Z, Qu Z, Koren G, Choi BR. Mutations in KCNE1 promote cardiac alternans in Long QT Syndrome type 5 rabbits. (accepted by *J. Physiol. minor revisions*)

24. Kabakov AY, Roder K, **Bronk P**, Turan NN, Dhakal S, Zhong M, Lu Y, Zeltzer ZA, Najman-Licht YB, Karma A, Koren G. E3 ubiquitin ligase rififylin (RFFL) has yin-yang effects on rabbit cardiac transient outward potassium currents (Ito) and corresponding channel proteins. *J. Biol. Chem.* 2024 Feb 15; 300(3):105759. PMID: 38367666.

25. Paquette SE, Oduor C, Gaulke A, Stefan S, **Bronk P**, Dafonseca V, Morrison A, Choi BR, Bailey J, Plavicki JS. Loss of developmentally derived Irf8+ macrophages promotes hyperinnervation and arrhythmia in the adult zebrafish heart. bioRxiv [Preprint]. 2-24 Apr 20:2024.04.17.589909. PMID: 38659956.

26. Daley MC, Moreau M, **Bronk P,** Fisher J, Kofron C, Mende U, McMullen P, Choi BR, Coulombe K. In vitro to in vivo extrapolation from three-dimensional hiPSC-derived cardiac microtissues and physiologically based pharmacokinetic modeling to inform next-generation arrythmia risk assessment. *Tox. Sci.* 2024 Sep 1; 201(1):145-157. PMID: 38897660.

27. Turan NN, Welton A, Lu Y, Kim TY, Roder K, Sengun E, Kabakov AY, **Bronk P**, Martinez-Moreno R, Baggett B, Odening KE, Choi BR, Koren G. Proof-of-concept study for LQT2 syndrome gene therapy in transgenic rabbits: minimally invasive intravenous delivery of AAV9. (Submitted to *Circ.: Arrhythmia Electrophysiol.*)

28. Sengun E, Zhou L, Kelsey M, Turan NN, Lu Y, Kabakov AY, **Bronk P**, Mi E, Kim TY, Vijayakumar S, Price D, Nussbaum SS, Song C, Feng J, Sellke FW, Dubielecka-Szczerba P, Del Monte F, Nerbonne J, Uydes-Dogan BS, Roder K, Choi BR, Van Wagoner DR, Sedivy JM, Koren G. The role of senescence in the development of age-related atrial fibrillation. (Submitted to *Circ.: Arrhythmia Electrophysiol.*)

OTHER PEER-REVIEWED PUBLICATIONS

Zinsmaier KE, **Bronk P**. (2001) Molecular chaperones and the regulation of neurotransmitter exocytosis. *Biochem. Pharmacology* 62(1): 1-11. PMID: 11377391.

ABSTRACTS

1. Frolov VA, Leikina E, **Bronk P**, Chernomordik LV, Zimmerberg J. *Wildtype HA induces hemifusion between cell membranes.* Biophysical Journal 72(2): MAMI30MAMI3 Part 2, 1997.
2. Zhang LL, Nikonov SS, **Bronk P**, Pugh EN. *Recovery components of fish cone photoresponses*. Annual Association for Research in Vision and Ophthalmology Meeting, Fort Lauderdale, FL, 1997.
3. **Bronk P**, Zinsmaier KE. *Implications from the Black Widow Spider venom-induced neurotransmitter release in csp mutants: the synaptic vesicle protein CSP promotes the activity of presynaptic calcium channels*. 51st Annual Meeting of the Society of General

Physiologists, "Mechanisms of Secretion", Woods Hole, MA, J. Gen. Physiol. 110, 27a, 1997.

