

Anthony Wei Peng

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Education:

- 2010 Neurobiology Course
Marine Biological Laboratory, Woods Hole, MA
- 2009 PhD, Health Sciences and Technology: Speech and Hearing Bioscience and Technology
Massachusetts Institute of Technology, Cambridge, MA
- 2003 BS, Electrical and Computer Engineering, Magna Cum Laude with Honors
Cornell University, School of Engineering, Ithaca, NY

Professional Appointments/Employment:

- 2015-Present Assistant Professor, Dept of Physiology and Biophysics
University of Colorado Denver, Anschutz Medical Center, Aurora, CO
- 2009-2015 Post-Doctoral Fellow, Dept of Otolaryngology Head & Neck Surgery
Stanford University, School of Medicine, Stanford, CA

Publications:

- 2017 Effertz T, Becker L, **Peng AW**, Ricci AJ. "Phosphoinositol-4,5-bisphosphate regulates auditory hair cell mechanotransduction channel pore properties and fast adaptation." **Journal of Neuroscience**, 2017 Oct 24;37(48): 11632-11646. PMC5707765.
- 2017 Larson T, Doll JC, Loizeau F, Hosseini N, **Peng AW**, Fantner GE, Ricci AJ, Pruitt BL. Rise time reduction of thermal actuators operated in air and water through optimized pre-shaped open-loop driving. **Journal of Micromechanics and Microengineering**, 2017 February 24; 27(4): 045005.
- 2017 Kazmierczak M, Kazmierczak P, **Peng AW**, Harris SL, Shah P, Puel JL, Lenoir M, Franco SJ, Schwander M. Pejvakin, a Candidate Stereociliary Rootlet Protein, Regulates Hair Cell Function in a Cell-Autonomous Manner. **Journal of Neuroscience**, 2017 Feb 16; 37(13): 3447-3464.
- 2016 **Peng AW**, Gnanasambandam R, Sachs, F, Ricci AJ. "Adaptation Independent Modulation of Auditory Hair Cell Mechanotransduction Channel Open Probability Implicates a Role for the Lipid Bilayer." **Journal of Neuroscience**, 2016 Mar 9; 36(10): 2945–2956. PMC4783497.
- 2015 Nam JH, **Peng AW**, Ricci AJ. "Underestimated sensitivity of mammalian cochlear hair cells due to splay between stereociliary columns." **Biophysical Journal**, 2015 Jun 2; 108(11):2633-47. PMC4457497.

- 2013 **Peng AW**, Effertz T, Ricci AJ. "Adaptation of Mammalian Auditory Hair Cell Mechanotransduction Is Independent of Calcium Entry." **Neuron**, 2013 Nov 20; 80(4):960-972. PMC4111567.
- 2012 Doll JC, **Peng AW**, Ricci AJ, Pruitt BL. "Faster Than the Speed of Hearing: Nanomechanical Force Probes Enable the Electromechanical Observation of Cochlear Hair Cells." **Nano Letters**, 2012 Dec 12; 12(12): 6107–6111. PMC3549426.
- 2012 Castellano-Munoz M, **Peng AW**, Salles FT, Ricci AJ. "Swept field laser confocal microscopy for enhanced spatial and temporal resolution in live-cell imaging." **Microscopy and Microanalysis**, 2012 Aug;18(4):753-60. PMC3549604.
- 2011 **Peng AW**, Salles FT, Pan B, Ricci AJ. "Integrating the biophysical and molecular mechanisms of auditory hair cell mechanotransduction." **Nature Communications**, 2011 Nov 1; 2:523. PMC3418221.
- 2011 **Peng AW**, Ricci AJ. "Somatic motility and hair bundle mechanics, are both necessary for cochlear amplification?" **Hearing Research**, 2011 Mar; 273:109-22. PMC2943979.
- 2010 Oshima K, Shin K, Diensthuber M, **Peng AW**, Ricci AJ, Heller S. "Mechanosensitive hair cell-like cells from embryonic and induced pluripotent stem cells." **Cell**, 2010 May 14; 141:704-16. PMC2873974.
- 2009 **Peng AW**, Belyantseva IA, Hsu PD, Friedman TB, Heller S. "Twinfilin 2 regulates actin filament lengths in cochlear stereocilia." **Journal of Neuroscience**. 2009 Dec 2; 29(48): 15083-88. PMC2823077.
- 2008 Xu Z, **Peng AW**, Oshima K, Heller S. "MAGI-1, a candidate stereociliary scaffolding protein, associates with the tip-link component cadherin 23." **Journal of Neuroscience**. 2008 Oct 29;28(44):11269-76. PMC2596868.

