Theodore John Price, Ph.D.
Ashbel Smith Professor
Department of Neuroscience and Center for Advanced Pain Studies
The University of Texas at Dallas
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Chronology of Education:

1993-1997	Bachelors of Science University of Texas at Dallas Mentor: Alice J. O'Toole, Ph.D. Field of Study: Neuroscience
1997-2003	Doctor of Philosophy University of Texas Health Science Center at San Antonio Mentor: Christopher M. Flores, Ph.D. Field of Study: Pharmacology
2003-2004	Postdoctoral Fellow University of Texas Health Science Center at San Antonio Mentor: Kenneth M. Hargreaves, D.D.S., Ph.D. Field of Study: Pharmacology
2004-2007	Postdoctoral Fellow McGill University Mentor: Fernando Cervero, M.D., Ph.D., D.Sc. Field of Study: Neuroscience and Anesthesiology

Doctoral Dissertation: The Neuronal Localization and Neuromodulatory Function of Cannabinoid-Responsive Receptors in the Trigeminal
Advisor: Christopher M. Flores, Ph.D. Associate Professor of Pharmacology

Chronology of Employment

2007 – 2012	Assistant Professor Department of Pharmacology College of Medicine University of Arizona
2012 – 2014	Associate Professor Department of Pharmacology College of Medicine University of Arizona
2014 – 2018	Associate Professor School of Behavior and Brain Sciences University of Texas at Dallas
2018 – present	Eugene McDermott Professor School of Behavior and Brain Sciences

University of Texas at Dallas

Honors and Awards

- College Honors List (University of Texas at Dallas), 1994 Spring, 1996 Spring and Fall.
- Nortel Scholar (University of Texas at Dallas), 1995
- Runner-up Alamo Chapter for Neuroscience poster contest, 1999
- Committee for Graduate Studies UTHSCSA Student Representative, 2002-2003
- Cover Art for *Neuroscience* Vol 120(1), 2003
- McGill Pain Day Organizing Committee, 2006-2007
- Vice President, Quebec Network of Junior Pain Investigators, 2006-2007
- American Pain Society Future Leaders in Pain Research, 2006-2007
- AAAS/Science Program for Excellence in Science Award Recipient, 2007
- First Prize, McGill Anesthesia Research Day, 2007
- American Pain Society Nominating Committee (elected position), 2008-2009
- American Pain Society Basic Science SIG Co-Chair (elected position), 2009-2011
- American Pain Society John C. Liebeskind Early Career Scholar Award, 2011
- Louis J Kettel Faculty Mentor Award from Department of Surgery, 2011
- University of Texas at Dallas Buhrmester Rising Star Award, 2012
- Vernon and Virginia Furrow Award for Graduate Education, University of Arizona, 2012
- Patrick D. Wall Young Investigator Award, International Association for the Study of Pain 2014
- Member, Somatosensory and Chemosensory Study Section: 2015 – 2021
- Editor in Chief – *Neurobiology of Pain*

Service Outreach

National / International

- Member, Society for Neuroscience 1999 - present
- Member, American Pain Society 2003 - 2019
- Member, International Association for the Study of Pain 2004 - present
- Founding Member, Quebec Network of Junior Pain Investigators 2006
- Contributing Editor: European Journal of Neuroscience, 2008-present
- Associate Editor: Pain, 2008-present
- IASP small grants review panel, 2008
- Wellcome Trust Review Panel, 2009
- NIH / NIDA CEBRA study section ad hoc reviewer November 2009
- NIH / NIAAA study section ad hoc reviewer April 2010
- The Louise and Allen Edwards Foundation (Montreal) grant reviewer, 2010 - present
- American Pain Society 2011 (Austin, TX) Conference Planning Committee
- American Pain Society Public Policy Committee, 2010 - present
- NIH / NIDCR SEP for RFA-DE-11-001, October 2010
- NIH / NCCAM Centers for Excellence in Pain Research Program Project, November 2010
- NIH /NIDA CEBRA study section reviewer March 2012
- NIH / NIDCR SEP March 2012
- NIH SCS Study Section Oct 2012, Jan 2014, June 2014
- NIH/NIDA CEBRA reviewer January 2013, Jan 2014, October 2014
- NIH SEP June 2013
- Academic Editor, PLoS One: 2012-2017

- Editorial Board, Molecular Pain: 2012-present
- Pharmacology Section Editor, European Journal of Pain: 2013-2018
- Chair of IASP Futures Task Force: 2013
- Member Organizing Committee IASP Buenos Aires 2014 Congress
- Co-chair APS Organizing Committee, Tampa 2014 Congress
- IASP Steering Committee for Strategic Plan: 2014
- Chair APS Organizing Committee, Palm Springs 2015 Congress
- IASP Committee for launch of new open access journal: Pain Reports 2015
- IASP Governance Committee 2015
- Co-chair, National Pain Strategy Transition to Chronic Pain Working Group: 2016 - 2017
- American Pain Society Board of Directors: Elected 2016 - 2019
- Associate Editor, Journal of Neuroscience, 2017 – present
- Neurobiology Section Editor, PAIN, 2018 – 2020
- Chair of Editorial Board for IASP Pain Research Forum, 2018 – 2021
- Member, AAAS 2018 - present
- Board of Directors, Migraine Research Foundation, 2019 – present
- Member, Peripheral Nerve Society 2019 - present

Publications / Creative Activity

(H-index = 52 – Google Scholar)

