

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 |

EDUCATION:

2000 B.S., Biomedical Engineering, **Columbia University**, New York, NY
2009 PhD, Physiology and Cellular Biophysics, **Columbia University**, New York, NY
Mentor: Robert (Rocky) Kass
2016 Post-doctoral Training, Department of Physiology and Biophysics, **University of Washington**, Seattle, WA
Mentor: William Zagotta

Professional Appointments/Employment:

2000-2001 Research Technician, Hospital for Special Surgery, New York, NY
Mentor: Robert Blank

2001-2003 Research Technician, Massachusetts Institute of Technology, Boston, MA
Mentor: Vernon Ingram

2010-2016 Postdoctoral Fellow, University of Washington, Seattle, WA
Mentor: William Zagotta

2016-present Assistant Professor, University of Colorado Anschutz Medical Center, Aurora,
CO

Honors and Awards:

2007 Award for best poster at the Physiology and Cellular Biophysics research day

Membership in Professional Organizations:

2004-present Member of the Biophysical society
2019-present Member of the Society of General Physiologists

Committee and Service Responsibilities:

Departmental

2017-2018 Faculty Search Committee

SOM

2018-present Faculty Senate representative for the Department of Physiology and Biophysics
2018-present Member of the admissions committee for the Neuroscience Program
2018 Steven Fadul Award committee member
2019-present Chair of the Steven Fadul Award committee
2019-present Chair of the Retreat/Symposium committee for the Structural Biology and
Biochemistry Program

Outside University

2018 Discussion leader, "Post-doc to Faculty Transition", Biophysical Society Annual
Meeting, Feb. 2018

Review and Referee Work:

Ad hoc reviewer for PNAS, Nature Communication, eLife, Journal of General Physiology, Biophysical Journal, PloS one, Scientific Reports, and Journal of Visualized Experiments

Invited Presentations:

- 2013 Platform presentation at the Biophysical Society Annual Meeting, Philadelphia, PA
- 2015 Platform presentation at the Biophysical Society Annual Meeting, Baltimore, MD
- 2015 Presentation at the 5th International Ion Channel Conference, Luzhou, China
- 2015 Seminar at Zhejiang University, Hangzhou, China
- 2015 Department of Pharmacology Seminar Series, Northwestern University Feinberg School of Medicine, Chicago, IL
- 2016 Department of Pharmacology Seminar Series, University of Indiana School of Medicine, Indianapolis, IN
- 2016 Department of Physiology Seminar Series, University of Maryland School of Medicine, Baltimore, MD
- 2016 Department of Physiology Seminar Series, University of Pennsylvania School of Medicine, Philadelphia, PA
- 2016 Department of Biophysics Seminar Series, University of Michigan, Ann Arbor, MI
- 2016 Department of Physiology and Biophysics Seminar Series, Stony Brook University Renaissance School of Medicine, Stony Brook, NY
- 2016 Department of Physiology and Biophysics Seminar Series, University of Colorado Anschutz Medical Campus, Aurora, CO
- 2016 Department of Molecular Physiology and Biophysics Seminar Series, Vanderbilt University School of Medicine, Nashville, TN
- 2016 Department of Cell and Molecular Physiology Seminar Series, Loyola University Chicago Stritch School of Medicine, Chicago, IL
- 2019 Department of Biology Seminar Series, University of Pittsburgh, Pittsburgh, PA

Teaching Record:

Medical Students

11/2018, 11/2019 M2M, Cell Physiology Block Lecturer

Graduate Students

08/2018, 08/2019 Core I: Foundations in Biomedical Sciences 002, Lecturer
10/2018, 10/2019 NRSC 7600 Lecturer (Voltage Clamp and Action Potential Propagation)
09/2017, 09/2018, 09/2019 Frontiers in Pharmacology

Mentees

2017-2019 Anna VanKeuren, Professional Research Associate. Current: PRA with Dr. Ming-Feng Tsai
2017-2019 Prafulla Aryal, Research Associate. Current: Senior Scientist Visterra Inc.
2018-present Robert Klipp, Post-doctoral Fellow
2018-present Megan Cullinan, STBB program graduate student

Funding Sources/Grants and Fellowships Awarded:

Current –

2017-2021 "Function and regulation of Acid-sensing ion channels in corneal neurons"
John Bankston (PI)
R00 Award (R00EY024267)
National Eye Institute
25% effort, \$747,000 total cost

2020-2025 "Dynamics of Acid-sensing ion channels"
John Bankston (PI)
R35 MIRA Award (R35GM136908)
National Institute of General Medical Sciences
50% effort, \$1,912,465 total cost