Book Chapters:

- 2016 Peng AW, Ricci AJ. "Glass Probe Stimulation of Hair Cell Stereocilia." Auditory and Vestibular Research: Methods and Protocols. Methods in Molecular Biology. Vol 1427: 487-500.

Funding Sources/ Grants and Fellowships Awarded:

Current -

- 2015-2018 "Molecular roles in active and passive mechanics in cochlear hair bundles"
A.W. Peng (PI)
R00 Award (R00DC013299)
National Institute on Deafness and other Communication Disorders-NIH
\$747,000

Expired-

- 2013-2015 "Molecular roles in active and passive mechanics in cochlear hair bundles"
A.W. Peng (PI)
K99 Career Award (K99DC013299)
National Institute on Deafness and other Communication Disorders-NIH
Stanford University, Stanford, CA
\$248,140
- 2010-2013 "Second Messenger Regulation of Hair Cell Mechanotransduction"

- A.W. Peng (PI)
 NRSA Post-Doctoral Fellowship (F32DC109752)
National Institute on Deafness and other Communication Disorders-NIH
 Stanford University, Stanford, CA
 \$153,084
- 2007-2008 “Inner Ear Hair Bundle Proteomics”
 A.W. Peng (PI)
 NRSA Pre-Doctoral Fellowship (F31DC009168)
National Institute on Deafness and other Communication Disorders-NIH
 Stanford University, Stanford, CA
 \$31,812

Honors and Awards:

- 2013 NSF travel award, 10th International Workshop on Nanomechanical Sensing
 2012 Award for Best Poster at the Stanford OHNS Research Day
 2010 Society of General Physiology Scholar
 2003-2007 SHBT Fellowship, Harvard-MIT Health Sciences and Technology
 2002 E. Ward Plummer Award for Best Paper

Invited Presentations:

- 2015 Department of Physiology & Biophysics, University of Colorado at Denver, Anschutz Medical School, Aurora, CO.
 2015 Department of Physiology, University of Pennsylvania, Philadelphia, PA.
 2014 Department of Otolaryngology-Head and Neck Surgery, University of Indiana, School of Medicine, Indianapolis, IN.
 2014 Department of Physiology & Biophysics, University of California, Irvine, Irvine, CA.
 2014 Kresge Hearing Research Institute, University of Michigan, Ann Arbor, MI.
 2014 National Institute on Deafness and Other Communication Disorders, NIH, Bethesda, MD.
 2014 Johns Hopkins University, School of Medicine, Baltimore, MD.
 2014 Grand Rounds, Department of Otolaryngology, University of Miami, Miller School of Medicine, Miami, FL.
 2014 37th MidWinter Meeting of the Association for Research in Otolaryngology, San Diego, CA.
 2014 Seminar at University of Pittsburgh, Pittsburgh, PA.
 2008 WIP Seminar at Eaton Peabody Laboratory, Massachusetts Eye and Ear Infirmary, Boston, MA.
 2008 National Institute on Deafness and Other Communication Disorders, NIH, Rockville, MD.

Conference Activity:

Talks

- 2018 **Peng AW**, Wang Y, Scharr A, Mecca, A, Nettles D, Ricci AJ. “Hair Bundle Stimulation by Fluid Jet Results in Complex Hair Bundle Movements that Modify the Manifestation of Adaptation.” MidWinter Meeting of the Association for Research in Otolaryngology, San Diego, CA; Feb. 11, 2018.