4. Ranjan R, **Bronk P**, Zinsmaier KE *The synaptic vesicle protein CSP is required for calcium-secretion coupling of evoked neurotransmitter release in Drosophila, but not for vesicle recycling*. Neurobiology of Drosophila. Program and Abstracts Vol. C. Doe and L. Hall (eds.), Cold Spring Harbor, New York, p. 152, 1997.
5. Wenniger JJ, **Bronk P**, Hong S, Zinsmaier KE *An analysis of the role of the CSP-HSC4 interaction for evoked neurotransmitter release*. 39th Annual Drosophila Research Conference, Program and Abstracts Volume, Washington, D.C., p. 597, 1998.
6. Zinsmaier KE, **Bronk P**, Guo X, Hong S, Wenniger JJ. *Cysteine String Protein (CSP) cooperates with the 70 kD heat shock congnate protein (HSC4) to mediate calcium-secretion coupling of neurotransmitter release in Drosophila*. Gordon Conference, "Cell Biology of the Neuron", Plymouth State College, Plymouth, NH, 1998.
7. **Bronk P**, Dawson-Scully KD, Atwood HL, Zinsmaier KE. *The loss of evoked neurotransmitter release in Drosophila cysteine string protein null-mutants cannot solely be attributed to a defect in calcium entry*. Cold Spring Harbor meeting of *Drosophila* Neurobiology, Cold Spring Harbor, NY, 1999.
8. Dawson-Scully KD, Millar AG, Zinsmaier KE, **Bronk P**, Atwood HL. *Resting intracellular calcium levels increase with temperature in boutons of the neuromuscular junction of Drosophila lacking cysteine string proteins*. University of Western, Southern Ontario Neuroscience Association, London, Ontario, Canada, p. 16, 2000.
9. Dawson-Scully K, Millar AG, Zinsmaier KE, **Bronk P**, Atwood HL. *Resting intracellular calcium levels increase with temperature in boutons of the neuromuscular junction of Drosophila lacking cysteine string proteins*. Society for Neuroscience Meeting, New Orleans, LA. 398.2, 2000.
10. **Bronk P**, Dawson-Scully K, Wenniger JJ, Atwood HL, Zinsmaier KE. *Cysteine-String Protein cooperates with Hsc70 to mediate multiple functions in neurotransmitter exocytosis*. Gordon Conference: "Cell Biology of the Neuron", Plymouth, NH, 2000.
11. **Bronk P**, Dawson-Scully K, Wenniger JJ, Guo X, Atwood HL, Zinsmaier KE. Cysteine-String Protein Cooperates with Hsc70-4 in Neurotransmitter Exocytosis. 42nd Annual *Drosophila* Research Conference, Washington, D.C, 2001.
12. Song W, Ranjan R, **Bronk P**, Nie Z, Dawson-Scully K, Lin Y, Seroude L, Atwood HL, Benzer S, Zinsmaier KE. *Methuselah, a putative G protein-coupled receptor, regulates excitatory neurotransmitter exocytosis at the larval neuromuscular junction of Drosophila*. Cold Spring Harbor Meeting of *Drosophila* Neurobiology. Cold Spring Harbor, NY, p.251, 2001.
13. **Bronk P**, Dawson-Scully KD, Nie Z, Atwood HL, Zinsmaier KE. *Opposing functions of Drosophila cysteine string protein at nerve terminals*. Cold Spring Harbor meeting of *Drosophila* Neurobiology. Cold Spring Harbor, NY, p.22, 2001.
14. Dawson-Scully K, **Bronk P**, Nie Z, Atwood HL, Zinsmaier KE. *Functional domains of Drosophila cysteine string protein mediate differential effects at nerve terminals*. Heat Shock Protein Symposium, Erindale, University of Toronto, Toronto, Canada: p.32, 2002.
15. **Bronk P**, Maloney R, Kim EZ, Reenan RA, Griffith LC. *Effects of two RNA editing sites in the Drosophila Ether-à-go-go potassium channel subunit*. Annual Meeting of the

Sloan-Schwartz Centers for Computational Neuroscience, Brandeis University, Waltham, MA, 2013.

