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POSITIONS HELD:

Howard Hughes Medical Institute (HHMI) Investigator, 2014-present

Department of Neuroscience, Dorris Neuroscience Center, The Scripps Research Institute, La Jolla, CA, 2000-present. Presidential Endowed Chair in Neurobiology, 2020-present; Professor, 2008-present; Associate Professor, 2005-2008; Assistant Professor, 2000-2005

Genomics Institute of the Novartis Research Foundation, San Diego, CA, 2000-2014. Director of Discovery Research, 2006-2014; Head of Neuroscience, 2002-2005; Staff Scientist, 2000-2003

EDUCATION:

Postdoctoral Fellow, University of California at San Francisco, 1996-2000. Advisor: Dr. Louis Reichardt

Doctor of Philosophy in Biology, Department of Biology, California Institute of Technology (Caltech), Pasadena, CA, 1990-1996. Advisor: Dr. Barbara Wold

Bachelor of Science, Magna Cum Laude, Molecular, Cellular and Developmental Biology, University of California, Los Angeles (UCLA), 1987-1990. Advisor: Dr. Judy A. Lengyel

Chemistry major, American University of Beirut, Lebanon, 1985-1986.

AWARDS & HONORS:

- Nobel Prize in Physiology or Medicine, 2021 (shared with David Julius)
- BBVA Foundation Frontiers of Knowledge Award in Biology and Biomedicine, 2021 (shared with David Julius)
- The Kavli Award for Neuroscience, 2020 (shared with David Julius)
- Elected member, American Academy of Arts and Sciences (AAAS), 2020

- Rosenstiel Award for Distinguished Work in Basic Medical Research, Brandeis University, 2019 (shared with David Julius)
- Elected member, National Academy of Sciences (NAS), 2017
- Alden W. Spencer Award, Columbia University, 2017 (shared with David Ginty)
- Elected fellow, American Association for the Advancement of Science (AAAS), 2016
- Young Investigator Award, Society for Neuroscience, 2006
- Damon Runyon Scholar Award, 2003-2005
- Basil O'Connor Starter Scholar Research Award, March of Dimes Birth Defects Foundation, 2001-2003
- Damon Runyon-Walter Winchell Cancer Research Foundation, Postdoctoral Fellowship1996-1999

SERVICES:

- Member, NAS Pradel Research Award Selection Committee, 2018-2020
- Editorial Board of Neuron, 2016-
- Member of Scripps Research Academic Planning Committee, 2015-
- Co-Chair, Working group to advise a steering committee to develop a National Pain Strategy (Affordable Care Act), 2015-2017

BIBLIOGRAPHY:

Research Articles:

1. Holt JR, Zeng WZ, Evans EL, Woo SH, Ma S, Abuwarda H, Loud M, **Patapoutian A**, Pathak MM (2021) Spatiotemporal dynamics of PIEZO1 localization controls keratinocyte migration during wound healing. Elife e65415. PMID: 34569935

2. Mousavi SAR, Dubin AE, Zeng WZ, Coombs AM, Do K, Ghadiri DA, Keenan WT, Ge C, Zhao Y, **Patapoutian A** (2021) PIEZO ion channel is required for root mechanotransduction in *Arabidopsis thaliana*. Proc Natl Acad Sci USA e2102188118. PMID: 33975957

3. Ma S, Dubin AE, Zhang Y, Mousavi SAR, Wang Y, Coombs AM, Loud M, Andolfo I, **Patapoutian A** (2021) A role of PIEZO1 in iron metabolism in mice and humans. Cell 184:969-982. PMID: 33571427

4. Procko C, Murthy S, Keenan WT, Mousavi SAR, Dabi T, Coombs A, Procko E, Baird L, **Patapoutian A**, Chory J (2021) Stretch-activated ion channes identified in the touch-sensitive structures of carnivorous Droseraceae plants. Elife e64250. PMID: 33724187

5. Baxter SL, Keenan WT, Athanas AJ, Proudfoot JA, Zangwill LM, Ayyagari R, Liebmann JM, Girkin CA, **Patapoutian A**, Weinreb RN (2020) Investigation of associations between Piezo1 mechanoreceptor gain-of-function variants and glaucoma-related phenotypes in humans and mice. Science Reports 10:19013. PMID: 33149214

6. Marshall KL, Saade D, Ghitani G, Coombs AM, Szczot M, Keller J, Ogata T, Daou I, Stowers LT, Bonnemann CG, Chesler AT, **Patapoutian A** (2020) PIEZO2 in sensory neurons and urothelial cells coordinates urination. Nature 588:290-295. PMID: 33057202

7. Yan H, Helman G, Murthy SE, Ji H, Crawford J, Kubisiak T, Bent SJ, Xiao J, Taft RJ, Coombs A, Wu Y, Pop A, Li D, de Vries LS, Jiang Y, Salomons GS, van der Knaap MS, **Patapoutian A**, Simons C, Burmeister M, Wang J, Wolf NI (2019) Heterozygous variants in the mechanosensitive ion channel TMEM63A result in transient hypomyelination during infancy. The American Journal of Human Genetics 105:966-1004. PMID: 31587869

8. Song Y, Li D, Farrelly O, Miles L, Li F, Kim SE, Lo TY, Wang F, Li T, Thompson-Peer KL, Gong J, Murthy SE, Coste B, Yakubovich N, **Patapoutian A**, Xiang Y, Rompolas P, Jan LY, Jan YN (2019) The mechanosensitive ion channel Piezo inhibits axon regeneration. Neuron 102:373-389. PMID: 30819546