1. **Price TJ**, O'Toole AJ, Dambach KC. (1998) A moving cast shadow diminishes the Pulfrich phenomenon. *Perception*, 27(5): 591-3.
2. O'Toole AJ, **Price TJ**, Vetter T, Bartlett JC, Blanz V. (1999) 3D shape and 2D surface textures of human faces: the role of "averages" in attractiveness and age. *Image And Vision Computing*, 18 (1): 9-19.
3. **Price TJ**, Helesic G, Parghi D, Hargreaves KM, Flores CM. (2003) Cannabinoid receptor type one (CB1) expression and distribution in the trigeminal ganglion of the rat. *Neuroscience,* 120(1): 155-62.
4. Dussor GO, Leong AS, Gracia NB, Kilo S, **Price TJ**, Hargreaves KM, Flores CM. (2003) Potentiation of Evoked CGRP Release from Oral Mucosa: A Potential Basis for the Pro-Inflammatory Effects of Nicotine. *European Journal of Neuroscience,* 18(9) 2515-26.
5. Dussor GO, **Price TJ**, Flores CM. (2003) Activating transcription factor 3 (ATF3) mRNA is up-regulated in primary cultures of trigeminal ganglion neurons. *Molecular Brain Research*, 118(1-2) 156-9.
6. **Price TJ**, Patwardhan A, Akopian A, Hargreaves KM, Flores CM. (2004) Modulation of trigeminal sensory neuron activity by the dual cannabinoid-vanilloid agonists anandamide (AEA), N-arachidonoyl-dopamine (NADA) and arachidonyl-2-chloroethylamide (ACEA). *British Journal of Pharmacology* 141(7) 1118-30.
7. **Price TJ**, Patwardhan A, Akopian A, Hargreaves KM, Flores CM. (2004) Cannabinoid receptor-independent actions of the aminoalkylindole cannabinoid WIN 55,212-2 on trigeminal sensory neurons. *British Journal of Pharmacology.* 142 (2) 257-66.
8. **Price TJ**, Louria MD, Candelario-Soto D, Dussor GO, Jeske NA, Patwardhan AM, Diogenes A, Trott A, Hargreaves KM, Flores CM. (2005) Treatment of trigeminal ganglion neurons in vitro with NGF, GDNF and BDNF: effects on neuronal survival, neurochemical properties and TRPV1-mediated neuropeptide secretion. *BMC Neuroscience* 6(1): 4.

9. **Price TJ**, Patwardhan AM, Flores CM, Hargreaves KM (2005). A role for the anandamide membrane transporter in TRPV1-mediated neurosecretion from trigeminal nociceptors. *Neuropharmacology* 49(1) 25-39.
10. **Price TJ**, Cervero F, DeKonick Y (2005) Role of cation-chloride cotransporters in pain and hyperalgesia. *Current Topics in Medicinal Chemistry.* 5(6) 547-555.
11. **Price TJ**, Jeske NA, Flores CM, Hargreaves KM (2005) Pharmacological interactions between calcium/calmodulin-dependent kinase II α and TRPV1 receptors in rat trigeminal sensory neurons. *Neuroscience Letters.* 389(2) 94-8.
12. **Price TJ**, Flores CM, Cervero F, Hargreaves KM (2006). The RNA binding and transport proteins staufen and fragile x mental retardation protein are expressed by rat primary afferent neurons and localize to peripheral and central axons. *Neuroscience*. 141(4) 2107-2116.
13. Patwardhan AM, Jeske NA, **Price TJ**, Akopian AN, Hargreaves KM (2006) The cannabinoid WIN 55,212 inhibits transient receptor potential vanilloid 1 (TRPV1) and evokes peripheral antihyperalgesia via calcineurin. *Proceedings of the National Academy of Sciences (USA).* 103(30) 11393-8.
14. **Price TJ**, Hargreaves KM, Cervero F (2006) Protein expression and mRNA cellular distribution of the NKCC1 cotransporter in the dorsal root and trigeminal ganglia of the rat. *Brain Research.* 1112(1) 146-158.
15. Jeske NA, Patwardhan AM, Gamper N, **Price TJ**, Akopian AN, Hargreaves KM. (2006) Cannabinoid WIN 55,212-2 regulated TRPV1 phosphorylation in sensory neurons. *Journal of Biological Chemistry.* 281(43) 32879-32890.
16. **Price TJ**, Flores CM (2006) Critical evaluation of colocalization of putative nociceptive markers in primary sensory ganglia: differences between the dorsal root (DRG) and trigeminal (TG) ganglia. *Journal of Pain.* 8(3) 263-72.
17. Pitcher MH, **Price TJ,** Entrena JM, Cervero F. (2007) Spinal NKCC1 blockade inhibits TRPV1-dependent referred allodynia. *Molecular Pain*. 3(17).
18. **Price TJ**, Rashid M, Millecamps M, Sanoja R, Entrena JM, Cervero F. (2007) Decreased nociceptive sensitization in mice lacking the fragile X mental retardation protein: role of mGluR1/5 and mTOR. *Journal of Neuroscience.* 27(51) 13958-67.
19. **Price TJ,** Cervero F, Gold MS, Hammond DL, Prescott SA. (2009) Chloride regulation in the pain pathway. *Brain Research Reviews.* 60(1) 149-70.
20. Walczak JS, **Price TJ,** Cervero F. (2009) Cannabinoid CB1 receptors are expressed in the mouse urinary bladder and their activation modulates afferent bladder activity. *Neuroscience.* 159(3) 1154-63.
21. **Price TJ**, Geranton SM. (2009) Translating nociceptor sensitivity: the role of axonal protein synthesis in nociceptor physiology. *European Journal of Neuroscience.* 29(12) 2253-2263.
22. Porreca F and **Price TJ**. (2009) When Pain Lingers. *Scientific American Mind.* 20, 34-41.
23. Sanoja R, Tortorici V, Fernandez C, **Price TJ**, Cervero F. (2010) Role of RVM neurons in capsaicin-evoked visceral nociception and referred hyperalgesia. *European Journal of Pain.* 14(2) 120e1-9.
24. Asiedu MN, Ossipov M, Kaila K, **Price TJ**. (2010) Acetazolamide and Midazolam act synergistically to inhibit neuropathic allodynia. *Pain.* 148(2) 302-208.
25. Vardanyan M, Melemedjian OK, **Price TJ**, Ossipov MH, Lai J, Roberts E, Boos TL, Deschamps JR, Jacobson AE, Rice KC, Porreca F. (2010) Reversal of pancreatitis-induced pain by an orally available, small molecule interleukin-6 receptor antagonist. *Pain*. 151(2) 257-265.

