BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Steven S. An	Assistant Professor of Physiology
eRA COMMONS USER NAME (credential, e.g., agency login) san003	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Virginia, Charlottesville, VA	B.A.	1993	Chemistry
Albany Medical College, Albany, NY	M.S.	1995	Physiol, Cell Biology
Brown University, Providence, RI	Ph.D.	2000	Molec Pharm & Physiol
Harvard University, Boston, MA	Post-Doc.	2000-2003	Resp Physiol/Cell Biophy

Positions and Honors

Positions and Employment

2000-2003 Research Fellow, Division of Molecular and Integrative Physiological Sciences, Harvard University, School of Public Health, Boston, MA
2003-2005 Research Associate, Division of Molecular and Integrative Physiological Sciences, Harvard University, School of Public Health, Boston, MA
2004-2005 Consultant, Asthma Drug Discovery and Screening Project, Prolexys Pharmaceutical Inc., Salt Lake City, UT
2006- Assistant Professor, Department of Environmental Health Sciences, Johns Hopkins University, Bloomberg School of Public Health, Baltimore, MD

Other Experience and Professional Memberships

1997- Member, American Physiological Society
1997- Member, Biophysical Society
2000- Member, American Thoracic Society (ATS)
2007- Planning Committee, Respiratory Structure and Function Assembly of the ATS
2009- Program Committee, Respiratory Structure and Function Assembly of the ATS
2011- Nominating Committee, Respiratory Structure and Function Assembly of the ATS
2012- Member, American Association for Cancer Research

Honors

1993-1995 Full-Tuition Trustee Scholarship (Albany Medical College)
1995 Graduate Studies Alumni Award for Outstanding Research (Albany Medical College)
1995 Brown University Fellowship
1999 The 43rd Biophysical Society Meeting Travel Award
1999 The 2nd John C. Seidel Memorial Symposium Travel Award
2000-2003 Ruth L. Kirschstein National Research Service Award (Harvard University)
2006 Ann Woolcock Memorial Award for Outstanding Contributions and Future Promise in Asthma Research, Respiratory Structure and Function Assembly (American Thoracic Society)
2007 Faculty Research Initiative Award (Johns Hopkins University)
2010 American Asthma Foundation (Sandler) Award
2011 Pilot Grant Award, the Johns Hopkins Engineering in Oncology Center at the Institute for NanoBiotechnology
2011 Developmental Project Award, the Johns Hopkins University In Vivo Cellular and Molecular Imaging Center (ICMIC), School of Medicine
2012 Teaching Excellence Award, Johns Hopkins Bloomberg School of Public Health

Selected Peer-reviewed Publications

Most relevant to the current application

1. Garzon-Muvdi T, Schiapparelli P, Ap Rhys CM, Guerrero-Cazares H, Smith C, Kim DH, Kone L, Farber H, **An SS**, Levchenko A, and Quinones-Hinojosa A. (2012) Regulation of brain tumor dispersal by NKCC1 through a novel role in focal adhesion regulation. *PLoS Biology* 10(5):e1001320. PMCID: PMC3341330.
2. Trepat X, Deng L, **An SS**, Navajas D, Tschumperlin DJ, Gerthoffer WT, Butler JP, and Fredberg JJ. (2007). Universal physical responses to stretch in the living cell. *Nature* 447:592-595. PMCID: PMC2440511.
3. Bursac P, Fabry B, Trepat X, Lenormand G, Butler JP, Wang N, Fredberg JJ, and **An SS**. (2007). Cytoskeleton dynamics: fluctuations within the network. *Biochemical and Biophysical Research Communications* 355:324-330. PMCID: PMC2430849
4. Laudadio RE, Millet EJ, Fabry B, **An SS**, Butler JP, and Fredberg JJ. (2005). The rat airway smooth muscle cell during actin modulation: rheology and glassy dynamics. *American Journal of Physiology* 289: C1388-C1395.
5. **An SS**, Laudadio RE, Lai J, Rogers RA, and Fredberg JJ. (2002). Stiffness changes in cultured airway smooth muscle cells. *American Journal of Physiology* 283:C792-C801.

Additional recent publications of importance to the field (in chronological order)

