YOUNG MIN BAE

PROFESSOR

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Educations

1991 D.V.M. (Doctor of Veterinary Medicine), Seoul Nat'l University College of Veterinary Medicine
1996 M.S., Physiology, Seoul Nat'l University College of Medicine
1998 Ph.D., Physiology, Seoul Nat'l University College of Medicine
2001 Postdoctoral research fellow, Department of Physiology, Seoul Nat'l University College of Medicine

Professional Background

2012–Present Professor: Department of physiology, Konkuk University School of Medicine
2009–2012 Head Professor of Konkuk University School of Medicine
2007–2012 Associate Professor: Department of physiology, Konkuk University School of Medicine
2005–2007 Assistant Professor: Department of physiology, Konkuk University School of Medicine
2001–2005 Instructor: Department of physiology, Konkuk University School of Medicine
2000– 2001 Teaching & Research Assistant: Seoul Nat'l University College of Medicine

Top 5 Publications

■ Kim JG, Sung DJ, Kim HJ, Park SW, Won KJ, Kim B, Shin HC, Kim KS, Leem CH, Zhang YH, Cho H, **Bae YM***. Impaired Inactivation of L-Type Ca2+ Current as a Potential Mechanism for Variable Arrhythmogenic Liability of HERG K+ Channel Blocking Drugs. PLoS One. 2016 Mar 1;11(3):e0149198. doi: 10.1371/journal.pone.0149198. eCollection 2016.

■ Park SW, Shin KC, Park HJ, Lee IW, Kim HS, Chung SC, Kim JS, Jun JH, Kim B, **Bae YM***. Diverse effects of a 445 nm diode laser on isometric contraction of the rat aorta. Biomed. Opt. Express 6(9), 3482-3493 (2015)

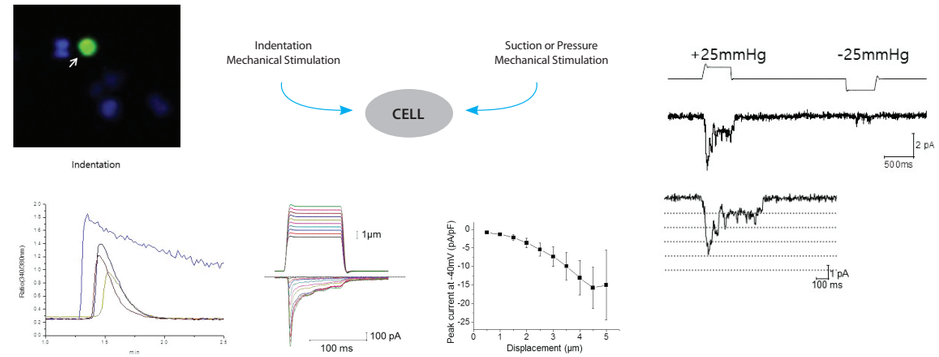
■ Jun JH, Park JR, Kim SP, **Bae YM** , Park JY, Kim HS, Choi S, Jung SJ, Hwa Park S, Yeom DI, Jung GI, Kim JS, Chung SC. Laser-induced thermoelastic effects can evoke tactile sensations. Sci Rep. 2015 Jun 5;5:11016. doi: 10.1038/srep11016.

■ Park SW, Noh HJ, Sung DJ, Kim JG, Kim JM, Ryu SY, Kang K, Kim B, **Bae YM***, Cho H. Hydrogen peroxide induces vasorelaxation by enhancing 4-aminopyridine-sensitive Kv currents through S-glutathionylation. Pflugers Arch. 2015 Feb;467(2):285-97. doi: 10.1007/s00424-014-1513-3. Epub 2014 Apr 23.

■ Sung DJ, Noh HJ, Kim JG, Park SW, Kim B, Cho H, **Bae YM***. Serotonin contracts the rat mesenteric artery by inhibiting 4-aminopyridine-sensitive Kv channels via the 5-HT2A receptor and Src tyrosine kinase. Exp Mol Med. 2013 Dec 13;45:e67. doi: 10.1038/emm.2013.116.

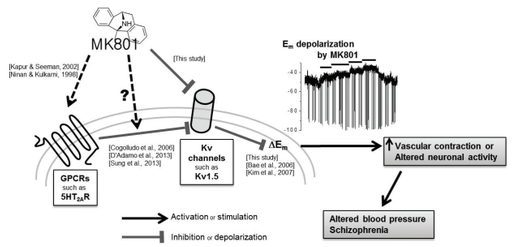
RESEARCH INTERESTS

1. Regulation of Ion Channels by Mechanical Stimuli: Touch Somatosensation and Regulation of Blood Pressure



Recent studies have indicated that Merkel cells and the mechanosensitive piezo2 ion channel play critical roles in light-touch somatosensation. We are studying the biophysical properties of piezo2 channels primarily in Merkel cells. We recently elucidated that piezo2 is a low-threshold, positive pressure-specific mechanically activated (MA) cation channel with a single channel conductance of ~30.7 pS. We anticipate that our findings will be a starting point for a more sophisticated understanding of the role of piezo2 in light-touch sensation. We are also studying the regulation of other ion channels (such as L-type Ca channels and inward rectifier K channels) with stretch and/or fluid flow shear force.

2. Serotonin (5-Hydroxytryptamine; 5-HT) Signaling and the Effects of Non-competitive Inhibitors of the NMDA Receptor such as Ketamine and MK801



3. Direct effects of clinically relevant drugs on ion channels

4. Effects of oxidative stress on ion channels

Researchers in South Korea have uncovered important details about the mechanism by which serotonin regulates blood flow. Serotonin is best known as a neurotransmitter with a central role in mental health and psychiatric disorders, but it also controls functions e echanism by which serotonin modulates blood vessel constriction. They have identified a specific cascade of signaling proteins through which serotonin triggers this response, and have shown that this pathway directly controls contraction in rat arteries. These researchers had previously demonstrated that serotonin alters the membrane electrical properties of smooth muscle cells that form the vasculature. Their latest results could steer future research into studying hypertension, and may offer useful insights into serotonin function in the brain.