26. Melemedjian OK, Asiedu MN, Tillu DV, Peebles K, Yan J, Ertz N, Dussor G, **Price TJ**. (2010) IL-6- and NGF-induced rapid control of protein synthesis and nociceptive plasticity via convergent signaling to the eIF4F complex. *Journal of Neuroscience*. 30(45) 15113-23.
27. Boitano S, Flynn AN, Schulz SM, Hoffman J, **Price TJ**, Vagner J. (2011) Potent agonists of the Protease Activated Receptor 2 (PAR_2). *Journal of Medicinal Chemistry*. 10; 54(5) 1308-13.
28. Asiedu MN, Tillu DV, Melemedjian OK, Shy A, Bodell B, Sanoja R, Ghosh S, Porreca F, **Price TJ**. (2011) Spinal PKMζ underlies the maintenance mechanism of persistent nociceptive sensitization. *Journal of Neuroscience*. 31(18) 6646-53. *Featured article*
29. Flynn AN, Tillu DT, Asiedu MN, Hoffman J, Vagner J, **Price TJ**, Boitano S. (2011) The protease-activated receptor-2 specific agonists, 2-aminothiazol-4-yl-LIGRL and 6-aminonicotinyl-LIGRL stimulate multiple signaling pathways to induce physiological responses in vitro and in vivo. *Journal of Biological Chemistry*. 286(21) 19076-88.
30. De Felice M, Sanoja R, Wang R, Vera-Portocarrero L, Oyarzo J, King T, Ossipov M, Vanderah TW, Lai J, Dussor G, Fields HL, **Price TJ**[#], Porreca F[#]. (2011) Engagement of descending inhibition from the rostral ventromedial medulla protects against chronic neuropathic pain. *Pain*. 152(12) 2701-9. [#]co-corresponding authors
31. Melemedjian OK, Asiedu MN, Tillu DV, Sanoja R, Yan, J, Lark A, Khoutorsky A, Johnson J, Peebles KA, Lepow T, Sonenberg N, Dussor G, **Price TJ**. (2011) Targeting adenosine monophosphate-activated protein kinase (AMPK) in preclinical models reveals a potential mechanism for the treatment of neuropathic pain. *Molecular Pain*. 7:70.
32. Peebles KA, **Price TJ**. (2012) Self-injurious behavior in intellectual disability syndromes: evidence for aberrant pain signaling as a contributing factor. *Journal of Intellectual Disability Research.* 56(5) 441-52.
33. Melemedjian OK, **Price TJ**. (2012) Dendritic spine plasticity as an underlying mechanism of neuropathic pain. *Experimental Neurology*. 233(2) 740-4.
34. Tillu DV, Melemedjian OK, Asiedu MN, Qu N, De Felice M Dussor G, **Price TJ**. (2012) Resveratrol engages AMPK to attenuate ERK and mTOR signaling in sensory neurons and inhibits incision-induced acute and chronic pain. *Molecular Pain.* 8:5.
35. **Price TJ** and Melemedjian OK, Fragile X Mental Retardation Protein (FMRP) and the Spinal Sensory System. In: Modeling the Fragile X Syndrome; Results and Problems in Cell Differentiation. Robert Denman, editor. Springer-Verlag Books. 2012.
36. Bowden K, Woullet A, Patwardhan A, **Price TJ**, Lawall J, Annabi J, Barker S, Annabi E. (2012) Transforaminal blood patch for the treatment of chronic headache from intracranial hypotension: a case report and review. *Anesthesiology Research and Practice.* 2012:923904.
37. Stidd DA, Wuollet AL, Bowden K, **Price TJ**, Patwardhan A, Barker S, Weinand ME, Annabi J, Annabi E (2012) Peripheral nerve stimulation for trigeminal neuropathic pain. *Pain Physician*. 15(1) 27-33.
38. Yan J, Melemedjian OK, **Price TJ**, Dussor G. (2012) Sensitization of dural afferents underlies migraine-related behavior following meningeal application of interleukin-6 (IL-6). *Molecular Pain.* 8:6.
39. King T, Qu C, Okun A, Melemedjian OK, Mandell E, Maskaykina I, Navratilova E, Dussor G, Ghosh S, **Price TJ**[#], Porreca F[#]. (2012) Contribution of PKMζ dependent and independent amplification to components of experimental neuropathic pain. *Pain*. 153(6) 1263-73 [#]co-corresponding authors