- 2018 **Peng AW**. "Hair Bundle Stimulation Modality Modifies Adaptation Manifestations." Ultimate Colorado MidWinter Meeting, Vail, CO; Feb. 5, 2018.
- 2017 **Peng AW**. "Teasing Apart Mechanisms of Mechanotransduction." Ultimate Colorado MidWinter Meeting, Vail, CO; Jan. 30, 2017.
- 2016 **Peng AW**. "New Insights into Auditory Mechanotransduction mechanisms." Ultimate Colorado MidWinter Meeting, Vail, CO; Jan. 25, 2016.
- 2015 **Peng AW**, Gnanasambandam R, Sachs F, Ricci AJ. "Modulation of Rat Auditory Hair Cell Mechanotransduction Channel Resting Open Probability Via an Adaptation Independent Mechanism." MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore, MD; Feb. 22, 2015.
- 2015 **Peng AW**, Gnanasambandam R, Sachs F, Ricci AJ. "Modulation of rat auditory hair cell mechanotransduction channel resting open probability implicates a role for the lipid bilayer." Biophysical Society 59th Annual Meeting, Baltimore, MD; Feb. 11, 2015.
- 2013 **Peng AW**, Effertz T, Ricci AJ. "Cochlear Adaptation Is Not Driven by Calcium Entry." MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore, MD; Feb. 18, 2013.
- 2012 **Peng AW**, Effertz T, Ricci AJ. "Cochlear Adaptation Is Not Driven by Calcium Entry." Bay Area Mechano Biology 2012 Symposium, Stanford, CA; Nov. 29, 2012.
- 2009 **Peng AW**, Belyantseva IA, Friedman TB, Heller S. "Twinflin 2 Regulates Actin Filament Lengths in Cochlear Stereocilia." 7th Molecular Biology of Hearing and Deafness, Boston, MA; June 23, 2009.
- 2008 **Peng AW**, Heller S. "Inner Ear Hair Bundle Proteomics: Identification of a Potential Actin Regulator associated with the Tips of Stereocilia." Auditory System GRS, New London, NH; June 29, 2008.

Papers

- 2011 Doll JC, **Peng A**, Ricci A, Pruitt BL. New Devices for Investigating Hair Cell Mechanical Properties In C. A. Shera & E. S. Olson, eds. What Fire is in Mine Ears: Progress in Auditory Biomechanics: Proceedings of the 11th International Mechanics of Hearing Workshop, 2011, p. 25-26. (Poster)

Abstracts

- 2017 **Peng AW**, Mecca A, Nettles D, Ricci AJ. "Reconciling Adaptation Mechanisms in Mammalian Cochlear Hair Bundles." MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore, MD; Feb 2017.
- 2016 **Peng AW**, Wang Y, Ricci AJ. "Characterization of Fluid Jet Stimulation of Mammalian Cochlear Hair Bundles." MidWinter Meeting of the Association for Research in Otolaryngology, San Diego, CA; Feb 2016.
- 2015 **Peng AW**, Ricci AJ. "A Comparison of Stiff Probe and Fluid Jet Stimulation of Mammalian Cochlear Hair Bundles." Force-Gated Ion Channels, Janelia Research Campus, Ashburn, VA; Mar. 22-25, 2015.
- 2014 **Peng AW**, Gnanasambandam R, Sachs F, Ricci AJ. "Modulation of rat auditory hair cell mechanotransduction channel resting open probability implicates a role for the lipid bilayer." Society of General Physiologists Annual Meeting, Woods Hole, MA; Sept 2014.

