

John Bankston, Ph.D.

University of Colorado Anschutz Medical Campus |
Department of Physiology and Biophysics | 12800 E. 19th
PI MS 8307 Rm 7133 Aurora, CO 80045 | 303-724-4909 |
917-273-3309 (cell) john.bankston@ucdenver.edu |
<http://www.bankstonlab.com> | Twitter @johnrbankston

EDUCATION

Ph.D. Physiology and Cellular Biophysics 2009
Columbia University, New York, NY

B.S. Biomedical Engineering 2000
Columbia University, New York, NY

EXPERIENCE

Assistant Professor 2016-Present
Department of Physiology and Biophysics
University of Colorado, Denver, CO

Project: Investigations into the structural mechanisms of Acid-sensing ion channels and their regulation by a family of integral membrane proteins called Stomatins using X-ray crystallography, FRET, double electron-electron resonance (DEER), patch clamp electrophysiology, and fluorescence imaging.

Role: PI

Postdoctoral Fellow 2010-2016
Department of Physiology and Biophysics
University of Washington, Seattle, WA

Project: Investigations into the structure and mechanisms of TRIP8b regulation of HCN channels using X-ray crystallography, single molecule fluorescence, and double electron-electron resonance (DEER).

Advisor: Dr. William Zagotta

Doctoral Student 2003-2009
Department of Physiology and Cellular Biophysics
Columbia University, New York, NY

Project: Investigations into the structure and function of the cardiac sodium channel and its impact on the Long QT syndrome using whole cell and single channel voltage clamp electrophysiology.

Advisor: Dr. Robert (Rocky) Kass

Research Technician 2001-2003
Department of Biology
Massachusetts Institute of Technology, Boston, MA

Project: Investigations into the prevention of aggregation and fibril formation of the mutant form of the Huntington's disease causing protein huntingtin using novel peptides and intrabodies.

Advisor: Dr. Vernon Ingram

Research Technician 2000-2001

Research Division
Hospital of Special Surgery, New York, NY

Project: Investigations of the genetics of bone strength and into potential treatments for osteogenesis imperfecta.

Advisors: Drs. Robert Blank, Nancy Camacho, and Cathleen Raggio

CURRENT FUNDING

R00EY024267-03 (Bankston) NIH K99/R00 Pathway to Independence Award	02/01/2017-1/30/2020 \$552,780 (DC)
--	--

COMPLETED FUNDING

1K99EY024267 (Bankston) NIH K99/R00 Pathway to Independence Award	09/01/2014-08/31/2019 \$167,324 (DC)
--	---

1F32NS074545 (Bankston) National Research Service Award (NRSA) Postdoctoral Fellowship National Institute for Neurological Disease and Stroke	09/15/2011-08/31/2014 \$136,797 (DC)
--	---

AWARDS

NIH K99/R00 Pathway to Independence Award	2014-2020
National Research Service Award (NINDS)	2011-2014
Columbia University Physiology and Biophysics Poster Competition - best poster	2007

PUBLICATIONS

Peer reviewed

15. **Bankston JR**, DeBerg HA, Stoll S, Zagotta WN. (2017) Mechanism for the inhibition of the cAMP dependence of HCN ion channels by the auxiliary subunit TRIP8b. *J. Biol Chem.* Oct 27;292(43):17794-17803.

14. DeBerg HA*, **Bankston JR* (co-first authors)**, Rosenbaum JC, Brzovich PS, Zagotta WN, Stoll S. (2015) Structural mechanism for the regulation of HCN ion channel by the accessory protein TRIP8b. *Structure.* Apr 7;23(4):734-44.

13. Hines KE, **Bankston JR**, Aldrich RW. (2015) Analyzing single-molecule time series via nonparametric Bayesian inference. *Biophysical Journal.* 103(3):540-556.

12. Sun J, **Bankston JR**, Payandeh J, Hinds TR, Zagotta WN, Zheng N. (2014) Crystal Structure of the plant dual-affinity nitrate transporter NRT1.1. *Nature.* 507(7490):73-7.

11. Moreno JD, Yang PC, **Bankston JR**, Grandi E, Bers DM, Kass RS, Clancy CE. (2013) Ranolazine for congenital and acquired late INa-linked arrhythmias: in silico pharmacological screening. *Circulation Research.* 113(7):e50-61.