40. Asiedu MN, Mejia G, Ossipov MK, Malan TP, Kaila K, **Price TJ**. (2012) Modulation of spinal GABAergic analgesia by inhibition of chloride extrusion capacity in mice. *Journal of Pain*. 13(6) 546-54.
41. Patwardhan A, Edelmayer R, Annabi E, **Price TJ**, Malan P, Dussor G. (2012) Receptor specificity defines algogenic properties of propofol and fospropofol. *Anesthesia and Analgesia*. 115(4) 837-840.
42. Hoffman J, Flynn A, Tillu DV, Zhang Z, Patek R, **Price TJ**, Vagner J, Boitano S. (2012) Lanthanide labeling of a potent protease activated receptor-2 agonist for time resolved fluorescence analysis. *Bioconjugate Chemistry*. 23(10) 2098-2104.
43. Flynn AN, Hoffman J, Tillu DV, Sherwood CL, Zhang Z, Patek R, Asiedu MN, Vagner J, **Price TJ**, Boitano S. (2013) Development of highly potent protease-activated receptor 2 agonists via synthetic lipid tethering. *FASEB Journal.* 27(4): 1498-510.
44. **Price TJ** and Ghosh S. (2013) ZIPping to pain relief: the role (or not) of PKMzeta in chronic pain. *Molecular Pain*. 22; 9(1): 6.
45. Melemedjian OK, Khoutorsky A, Sorge RE, Yan J, Asiedu MN, Valdez A, Ghosh S, Dussor G, Mogil JS, Sonenberg N, **Price TJ**. (2013) mTORC1 inhibition induces pain via IRS1-dependent feedback activation of ERK. *Pain*. 154(7): 1080-91.
46. Melemedjian OK, Tillu DV, Asiedu MN, Mandell EK, Moy JK, Blute VM, Taylor CJ, Ghosh S, **Price TJ**. (2013) BDNF regulates atypical PKC at spinal synapses to initiate and maintain a centralized chronic pain state. *Molecular Pain*. 9(1): 12.
47. Melemedjian OK, Yassine H, Shy A, **Price TJ.** (2013) Proteomic and functional annotation analysis of injured peripheral nerves reveals ApoE as a protein upregulated by injury that is modulated by metformin treatment. *Molecular Pain*. 9(1): 14.
48. **Price TJ**, Dussor G (2013) AMPK: An emerging target for modification of injury-induced pain plasticity. *Neuroscience Letters.* S0304-3940(13) 607-1.
49. Gao Y, Romero-Aleshire MJ, Cai Q, **Price TJ**, Brooks HL. (2013) Rapamycin inhibition of mTORC1 reverses lithium-induced proliferation of renal collecting duct cells. *American Journal of Physiology Renal Physiology*. 305(8) F1201-8.
50. Parker SS, Mandell EK, Hapak SM, Maskaykina IY, Kusne Y, Kim JY, Moy JK, St John P, Wilson JM, Gothard KM, **Price TJ**[#], Ghosh S[#]. (2013) Competing molecular interactions of aPKC isoforms regulate neuronal polarity. *PNAS.* 110(35) 14450-5. [#] co-corresponding authors.
51. Taylor A, Westveld A, Szkudlinska M, Guruguri P, Annabi E, Patwardhan A, **Price TJ**[#], Yassine H[#]. (2013) The use of metformin is associated with decreased lumbar radiculopathy pain. *Journal of Pain Research.* Dec 9 (6) 755-63. [#] co-corresponding authors.
52. Melemedjian OK[#], Mejia GL, Lepow TS, Zoph OK, **Price TJ**[#]. (2014) Bidirectional regulation of P body formation mediated by eIF4F complex formation in sensory neurons. *Neuroscience Letters.* 563 169-174. [#] co-corresponding authors
53. Asiedu MN, Mejia GL, Hubner CA, Kaila K, **Price TJ**. (2014) Inhibition of carbonic anhydrase augments $GABA_A$ receptor-mediated analgesia via a spinal mechanism of action. *Journal of Pain.* S1526-5900(14) 00019-4.
54. Boitano S[#], Hoffman J, Tillu DV, Asiedu MN, Zhang Z, Sherwood CL, Wang Y, Dong X, **Price TJ**[#], Vagner J[#]. (2014) Development and evaluation of small peptidomimetic ligands to protease-activated receptor-2 (PAR_2) through the use of lipid tethering. *PLoS ONE*. 9(6) e99140. [#] co-corresponding authors

55. **Price TJ**, Dussor G. (2014) Evolution: the advantage of 'maladaptive' pain plasticity. *Current Biology.* 24(10) R384-6.
56. Kusne Y, Goldberg EL, Parker SS, Hapak SM, Maskaykina IY, Chew WM, Limesand KH, Brooks HL, **Price TJ**, Nikolich-Zugich J, Ghosh S. (2014) Contrasting effects of chronic, systemic treatment with mTOR inhibitors rapamycin and metformin on adult neural progenitors in mice. *Age.* 36(1) 199-212.
57. Mao-Ying QL, Kavelaars A, Krukowski K, Zhuo W, **Price TJ**, Cleeland C, Heijnen CJ. (2014) The antidiabetic drug metformin protects against chemotherapy-induced peripheral neuropathy in a mouse model. *PLoS One*. 9(6) e100701.
58. Melemedjian OK, Tillu DV, Moy JK, Asiedu MN, Mandell EK, Ghosh S, Dussor G, **Price TJ**. (2014) Local translation and retrograde axonal transport of CREB regulates IL-6-induced nociceptive plasticity. *Molecular Pain*. 10:45.
59. Kaila K, **Price TJ**, Payne JA, Puskarjov M, Voipio J. (2014) Cation-chloride cotransporters in neuronal development, plasticity and disease. *Nature Reviews Neuroscience.* 15(10) 637-54.
60. Sherwood CL, Daines MO, **Price TJ**, Vagner J, Boitano S. (2014) A highly potent agonist to protease-activated receptor-2 (PAR_2) reveals apical activation of the airway epithelium resulting in Ca^{2+}-regulated ion conductance. *American Journal of Physiology: Cell Physiology.* 307(8) 718-26
61. Gereau RW, Sluka KA, Maixner W, Savage SR, **Price TJ**, Murinson BB, Sullivan MD, Fillingim RB. (2014) A pain research agenda for the 21st century. *Journal of Pain*. 15(12) 1203-14.
62. Gkogkas CG, Khoutorsky A, Cao R, Jafarnejad SM, Prager-Khoutorsky M, Giannakas N, Kaminari A, Fragkouli A, Nader K, **Price TJ**, Konicek BW, Graff JR, Tzinia AK, Lacaille JC, Sonenberg N. (2014) Pharmacogenetic inhibition of eIF4E-dependent MMP9 mRNA translation reverses fragile X syndrome-like phenotypes. *Cell Reports*. S2211-1247(14) 00933-4.
63. Wei X, Yan K, Tillu DV, Asiedu MN, Weinstein N, Melemedjian OK, **Price TJ**, Dussor G (2015) Meningeal norepinephrine produces headache behaviors in rats via actions both on dural afferents and fibroblasts. *Cephalalgia*. 35(12) 1054-64.
64. **Price TJ**, Prescott SA (2015) Inhibitory regulation of the pain gate and how its failure causes pathological pain. *Pain*. 156(5) 789-92.
65. Tillu DV, Hassler SN, Burgos-Vega C, Quinn TL, Sorge RE, Dussor G, Boitano S, Vagner J, **Price TJ** (2015) Protease activated receptor 2 (PAR_2) activation is sufficient to induce the transition to a chronic pain state. *Pain*. 156(5) 859-67.
66. **Price TJ,** Inyang KE (2015) Commonalities between pain and memory mechanisms and their meaning for understanding chronic pain. *In: The Molecular and Cellular Biology of Pain: Progress in Molecular Biology and Translational Science*. Price and Dussor Editors. Elsevier Press, Oxford UK. 131, 409-34.
67. Kim JV, Tillu DV, Quinn TL, Mejia GL, Shy A, Asiedu MN, Murad E, Schumann AP, Totsch SK, Sorge R, Mantyh PW, Dussor G, **Price TJ** (2015) Spinal dopaminergic projections control the transition to pathological pain plasticity via a D1/D5-mediated mechanism. *Journal of Neuroscience*. 35(16) 6307-6317.
68. Kandasamy R, **Price TJ** (2015) The pharmacology of nociceptor priming. *Handbook of Experimental Pharmacology.* 227, 15-37.
69. Boitano S, Hoffman J, Flynn AN, Asiedu MN, Tillu DV, Zhang Z, Sherwood CL, Rivas CM, DeFea K, Vagner J, **Price TJ** (2015) The novel PAR2 ligand C391 blocks multiple PAR2 signaling pathways in vitro and in vivo. *British Journal of Pharmacology.* 172(18) 4535-4545.