9. Nonomura K, Lukacs V, Sweet DT, Goddard LM, Kanie A, Whitwam T, Ranade SS, Fujimori T, Kahn ML, **Patapoutian A** (2018) Mechanically activated ion channel PIEZO1 is required for lymphatic valve formation. Proc Natl Acad Sci USA 115:12817-22. PMID: 30482854

10. Hoffman BU, Baba Y, Griffith TN, Mosharov EV, Woo SH, Roybal DD, Karsenty G, **Patapoutian A**, Sulzer D, Lumpkin EA (2018) Merkel cells activate sensory neural pathways through adrenergic synapses. Neuron 100:1401-13. PMID: 30415995

11. Murthy SE, Dubin AE, Whitwam T, Jojoa-Cruz S, Cahalan SM, Mousavi SAR, Ward AB, **Patapoutian A** (2018) OSCA/TMEM63 are an evolutionarily conserved family of mechanically activated ion channels. eLife 7. PMID: 30382938

12. Jojoa-Cruz SJ, Saotome K, Murthy SE, Tsui CCA, Sansom MS, **Patapoutian A**, Ward AB (2018) Cryo-EM structure of the mechanically activated ion channel OSCA1.2. eLife 7. PMID: 30382939

13. Zeng WZ, Marshall KL, Min S, Daou I, Chapleau MW, Abboud FM, Liberles SD, **Patapoutian A** (2018) PIEZOs mediate neuronal sensing of blood pressure and the baroreceptor reflex. Science 362:464-7. PMID: 30361375

14. Murthy SE, Loud MC, Daou I, Marshall KL, Schwaller F, Kühnemund J, Francisco AG, Keenan WT, Dubin AE, Lewin GR, **Patapoutian A** (2018) The mechanosensitive ion channel Piezo2 mediates sensitivity to mechanical pain in mice. Sci Transl Med 10(462). PMID: 30305457

15. Kefauver JM, Saotome K, Dubin AE, Pallesen J, Cottrell CA, Cahalan SM, Qiu Z, Hong G, Crowley CS, Whitwam T, Lee WH, Ward AB, **Patapoutian A** (2018) Structure of the human volume regulated anion channel. eLife 7. PMID: 30095067

16. Xu J, Mathur J, Vessières E, Hammack S, Nonomura K, Favre J, Grimaud L, Petrus M, Francisco A, Li J, Lee V, Xiang FL, Mainquist JK, Cahalan SM, Orth AP, Walker JR, Ma S, Lukacs V, Bordone L, Bandell M, Laffitte B, Xu Y, Chien S, Henrion D,

Patapoutian A (2018) GPR68 senses flow and is essential for vascular physiology. Cell 173:762-75. PMID: 29677517

17. Ma S, Cahalan S, LaMonte G, Grubaugh ND, Zeng W, Murthy SE, Paytas E, Gamini R, Lukacs V, Whitwam T, Loud M, Lohia R, Berry L, Khan SM, Janse CJ, Bandell M, Schmedt C, Wengelnik K, Su AI, Honore E, Winzeler EA, Andersen KG, **Patapoutian A** (2018) Common PIEZO1 allele in African populations causes RBC dehydration and attenuates *Plasmodium* infection. Cell 173:443-55. PMID: 29576450

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24. Woo SH, Lukacs V, de Nooij JC, Zaytseva D, Criddle CR, Francisco A, Jessell TM, Wilkinson KA, **Patapoutian A** (2015) Piezo2 is the principal mechanotransduction channel for proprioception. Nat Neurosci 18:1756-62. PMID: 26551544

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26. Cahalan SM, Lukacs V, Ranade SS, Chien S, Bandell M, **Patapoutian A** (2015) Piezo1 links mechanical forces to red blood cell volume. eLife 4. PMID: 26001274

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33. Jabba S, Goyal R, Sosa-Pagán JO, Moldenhauer H, Wu J, Kalmeta B, Bandell M, Latorre R, **Patapoutian A**, Grandl J (2014) Directionality of temperature activation in mouse TRPA1 ion channel can be inverted by single-point mutations in ankyrin repeat six. Neuron 82:1017-31. PMID: 24814535

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Review Articles:

1. Kefauver JM, Ward AB, **Patapoutian A** (2020) Discoveries in structure and physiology of mechanically activated ion channels. Nature 587:567-576. PMID 33239794

2. Ma K, **Patapoutian A** (2020) Getting a grip on touch receptors. Science 368:1311-1312. PMID: 32554582

3. Murthy SE, Dubin AE, **Patapoutian A** (2017) Piezos thrive under pressure: mechanically activated ion channels in health and disease. Nat Rev Mol Cell Biol 18:771-83. PMID: 28974772

4. Ranade SS, Syeda R, **Patapoutian A** (2015) Mechanically activated ion channels. Neuron 87:1162-79. PMID: 26402601

5. Woo SH, Lumpkin EA, **Patapoutian A** (2015) Merkel cells and neurons keep in touch. Trends Cell Biol 25:74-81. PMID: 25480024

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Member, National Academy of Sciences (NAS)
Fellow, American Association for the Advancement of Science (AAAS)
American Pain Society
Society for Neuroscience

CURRENT RESEARCH SUPPORT:

Howard Hughes Medical Institute Investigator (2/2014-present)
NIH R01 HL143297—Molecular understanding of membrane sensors
(04/2019-03/2023) PI: Andrew Ward
NIH/R35 NS105067—Mechanisms of force sensing in the nervous system
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