Pending –

2020-2025 "Allosteric modulation of HCN channels"
John Bankston (Co-I)
R01 Award (R01GM140004-01)
National Heart Lung Blood Institute
25% effort, \$2,609,107 total cost

Expired –

2014-2016 "Function and Regulatory Mechanisms of Acid-sensing ion channels"
John Bankston (PI)
K99 Career Award (EY024267)
National Eye Institute
University of Washington
100% effort, \$180,710 total cost

2011-2013 "Mechanisms of HCN regulation by accessory subunit TRIP8b using fluorescence and electrophysiology"
John Bankston (PI)
NRSA post-doctoral fellowship (F32NS074545)
National Institute of Neurological Disorders and Stroke
University of Washington
100% effort, \$158,946 total cost

Peer-Reviewed Publications:

2020 Colin H. Peters, Mallory E. Myers, Julie Juchno, Charlie Haimbaugh, Hicham Bichraoui, Yanmei Du, **John R. Bankston**, Lori A. Walker, and Catherine Proenza. "Isoform-specific regulation of HCN4 channels by a family of endoplasmic reticulum proteins." **P.N.A.S, USA**. July 28,2020; 117(30):18079-18090. PMID: 32647060

2019 Klipp RC, Cullinan MM, **Bankston JR**. "Insights into the molecular mechanisms underlying the inhibition of acid-sensing ion channel 3 gating by Stomatin." **Journal of General Physiology**. 2020 Mar 2;152(3):e201912471. PMID: 32012213

- 2017 **Bankston JR**, DeBerg HA, Stoll S, Zagotta WN. "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.
- 2015 DeBerg HA*, **Bankston JR* (co-first authors)**, Rosenbaum JC, Brzovich PS, Zagotta WN, Stoll S. "Structural mechanism for the regulation of HCN ion channel by the accessory protein TRIP8b." *Structure.* Apr 7;23(4):734-44.
- 2015 Hines KE, **Bankston JR**, Aldrich RW. "Analyzing single-molecule time series via nonparametric Bayesian inference." *Biophysical Journal.* 103(3):540-556.
- 2014 Sun J, **Bankston JR**, Payandeh J, Hinds TR, Zagotta WN, Zheng N. "Crystal Structure of the plant dual-affinity nitrate transporter NRT1.1." *Nature.* 507(7490):73-7.
- 2013 Moreno JD, Yang PC, **Bankston JR**, Grandi E, Bers DM, Kass RS, Clancy CE. "Ranolazine for congenital and acquired late INa-linked arrhythmias: in silico pharmacological screening." *Circulation Research.* 113(7):e50-61.
- 2012 **Bankston JR**, Camp SS, DiMaio F, Lewis AS, Chetkovich DM, Zagotta WN. "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.
- 2011 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. "A computational model to predict the effects of class I anti-arrhythmic drugs on ventricular rhythms." *Science Translational Medicine.* 3(98):98ra83.
- 2010 **Bankston JR** and Kass RS. "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.
- 2009 Kurokawa J, **Bankston JR**, Kaihara A, Furukawa T, Kass RS. "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.
- 2009 Chung DY, Chan PJ, **Bankston JR**, Yang L, Liu G, Marx SO, Karlin A, Kass RS. "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.
- 2008 Holland KD, Kearney JA, Buck G, Keddache M, **Bankston JR**, Glaaser IW, Kass RS, and Meisler MH. "Mutation of the sodium channel SCN3A in a patient with cryptogenic partial epilepsy." *Neuroscience Letters.* 33(1):65-70.
- 2007 **Bankston JR**, Yue M, Chung W, Spyres M, Pass RH, Silver E, Sampson KJ, Kass RS. "A Novel and Lethal De Novo LQT-3 Mutation in a Newborn with Distinct Molecular Pharmacology and Therapeutic Response." *PloS ONE.* 2(12): e1258.
- 2007 **Bankston JR**, Sampson KJ, Kateriya S, Glaaser IW, Malito DL, Chung WK and Kass RS. "A novel LQT-3 mutation disrupts an inactivation gate complex with distinct rate-dependent phenotypic consequences." *Channels.* 1(4): 273 – 280.
- 2006 Glaaser IW, **Bankston JR**, Liu H, Tateyama M, Kass RS. "A carboxyl-terminal hydrophobic interface is critical to sodium channel function: Relevance to inherited disorders." *Journal of Biological Chemistry.* 281(33): 24015-23.
- 2005 Dahlgren PR, Karymov MA, **Bankston J**, Holden T, Thumfort P, Ingram VM, Lyubchenko YL. "Atomic force microscopy analysis of the Huntington protein nanofibril formation." *Nanomedicine.* 1(1): 52-7.