70. Lipovka Y, Chen H, Vagner J, **Price TJ**, Tsao TS, Konhilas JP (2015) Estrogen receptors interact with the alpha catalytic subunit of AMP-activated protein kinase. *Bioscience Reports.* 35(5) e00264.
71. **Price TJ**, Das V, Dussor G (2016) Adenosine monophosphate-activated protein kinase (AMPK) activators for the prevention, treatment and potential reversal of pathological pain. *Current Drug Targets*. 17(8) 908-920.
72. Andrews NA, Latremoliere A, Basbaum AI, Mogil JS, Porreca F, Rice AS, Woolf CJ, Currie GL, Dworkin RH, Eisenach JC, Evans S, Gewandter JS, Gover TD, Handwerker H, Huang W, Iyengar S, Jensen MP, Kennedy JD, Lee N, Levine J, Lidster K, Machin I, McDermott MP, McMahon SB, **Price TJ**, Ross SE, Scherrer G, Seal RP, Sena ES, Silva E, Stone L, Svensson CI, Turk DC, Whiteside G (2016) Ensuring transparency and minimization of methodological bias in preclinical pain research: Pprecise considerations. *Pain.* 157(4) 901-909.
73. Kim JY, Megat S, Moy JK, Asiedu MN, Mejia GL, Vagner J, **Price TJ** (2016) Neuroligin 2 regulates spinal GABAergic plasticity in hyperalgesic priming, a model of the transition from acute to chronic pain. *Pain*. 157(6) 1314-24.
74. Barragan-Iglesias P, Oineda-Farias JB, Bravo-Hernandez M, Cervantes-Duran C, **Price TJ**, Murbartian J, Granados-Soto V (2016) Predominant role of spinal P2Y1 receptors in the development of neuropathic pain in rats. *Brain Research*. 1636 43-51
75. Davidson S, Golden JP, Copits BA, Ray PR, Vogt SK, Valtcheva MV, Schmidt RE, Ghetti A, **Price TJ,** Gereau RW (2016) Group II mGluRs suppress hyperexcitability in mouse and human nociceptors. *Pain*. 157(9) 2081-8.
76. Pember SO, Mejia GL, **Price TJ**, Pasteris RJ (2016) Piperidinyl thiazole isoxazolines: A new series of highly potent, slowly reversible FAAH inhibitors with analgesic properties. *Bioorganic & Medicinal Chemistry Letters.* 26(12) 2965-73.
77. Mejia GL, Asiedu MN, Hitoshi Y, Dussor G, **Price TJ** (2016) The potent, indirect adenosine monophosphate-activated protein kinase activator R419 attenuates mitogen-activated protein kinase signaling, inhibits nociceptor excitability and reduces pain hypersensitivity in mice. *Pain Reports*. 1(1) e562.
78. Burgos-Vega C, Quigley L, Avona A, **Price TJ**, Dussor G (2016) Dural stimulation in rats causes BDNF-dependent priming to subthreshold stimuli including a migraine trigger. *Pain.* 157(12) 2722-2730.
79. Park SI, Shun G, McCall JG, Al-Hasani R, Norris A, Xia L, Brenner DS, Noh KN, Bang SY, Bhatti, DL, Jang K, Kang K, Mickle AD, Dussor G, **Price TJ**, Gereau RW, Bruchas MR, Rogers JA (2016) Stretchable multi-channel antennas in soft wireless optoelectronic implants for optogenetics. *PNAS.* 113(50) 8169-8177.
80. Asiedu MN, Dussor G, **Price TJ** (2016) Targeting AMPK for the alleviation of pathological pain. *EXS*. 107, 257-285.
81. Li X, Che Z, Mazhar K, **Price TJ**, Qin Z (2016) Ultrafast near infrared light-triggered intracellular uncaging to probe cell signaling. *Advanced Functional Materials.* 27 1605778-1605778.
82. Asiedu MN, Han C, Dib-Hajj SD, Waxman SG, **Price TJ**, Dussor G (2016) The AMPK activator A769662 blocks voltage-gated sodium channels: discovery of a novel pharmacophore with potential utility for analgesic development. *PLoS One.* 12(1) e0169882.
83. Hanamura K, Washburn HR, Sheffler-Collins SI, Xia N, Henderson N, Tillu DV, Hassler S, Spellman DS, Zhang G, Neubert TA, **Price TJ**, Dalva MB (2017) Extracellular phosphorylation