1. **An SS**, and Hai C-M. (2000). Mechanical signals and mechanosensitive modulation of intracellular [Ca^{2+}] in smooth muscle. *American Journal of Physiology* 279:C1375-C1384.
2. **An SS**, Fabry B, Mellema M, Bursac P, Gerthoffer WT, Kayyali US, Gaestel M, Shore SA, and Fredberg JJ (2004) Role of heat shock protein 27 in cytoskeletal remodeling of the airway smooth muscle cell. *Journal of Applied Physiology* 96:1701-1713.
3. **An SS**, Pennella CM, Gonnabathula A, Chen J, Wang N, Gaestel M, Hassoun PM, Fredberg JJ, and Kayyali US. (2005). Hypoxia alters biophysical properties of endothelial cells via p38 MAPK- and Rho kinase-dependent pathways. *American Journal of Physiology* 289:C521-C530.
4. **An SS**, Fabry B, Trepat X, Wang N, and Fredberg JJ. (2006). Do biophysical properties of the airway smooth muscle in culture predict airway hyperresponsiveness? *American Journal of Respiratory Cell and Molecular Biology* 35:55-64. PMCID: PMC2553364
5. **An SS**, Bai TR, Bates JHT, Black JL, Brown RH, Brusasco V, Chitano P, Deng L, Dowell M, Eidelman DH, Fabry B, Ford LE, Fredberg JJ, Gerthoffer WT, Gilbert SH, Gunst SJ, Halayko AJ, Ingram RH, Irvin CG, James AL, Janssen LJ, King GG, Knight DA, Lauzon AM, Lakser OJ, Ludwig MS, Lutchen KR, Maksym GN, Martin JG, Mauad T, McParland BE, Mijailovich SM, Mitchell HW, Mitchell RW, Mitzner W, Murphy TM, Pare PD, Pellegrino R, Seow CY, Smith PG, Solway J, Schellenberg RR, Silveira PS, Stephens NL, Sterk PJ, Stewart AG, Tang DD, Tepper RS, and Wang L. (2007). Airway smooth muscle dynamics: a final common pathway of airway obstruction in asthma. *European Respiratory Journal* 29: 834-860. PMCID: PMC2527453
6. **An SS**, Kim J, Ahn K, Trepat X, Drake KJ, Kumar S, Ling G, Purington C, Rangasamy T, Kensler TW, Mitzner W, Fredberg JJ, and Biswal S. (2009). Cell stiffness, contractile stress and the role of extracellular matrix. *Biochemical and Biophysical Research Communications* 382:697-703. PMCID: PMC2956180
7. Deshpande DA, Wang WC, Mcllmoyle EL, Robinett KS, Schillinger RM, **An SS**, Sham JS, and Liggett SB. (2010). Bitter taste receptors on airway smooth muscle bronchodilate by localized calcium signaling and reverse obstruction. *Nature Medicine* 16:1299-1304. PMCID: PMC3066567.
8. **An SS**, Askovich PS, Zarembinski TI, Ahn K, Peltier JM, von Rechenberg M, Sahasrabudhe S, and Fredberg JJ. (2011). A novel small molecule target in human airway smooth muscle for potential treatment of obstructive lung diseases: a staged high-throughput biophysical screening. *Respiratory Research* 12:8. PMCID: PMC3034681.
9. **An SS**, Wang WCH, Koziol-White CJ, Ahn K, Lee DY, Kurten RC, Panettieri RA, and Liggett SB. (2012) TAS2R activation promotes airway smooth muscle relaxation despite β2-adrenergic receptor tachyphylaxis. *American Journal of Physiology* 303:L304-L311. PMCID: PMC3423830.
10. Saxena H, Deshpande DA, Tiegs BC, Yan H, Battafarano RJ, Burrows WM, Damera G, Panettieri RA, DuBose TD, **An SS**, and Penn RB. (2012) The GPCR OGR1 (GPR68) mediates diverse signaling and contraction of airway smooth muscle in response to small reductions in extracellular pH. *British Journal of Pharmacology* 166:981-990. PMCID: PMC3417423.

Research Support

ACTIVE

R01 HL107361-01 (An) 4/01/11-3/30/16 6.00 calendar months
NIH/NHLBI $264,000
Nrf2 as a Critical Determinant of Smooth Muscle Function
The goal of this project is to focus on the structure and function of airway smooth muscle – the end organ that leads to airway constriction – and the role for a transcription factor (Nrf2) in the context of airway wall remodeling in chronic asthma.
Role: Principal Investigator

R21 HL108071-01 (Penn) 04/01/11-3/30/13 1.20 calendar months
NIH/NHLBI $150,000
OGR1 is a Proton-Sensing GPCR in Airway Smooth Muscle
The goal of this project is to study the mechanisms of airway smooth muscle contractility and signaling mediated by reductions in pH involving G protein-coupled receptors (GPCR).
Role: Principal Investigator, Subcontract

100163 (Levchenko) 07/01/10-6/30/13 1.80 calendar months
American Asthma Foundation $150,000
Integrative Biology-Based Investigation of Interplay between Inflammatory Signaling and Single-Cell Mechanics of Human Airway Smooth Muscle
The major goal of this project is explore the interplay of the mechanical and chemical signals in regulating the onset and progression of asthma.
Role: Co-Principal Investigator

R01 HL073859-05A2 (Shimoda) 07/01/10-06/30/14 1.20 calendar months
NIH/NHLBI $225,000
Chronic Hypoxia and PH Homeostasis in Pulmonary Myocytes
The goal of this project is to determine the mechanisms by which Na^+/H^+ exchanger isoform 1 regulates pulmonary arterial smooth muscle cell contraction, proliferation and migration during chronic sustained hypoxia.
Role: Co-Investigator

Pilot Project (Yegnasubramanian, An) 07/01/11-06/30/13 0.6 calendar months
The Johns Hopkins Engineering in Oncology Center at the Institutes for NanoBioTechnology
Understanding the Cellular Mechanical Dynamics Regulated by AIM1, A Novel Putative Metastasis Suppressor Gene in Prostate Cancer
The goal of this project is to investigate the mechanical functions of a novel tumor suppressor gene (Absent in Melanoma-1, AIM1) as they relate to prostate cancer cell migration and invasion.
Role: Principal Investigator

OVERLAP

none