Commentaries and Reviews:

- 2008 **Bankston JR**, Kass RS. "Ion channels: The voltage-sensor quartet." *Nature.* 13;456(7219):183-85.

- 2007 **Bankston JR**, Kass RS. "Fading sodium channels in failing hearts." *Circ Res*. 101(11):1073-4.

Conference Activity:

Conference Talks

- 2020 Peters CH, **Bankston JR**, Proenza CP. "Isoform-specific regulation of HCN4 channels by a family of novel interacting proteins." Biophysical Society 64th Annual Meeting, San Diego, CA. Feb. 2020.
- 2019 Cullinan MM, Aryal P, **Bankston JR**. "Measuring dynamics of the Acid-sensing ion channel N-terminus using transition metal ion FRET." Biophysical Society 63rd Annual Meeting, Baltimore, MD. Mar. 2019.
- 2015 **Bankston JR**, Deberg, HA, Rosenbaum JC, Brzovic, PS, Stoll S, Zagotta WN. "Spectroscopic and biochemical studies of TRIP8b regulation of HCN channels" Biophysical Society 59th Annual Meeting, Baltimore, MD. Feb. 2015.
- 2015 **Bankston JR**, Deberg, HA, Rosenbaum JC, Brzovic, PS, Stoll S, Zagotta WN. "Spectroscopic and biochemical studies of TRIP8b regulation of HCN channels" 5th International Meeting on Ion Channels, Luzhou, China. June. 2015.
- 2013 **Bankston JR**, Camp SS, Zagotta WN. "Dimeric TRIP8b binds to the cyclic nucleotide binding domain of HCN channels." Biophysical Society 57th Annual Meeting, Philadelphia, PA. Feb. 2013.

Conference Posters

- 2020 Cullinan MM, **Bankston JR**. "Measuring Interactions between the intracellular domains of the Acid-sensing ion channel." Biophysical Society 64th Annual Meeting, San Diego, CA. Feb. 2020.
- 2020 Klipp RC, **Bankston JR**. "Polyunsaturated fatty acid regulation of the acid-sensing ion channel." Biophysical Society 64th Annual Meeting, San Diego, CA. Feb. 2020.
- 2019 Klipp RC, **Bankston JR**. "Stomatin Dependent Regulation of Acid-Sensing Ion Channels." Biophysical Society 63rd Annual Meeting, Baltimore, MD. Mar. 2019.
- 2015 **Bankston JR**, Deberg, HA, Rosenbaum JC, Brzovic, PS, Stoll S, Zagotta WN. "Mechanism of TRIP8b regulation of HCN channels" 5th International Meeting on Ion Channels, Luzhou, China. June. 2015.
- 2015 Hines KE, **Bankston JR**, Aldrich RW. "Analyzing single-molecule time series via nonparametric bayesian inference." Biophysical Society 59rd Annual Meeting, Baltimore, MD. Mar. 2019.
- 2012 **Bankston JR**, Camp SS, Lewis AS, Chetkovich DM, Zagotta WN. "Molecular Determinants of the Interaction Between HCN2 and its Accessory Subunit TRIP8b." Biophysical Society 55th Annual Meeting, Baltimore, MD. Mar. 2011.
- 2010 Moreno JD, **Bankston JR**, Kass RS, Clancy, CE. "Cardiac Dynamics In-Silico: Pharmacological Targeting of LongQT 3 Syndrome." Biophysical Society 54th Annual Meeting, San Francisco, CA. Feb. 2010.
- 2009 Bankston JR, Kass RS. "Molecular Basis for blockade of the cardiac sodium channel by beta blockers." Biophysical Society 52nd Annual Meeting, Baltimore, MD. Mar. 2011.
- 2006 **Bankston JR**, Sampson KJ, Kateriya S, Glaaser IW, Malito DL, Chung WK and Kass RS. "A novel LQT-3 mutation in the C-terminus of the cardiac sodium channel causes with distinct rate-dependent phenotypic consequences." Keystone Symposium on Cardiac Arrhythmias: Linking Structural Biology to Gene Defects. Tahoe City, CA. Jan-Feb 2006.

2005 **Bankston JR**, Kurokawa J, Kass RS. "Interaction between the intracellular domains of KCNQ1 and KCNE1 is critical for PKA-dependent regulation of the I_{Ks} potassium channel." Biophysical Society 48th Annual Meeting, Baltimore, MD. Mar. 2005.