of a receptor tyrosine kinase controls synaptic localization of NMDA receptors and regulates pathological pain. *PLoS Biology.* 15(7) e2002457.
84. Sahn JJ, Mejia GL, Ray PR, Martin SF[#], **Price TJ[#]** (2017) Sigma 2 receptor / Tmem97 agonists produce long lasting anti-neuropathic pain effects in mice. *ACS Chemical Neuroscience.* 8(8) 1801-1811. [#] co-corresponding authors
85. Moy, JK, Khoutorsky A, Asiedu MN, Black, BJ, Kuhn JL, Barragan-Iglesias P, Megat S, Burton MD, Burgos-Vega CC, Melemedjian OK, Boitano S, Vagner J, Gkogkas CG, Pancrazio JJ, Mogil JS, Dussor G, Sonenberg N, **Price TJ** (2017) The MNK-eIF4E signaling axis contributes to injury-induced nociceptive plasticity and the development of chronic pain. *Journal of Neuroscience.* 37(31) 7481-7499.
86. Burton MD, Tillu DV, Mazhar K, Mejia GL, Asiedu MN, Inyang K, Hughes T, Lian B, Dussor G, **Price TJ** (2017) Pharmacological activation of AMPK inhibits incision-evoked mechanical hypersensitivity and the development of hyperalgesic priming in mice. *Neuroscience*. 359 119-129.
87. Megat S, Shiers S, Moy JK, Barragan-Iglesias P, Pradhan G, Seal RP, Dussor G, **Price TJ** (2018) A critical role for dopamine D5 receptors in pain chronicity in male mice. *Journal of Neuroscience.* 38(2). 379-397
88. Khoutorsky A, **Price TJ** (2018) Translational control mechanisms in persistent pain. *Trends in Neurosciences.* 41(2) 100-114.
89. Barragan-Iglesias P, Tzu-Fang L, Bhat V, Megat S, Burton M, **Price TJ**, Campbell Z (2018) Inhibition of poly(A) binding protein with a synthetic RNA mimic reduces pain sensitization in mice. *Nature Communications.* 9(1): 10.
90. Barragan-Iglesias P, Oidor-Chan VH, Loeza-Alcocer E, Pineda-Farias JB, Velazques-Lagunas I, Salinas-Abarca AB, Hong E, Sanchez-Mendoza A, Delgado-Lezama R, **Price TJ**, Granados-Soto V (2018) Evaluation of the neonatal streptozotocin model of diabetes in rats: Evidence for a model of neuropathic pain. *Pharmacological Reports.* 70(2): 294-303.
91. Moy JK, Khoutorsky A, Asiedu MN, Dussor G, **Price TJ** (2018) eIF4E phosphorylation influences Bdnf mRNA translation in mouse dorsal root ganglion neurons. *Frontiers in Cellular Neuroscience.* 12: 29.
92. Megat S, **Price TJ** (2018) Therapeutic opportunities for pain medicines via targeting of specific translation signaling mechanisms. *Neurobiology of Pain.* 4: 8-19
93. Ray PR, Torck A, Quigley L, Wangzhou A, Neiman M, Rao C, Lam T, Kim JV, Kim TH, Zhang MQ, Dussor G, **Price TJ** (2018). Comparative transciptome profiling of the human and mouse dorsal root ganglia: An RNA-seq based resource for pain and sensory neuroscience research. *Pain.* 159(7): 1325-1345.
94. **Price TJ**, Gold MS (2018) From mechanism to cure: renewing the goal to eliminate the disease of pain. *Pain Medicine.* 19 (8) 1525-1549.
95. Moy JK, Kuhn J, Szabo-Pardi TA, Pradhan G, **Price TJ** (2018) eIF4E phosphorylation regulates ongoing pain, independently of inflammation, and hyperalgesic priming in the mouse CFA model. *Neurobiology of Pain.* 4: 45-50.
96. **Price TJ**, Basbaum AI, Bresnahan J, Chambers JF, De Koninck Y, Edwards RR, Ji RR, Katz J, Kavelaars A, Levine JD, Porter L, Schechter N, Sluka KA, Terman GW, Wager TD, Yaksh EL, Dworkin RH (2018) Transition to chronic pain: opportunities for the development of novel therapeutics. *Nature Reviews Neuroscience.* 19. 383-384.
97. Shepherd AJ, Mickle AD, Copits BA, Karlsson P, Kadunganattil S, Golden JP, Tadinada SM, Mack MR, Haroutounian S, de Kloet AD, Samineni VK, Valtcheva MC, McIlvried LA, Sheanhan

YD, Jain S, Ray PR, Usachev YM, Dussor G, Kim BS, Krause EG, **Price TJ**, Gereau RW, Mohapatra DP (2018) Macrophage-to-sensory neuron crosstalk mediated by Angiotensin II type-2 receptor elicits neuropathic pain. *Journal of Neuroscience.* 38(32) 7032-7057.