10. **Bankston JR**, Camp SS, DiMaio F, Lewis AS, Chetkovich DM, Zagotta WN. (2012) Structure and stoichiometry of an accessory subunit TRIP8b interaction with hyperpolarization-activated cyclic nucleotide-gated channels. *P.N.A.S., USA*. 109(20):7899-904.
9. Moreno JD, Zhu ZI, Yang PC, **Bankston JR**, Jeng MT, Kang C, Wang L, Bayer JD, Christini DJ, Trayanova NA, Ripplinger CM, Kass RS, Clancy CE. (2011) A computational model to predict the effects of class I anti-arrhythmic drugs on ventricular rhythms. *Science Translational Medicine*. 3(98):98ra83.
8. **Bankston JR** and Kass RS. (2010) Therapeutic management of Long QT Syndrome Variant 3: Local anesthetic properties of beta-blocking drugs. *Journal of Molecular and Cellular Cardiology*. 48(1):246-53.
7. Kurokawa J, **Bankston JR**, Kaihara A, Furukawa T, Kass RS. (2009) KCNE variants reveal a critical role of the beta subunit carboxyl terminus in PKA-dependent regulation of the I(Ks) potassium channel. *Channels*. 3(1): 16-24.
6. Chung DY, Chan PJ, **Bankston JR**, Yang L, Liu G, Marx SO, Karlin A, Kass RS. (2009) Location of KCNE1 relative to KCNQ1 in the I(KS) potassium channel by disulfide cross-linking of substituted cysteines. *P.N.A.S., USA*. 106(3):743-8.
5. Holland KD, Kearney JA, Buck G, Keddache M, **Bankston JR**, Glaaser IW, Kass RS and Meisler MH. (2008) Mutation of the sodium channel *SCN3A* in a patient with cryptogenic partial epilepsy. *Neuroscience Letters*. 33(1): 65-70.
4. **Bankston JR**, Yue M, Chung W, Spyres M, Pass RH, Silver E, Sampson KJ, Kass RS. (2007) A Novel and Lethal De Novo LQT-3 Mutation in a Newborn with Distinct Molecular Pharmacology and Therapeutic Response. *PLoS ONE*. 2(12): e1258.
3. **Bankston JR**, Sampson KJ, Kateriya S, Glaaser IW, Malito DL, Chung WK and Kass RS. (2007) A novel LQT-3 mutation disrupts an inactivation gate complex with distinct rate-dependent phenotypic consequences. *Channels*. 1(4): 273 – 280.
2. Glaaser IW, **Bankston JR**, Liu H, Tateyama M, Kass RS. (2006) A carboxyl-terminal hydrophobic interface is critical to sodium channel function: Relevance to inherited disorders. *Journal of Biological Chemistry*. 281(33): 24015-23.
1. Dahlgren PR, Karymov MA, **Bankston J**, Holden T, Thumfort P, Ingram VM, Lyubchenko YL. (2005) Atomic force microscopy analysis of the Huntington protein nanofibril formation. *Nanomedicine*. 1(1): 52-7.

Pending Manuscripts

Bankston JR, DeBerg HA, Stoll S, Zagotta WN. (2017) Mechanism of TRIP8b regulation of HCN channels. In preparation.

Commentaries and Reviews

Bankston JR and Kass RS. (2008) Ion channels: The voltage-sensor quartet. *Nature*. 456(7219): 183-185.

Bankston JR and Kass RS. (2007) Fading Sodium channels in failing hearts. *Circulation Research*. 1(4): 273 – 280.

Invited Talks

Tripping up HCN channel function with an accessory subunit. Loyola University Department of Cell and Molecular Physiology seminar series. Maywood, IL. January 2016.

Tripping up HCN channel function with an accessory subunit. Vanderbilt University Department of Molecular Physiology and Biophysics seminar series. Nashville, TN. March 2016.

Tripping up HCN channel function with an accessory subunit. University of Pennsylvania Department of Physiology seminar series. Philadelphia, PA. February 2016.

Tripping up HCN channel function with an accessory subunit. University of Colorado Anschutz Medical Center Department of Physiology and Biophysics seminar series. Aurora, CO. February 2016.

Tripping up HCN channel function with an accessory subunit. University of Michigan Department of Biophysics seminar series. Ann Arbor, MI. January 2016.

Tripping up HCN channel function with an accessory subunit. Stony Brook Department of Physiology and Biophysics and the Department of Cardiology seminar series. Stony Brook, NY. January 2016.

Tripping up HCN channel function with an accessory subunit. Indiana University School of Medicine Department of Pharmacology and Toxicology seminar series. Indianapolis, IN. January 2016.

Tripping up HCN channel function with an accessory subunit. University of Maryland School of Medicine Department of Physiology seminar series. Baltimore, MD. January 2016.

Tripping up HCN channel function with an accessory subunit. Northwestern University Department of Pharmacology seminar series. Chicago, IL. September 2015.

Mechanisms of regulation of HCN channels by the accessory subunit TRIP8b. The 5th Annual International Ion Channel Conference (satellite meeting). Hangzhou, China. June 2015.

Spectroscopic and biochemical studies of TRIP8b regulation of HCN channels. The Biophysical society 59th annual meeting. Baltimore, MD. February 2015.

Dimeric TRIP8b binds to the cyclic-nucleotide binding domain of HCN channels. The Biophysical society 57th annual meeting. Philadelphia, PA. February 2013.

Selected Poster Presentations

Bankston JR, DeBerg HA, Rosenbaum JC, Brzovich PS, Stoll S, Zagotta WN. Mechanisms of regulation of HCN channels by the accessory subunit TRIP8b. The 5th Annual International Ion Channel Conference. Luzhou, China. June 2015.

Bankston JR, Camp SS, Lewis AS, Chetkovich DM, Zagotta WN. Molecular determinants of the interaction between HCN2 and its accessory subunit TRIP8b. The Biophysical society 56th annual meeting. San Diego, CA. February 2012.

Bankston JR and Kass RS. Mechanism of Beta-blocker action on sodium channels: similarity to local anesthetics. Cardiovascular Research Symposium. Columbia University. New York, NY. February 2009.

SERVICE AND PROFESSIONAL MEMBERSHIPS

The Biophysical Society	2005-present
Reviewer for the Journal of General Physiology	2011-present
Reviewer for PNAS	2015-present
Reviewer for JOVE	2016-present
Reviewer for Nature Communications	2017-present
Reviewer for Scientific Reports	2017-present
Reviewer for eLife	2018-present

TEACHING EXPERIENCE

Lecturer Department of Physiology and Biophysics University of Washington, Seattle, WA Course: PBio 519	2010,2012,2015
--	----------------

Lecturer Department of Physiology and Cellular Biophysics Columbia University, New York, NY Course: Introduction to physiology. Lecture on cardiac electrophysiology.	2009
--	------

Private Tutor Academics Plus New York, NY Tutored high school students in math, science, and SAT test prep	2003-2010
---	-----------

Mentor University of Washington and Columbia University Mentored, in the lab, 1 high school student, 6 undergraduate students, and 3 graduate students during my career thus far.	2001-present
---	--------------