16. **Bronk P,** Polina I, Terentyeva R, Hamiltion S, Terentyev D. *Biphasic Ca^{2+} regulation of SK channels in ventricular cardiomyocytes maximizes their conductance during a late phase of the action potential.* Biophysical Journal Vol. 116(3): 235a-236a, 2019 Annual Meeting of the Biophysical Society, Baltimore, MD.
17. Hamilton S, Terentyeva R, Kim TY, **Bronk P**, O-Uchi J, Csordas G, Choi BR, Terentyev D. *Pharmacological modulation of mitochondrial Ca^{2+} uptake regulates sarcoplasmic reticulum Ca^{2+} release via oxidation of ryanodine receptor by reactive oxygen species.* Biophysical Journal Vol. 116(3): 382a, 2019 Annual Meeting of the Biophysical Society, Baltimore, MD.
18. **Bronk P,** Kim TY**,** Polina I, Hamiltion S, Terentyeva R, Roder K, Koren G, Terentyev D, Choi BR. *Role of SK Current Rectification in Shaping Action Potential in Ventricular Myocytes.* Biophysical Journal Vol. 118(3): 253a, 2020 Annual Meeting of the Biophysical Society, San Diego, CA.
19. Terentieva R, Hamilton S, Kim TY, Polina I, **Bronk P**, Roder K, O-Uchi J, Koren G, Gyorke S, Belevych AE, Choi BR, Terentyev DA. *Inhibition of Tyrosine Kinase Pyk2 in Hypertrophic Hearts: Cellular Mechanisms of Anti-Arrhythmic Effects.* Biophysical Journal Vol. 118(3): 566a, 2020 Annual Meeting of the Biophysical Society, San Diego, CA.
20. **Bronk P**, Kim TY, Lu YC, Turan N, Qu Z, Terentyeva R, Terentyev DA, Koren G, Choi BR. *Physiological Role of SK Channels in Modulating Cardiac Repolarization: APD and Dispersion at Slow Heart Rate in Long QT Syndrome*. Biophysical Journal Vol. 122(3): 255a, 2023 Annual Meeting of the Biophysical Society, San Diego, CA.
21. Navarette-Welton A, Kim TY, **Bronk P**, Qu Z, Koren K, Choi BR. *Low-efficiency gene editing is capable of suppressing arrhythmogenesis in long QT type II: computer simulation study*. Circulation Vol. 148: A12241, American Heart Association 2023 Meeting, Philadelphia, PA.
22. **Bronk P**, Zhang P, Wang E, Lu Y, Banerjee D, Stanley M, Sellke F, Radice G, Choudhary G, Tran C, Choi BR. *Role of cardiomyocyte mechanotransduction in triggering atrial arrhythmias in pulmonary hypertension*. Circulation Vol. 150: A4142747, American Heart Association 2024 Meeting, Chicago, IL.
23. **Bronk P**, Zhang P, Wang E, Radice G, Tran C, Choudhary G, Choi BR. *Role of inflammatory cytokines in triggering ventricular arrhythmias in pulmonary hypertension*. Circulation Vol. 150: A4143048, American Heart Association 2024 Meeting, Chicago, IL.

GRANTS

1. 5F31MH12611-01 National Institute of Mental Health, 2/1/2000 – 1/31/2002 Role of Cysteine-String Proteins in neurotransmission. $64,782 total. **Bronk PM, PI**.

2. 1F32MH070207-01 National Institute of Mental Health, 2/1/2004 – 1/31/2007 Synapsins: structure and function in neurotransmission. $139,456 total. **Bronk PM, PI**.

3. 11920_20221322 Rhode Island Foundation, 4/1/2022 – 12/31/2023, Novel Therapy to Prevent Drug-Induced Sudden Cardiac Death. $25,000 Direct Costs. **Bronk P, PI**.

4. 20160 Advance Clinical and Translational Research, 4/5/2023-6/30/2024, Targeting Mechanotransduction for Atrial Arrhythmias in Pulmonary Hypertension. $41,241 Direct Costs. Tran CT, PI. and **Bronk P, MPI**.

UNIVERSITY TEACHING ROLES

1999	Taught 1 semester recitation section for Introductory Neurobiology Course, University of Pennsylvania, 15 students in section.
2009-2010	Team teaching NBIO 250 pro-seminar course, Brandeis University, 15 students.
2009-2011	Co-mentored Brandeis University undergraduates Jessica Hutcheson and Nick Hornstein in their honors thesis. Both graduated with honors. Nick went on to an MD/PhD at Columbia University.
2011-2013	Co-mentored a BS/MS program undergraduate student at Brandeis University, Lena Chen graduated with honors and research project earned her a master's in science.