98. Paige C, Maruthy GB, Mejia GL, Dussor G, **Price TJ** (2018) Spinal inhibition of P2XR or p38 signaling disrupts hyperalgesic priming in male, but not female, mice. *Neuroscience.* 10 (385): 7337-7350.
99. Black B, Atmaramani R, Kumaraju R, Plagens S, Romero-Ortega M, Dussor G, **Price TJ**, Campbell ZT, Pancrazio JJ (2018) Adult mouse sensory neurons on microelectrode arrays exhibit increased spontaneous and stimulus-evoked activity in the presence of interleukin-6. *Journal of Neurophysiology.* 120 (3): 1374-1385
100. Shiers S, Pradhan G, Mwirigi J, Mejia GL, Ahmad A, Kroener S, **Price TJ** (2018) Neuropathic pain creates an enduring prefrontal cortex dysfunction corrected by the type II diabetic drug metformin but not by gabapentin. *Journal of Neuroscience.* 38 (33): 7337-7350.
101. Uttam S, Wong C, **Price TJ**, Khoutorsky A (2018) eIF4E-dependent translation control: a central mechanism for regulation of pain plasticity. *Frontiers in Genetics*. 9: 470.
102. Moy JK, Szabo-Pardi T, Tillu DV, Megat S, Pradhan G, Kume M, Asiedu MN, Dussor G, **Price TJ** (2018) Temporal and sex differences in the role of BDNF/TrkB signaling in hyperalgesic priming in mice and. *Neurobiology of Pain. In press*.
103. Black BJ, Atmaramani R, Plagens S, Campbell ZT, Dussor G, **Price TJ**, Pancrazio JJ (2019) Emerging neurotechnology for antinociceptive mechanisms and therapeutics discovery. *Biosensors and Bioelectronics.* 126: 679-689.
104. Inyang KE, Szabo-Pardi T, Wentworth E, McDougal TA, Dussor G, Burton MD, **Price TJ** (2019) The antidiabetic drug metformin prevents and reverses neuropathic pain and spinal cord microglial activation in male but not female mice. *Pharmacological Research.* 139: 1-16.
105. Barragan-Iglesias P, Kuhn J, Vidal-Cantu GC, Salinas-Abarca AB, Granados-Soto V, Dussor G, Campbell ZT, **Price TJ** (2019) Activation of the integrated stress response in nociceptors drives methylglyoxal induced pain. *Pain.* 160: 160-171.
106. Hassler SN, Ahmad FB, Burgos-Vega CC, Boitano S, Vagner J, **Price TJ**, Dussor G (2019) Protease activated receptor activation causes migraine-like pain behaviors in mice. *Cephalalgia.* 39(1) 111 - 122.
107. Burgos-Vega CC, Quigley LD, Trevisan G, Yan F, Asiedu MN, Motina M, Safdar N, Yousef H, Avona A, **Price TJ**, Dussor G (2019) Non-invasive dural stimulation in mice: a novel preclinical model of migraine. *Cephalalgia.* 39(1) 123 - 134.
108. Megat S, Ray PR, Moy JK, Lou T, Barragan-Iglesias P, Li Y, Pradhan G, Wangzhou A, Ahmad A, Burton MD, North RY, Dougherty PM, Khoutorsky A, Sonenberg N, Webster KR, Dussor G, Campbel ZT, **Price TJ** (2019) Nociceptor translational profiling reveals the ragulator-Rag GTPase complex as a critical generator of neuropathic pain. *Journal of Neuroscience.* 39(3) 393 – 411.
109. Paige C, Mejia GL, Dussor G, **Price TJ** (2018) AMPK activation regulates P-body dynamics in mouse sensory neurons *in vitro* and *in vivo*. *Neurobiology of pain.* 5, 100026.
110. Shiers S, **Price TJ** (2019) Neuroscience: A male-specific pain memory mechanism. *Current Biology.* 29(2) 50 – 52.
111. Ray P, Kahn J, Wangzhou A, Tavares-Ferreira D, Akopian AN, Dussor G, **Price TJ** (2019) Transcriptome analysis of the human tibial nerve identifies sexually dimorphic expression of genes involved in pain, inflammation and neuro-immunity. *Frontiers in Molecular Neuroscience.* 12:37.