- 2014 **Peng AW**, Ricci AJ. "A new mechanism for operating point modulation in mammalian auditory mechanotransduction" Biophysical Society 58th Annual Meeting, San Francisco, CA; Feb. 19, 2014.
- 2013 **Peng AW**, Effertz T, Ricci AJ. "Cochlear mechanotransduction adaptation is not driven by calcium entry." Neuroscience 2013, San Diego, CA; Nov. 11, 2013.
- 2012 **Peng AW**, Effertz T, Ricci AJ. "Mechanotransduction current adaptation differs between lower vertebrate and mammalian hair cells." Inner Ear Biology Workshop and Symposium, Tübingen, Germany; Oct 1, 2012.
- 2012 **Peng AW**, Effertz T, Ricci AJ. "Comparisons of hair cell mechanotransduction adaptation in aves and mammals." Force Transduction & Emerging Ion Channels, Berlin, Germany; May 9, 2012.
- 2012 **Peng AW**, Doll JC, Ricci AJ. "The study of activation kinetics in the mammalian auditory system." MidWinter Meeting of the Association for Research in Otolaryngology, San Diego, CA; Feb. 26, 2012.
- 2010 Oshima K, **Peng A**, Ricci A, Heller S. "Functional Hair Cell-Like Cells from Embryonic and Induced Pluripotent Stem Cells. MidWinter Meeting of the Association for Research in Otolaryngology, Anaheim, CA; Feb. 9. 2010.
- 2010 **Peng AW**, Hsu PD, Heller S. "Inner Ear Hair Bundle Proteomics: Identification of Novel Stereocilia Proteins." MidWinter Meeting of the Association for Research in Otolaryngology, Anaheim, CA; Feb. 6. 2010.
- 2009 Xu Z, **Peng AW**, Oshima K, Heller S. "MAGI-1, a Candidate Stereociliary Scaffolding Protein Associates with the Tip Link Component Cadherin 23." MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore, MD; Feb. 18. 2009.
- 2008 **Peng AW**, Heller S. "Inner Ear Hair Bundle Proteomics: Identification of a Potential Actin Regulator associated with the Tips of Stereocilia." Auditory System GRC, New London, NH; June 29, 2008.
- 2008 Xu Z, **Peng AW**, Oshima K, Mann S, Heller S. "MAGI-1 Binds to Cadherin 23 and Localizes at Hair-Cell Bundles." MidWinter Meeting of the Association for Research in Otolaryngology, Phoenix, AZ; Feb. 19. 2008.
- 2007 **Peng AW**, Heller S. Inner Ear Hair Bundle Proteomics. Neuroscience 2007, San Diego, CA; Nov. 7, 2007.

Teaching and Mentoring Experience:

Teaching

- 2015-Present NRSC 7600 Synaptic Transmission Lecturer
 2015-Present Molecules to Medicine, Cell Physiology block Lecturer
 2015-Present Synaptic Physiology Laboratory Instructor
 2015-Present Neuroscience Program Bootcamp Instructor
 2009, 2014 Laboratory Teaching Assistant, Stanford Intensive Neuroscience Course

Mentoring

- 2017-Present Andrew Mecca, Neuroscience Program Graduate Student
 2016-Present Giusy Caprara, Post-doctoral Fellow
 2013 Stanford Student Outreach to Alumni Resources Post-doc Mentor

2007-2010 Hsu, PD, High School and UC Berkeley Undergraduate student
2008 Choi, RJ, Stanford Medical Student

Service:

2017-Present Neuroscience Program Graduate Training Committee mentor
2016-Present Department of Physiology and Biophysics Faculty Senator
2016-2017 Department of Physiology and Biophysics faculty search committee member

Professional Associations and Outreach

2015 Session Co-Chair, "Mechanosensation"
Biophysical Society 59th Annual Meeting, Baltimore, MD
2014 Session Co-Chair, "Young Investigator Symposia: Cochlear Mechanotransduction"
37th Annual MidWinter Meeting, Association for Research in Otolaryngology, San Diego,
CA
2014-2015 Member of Society of General Physiologists
2014-2015 Member of Biophysical Society
2010-Present Member of Association for Research in Otolaryngology
2009-Present Member of Society for Neuroscience

Reviewer for Neuron, Nature Communications, Journal of Neuroscience, Journal of Comparative Neurology, Journal of Physiology

Other Research Experience:

2004 Graduate Student, Mentor: Donald K. Eddington
Harvard Medical School, Cochlear Implant Research Laboratory, Massachusetts Eye and
Ear Infirmary, Boston, MA
2002 Summer Researcher, Mentor: Arjun Yodh
University of Pennsylvania, Dept of Physics, Philadelphia, PA
2001-2002 Undergraduate Researcher, Mentor: Kevin Kornegay
Cornell University, Advanced Integrated Microsystems, Dept of Electrical and Computer
Engineering, Ithaca, NY