112. North RY, Li Y, Ray P, Rhines LD, Tatsui CE, Rao G, Johansson CA, Zhang H, Kim YH, Zhang B, Dussor G, Kim TH, **Price TJ**, Dougherty PM (2019) Electrophysiological and transcriptomic correlates of neuropathic pain in human dorsal root ganglion neurons. *Brain.* 142(5) 1215-1226.
113. Avona A, Burgos-Vega C, Burton MD, Akopian A, **Price TJ**, Dussor G (2019) Dural Calcitonin Gene-Related Peptide produces female-specific responses in rodent migraine models. *Journal of Neuroscience.* 39(22) 4323-4331.
114. Tang Y, Lenzini PA, Busui RP, Ray PR, Campbell H, Perkins BA, Callaghan B, Wagner MJ, Motsinger-Reif AA, Buse JB, **Price TJ**, Mychaleckyj JC, Cresci S, Shah H, Doria A (2019) A genetic locus on chromosome 2q24 predicting peripheral neuropathy risk in type 2 diabetes: results from the ACCORD and BARI 2D studies. *Diabetes,* 68(8) 1649-1662.
115. Patil M, Hovhannisyan AH, Wangzhou A, Mecklenberg J, Koek W, Goffin V, Grattan D, Boehm U, Dussor G, **Price TJ**, Akopian AN (2019) Prolactin receptor expression in mouse dorsal root ganglia neuronal subtypes is sex-dependent. *Journal of Neuroendocrinology* 31(8) e12759.
116. Megat S, Ray PR, Tavares-Ferreira D, Moy JK, Sankaranarayanan I, Wangzhou A, Fang Lou T, Barragan-Iglesias P, Campbell ZT, Dussor G, **Price TJ** (2019) Differences between dorsal root and trigeminal ganglion nociceptors in mice revealed by translational profiling. *Journal of Neuroscience,* 39(35) 6829-6847.
117. Inyang KE, Burton MD, Szabo-Pardi T, Wentworth E, McDougal TA, Ramirez ED, Pradhan G, Dussor G, Price TJ (2019) Indirect AMPK-Activated protein kinase activators prevent incision-induced hyperalgesia and block hyperalgesic priming, whereas positive allosteric modulators block only priming in mice. *Journal of Pharmacology and Experimental Therapeutics.* 371(1) 138-150.
118. Mihail SM, Wangzhou A, Kunjilwar KK, Moy JK, Dussor G, Walters ET, Price TJ (2019) MNK-eIF4E signaling is a highly conserved mechanism for sensory neuron axonal plasticity: evidence from *Aplysia californica*. *Philosophical Transactions of the Royal Society of London B.* 374(1785) 20190289.
119. Patil M, Belugin S, Mecklenburg J, Wangzhou A, Paige C, Barba-Escobedo PA, Boyd JT, Goffin V, Grattan D, Boehm U, Dussor G, **Price TJ**[*], Akopian AN[*] (2019) Prolactin regulates pain responses via a female-selective nociceptor-specific mechanism. *iScience.* 20 449-465. *co-corresponding authors.
120. Kang P, Li X, Liu Y, Shiers S, Xiong H, Giannotta M, Dejana E, **Price TJ**, Randrianalisoa J, Neilsen SO, Qin Z (2019) Transient photoinactivation of cell membrane protein activity without genetic modification by molecular hyperthermia. *ACS Nano.* 13(11) 12487-12499.
121. **Price TJ**, Ray PR (2019) Recent advances toward understanding the mysteries of the acute to chronic pain transition. *Current Opinion in Physiology.* 11: 42-50.
122. Inyang KE, McDougal TA, Ramirez ED, Williams M, Laumet G, Kavelaars A, Heijnen CJ, Burton MD, Dussor G, **Price TJ** (2019) Alleviation of paclitaxel-induced mechanical hypersensitivity and hyperalgesic priming with AMPK activators in male and female mice. *Neurobiology of Pain.* 6:100037.
123. Shiers S, Mwirigi J, Pradhan G, Kume M, Black B, Barragan-Iglesias P, Moy JK, Dussor G, Pancrazio JJ, Kroener S, **Price TJ** (2020) Reversal of peripheral nerve injury-induced neuropathic pain and cognitive dysfunction via genetic and tomivosertib targeting of MNK. *Neuropsychopharmacology,* 45(3) 524-533.
124. Ruhl CR, Pasko BL, Khan HS, Kindt LM, Stamm CE, Franco LH, Hsia CC, Zhou M, Davis CR, Qin T, Gautron L, Burton MD, Naik DK, Dussor G, **Price TJ**, Shiloh MU (2020) Mycobacterium

tuberculosis sulfolipid-1 activates nociceptive neurons and induced cough. *Cell*, 181(2) 293-305.

125. Wangzhou A, McIlvried, Paige C, Barragan-Iglesias P, Shiers S, Ahmad A, Guzman CA, Dussor G, Ray PR, Gereau RW, **Price TJ** (2020) Pharmacological target-focused transcriptomic analysis of native versus cultured human and mouse dorsal root ganglion. *Pain,* 161(7) 1497-1517*.*
126. Barragan-Iglesias P, Franco-Enzastiga U, Jeevakumar V, Shiers S, Wangzhou A, Granados-Soto V, Campbell ZT, Dussor G, **Price TJ** (2020) Type I Interferons act directly on nociceptors to produce pain sensitization: implications for viral infection-induced pain. *Journal of Neuroscience.* 40(18) 3517-3532.
127. Hassler SN, Kume M, Mwirigi K, Ahmad A, Shiers S, Wangzhou A, Ray P, Belugin SN, Naik DJ, Burton MD, Vagner J, Boitano S, Akopian AN, Dussor G, **Price TJ** (2020) The cellular basis of protease activated receptor type 2 (PAR2) evoked mechanical and affective pain. *Journal of Clinical Investigation Insight*. 5(11) 137393*.*
128. Tavares-Ferreira D, Megat S, **Price TJ** (2020) Using translating ribosome affinity purification (TRAP) to understand cell-specific translatomes in pain states. In *Contemporary approaches to the study of pain: from molecules to neural networks.* Edited by Rebecca P Seal. Springer Nature*.*
129. Paige C, Shiers S, **Price TJ** (2020) The Future of Pain Therapeutics In *Pain Management for Clinicians: A Guide to Assessment and Treatment.* Edited by Carl Noe. Springer Nature Switzerland. ISBN 978-3-030-39981-8.
130. Baptista-de-Souza D, Tavares-Ferreira D, Megat S, Sankaranarayanan I, Shiers S, Flores CM, Ghosh S, Nunes-de-Souza RL, Canto-de-Souza A, **Price TJ** (2020) Sex difference in the role of atypical PKC within the basolateral nucleus of the amygdala in a mouse hyperalgesic priming model. *Neurobiology of Pain.* 8:100049.
131. Ray PR, Wangzhou A, Ghneim N, Yousuf MS, Paige C, Tavares-Ferreira D, Mwirigi JM, Shiers S, Sankaranarayanan I, McFarland AJ, Neerukonda SV, Davidson S, Dussor G, Burton MD, **Price TJ** (2020) A pharmacological interactome between COVID-19 patient samples and human sensory neurons reveals potential drivers of neurogenic pulmonary dysfunction. *Brain, Behavior and Immunity.* 89 559-568*.*
132. Jeevakumar V, Khalid Al Sardar A, Mohamaed F, Smithhart CM, **Price TJ**, Dussor G (2020) IL-6 induced upregulation of T-type Ca^{2+} currents and sensitization of DRG nociceptors is attenuated by MNK inhibition. *Journal of Neurophysiology.* 124(1) 274-283*.*
133. Avona A, Mason BN, Lackovic J, Wajahat N, Motina M, Quigley L, Burgos-Vega C, Loomis CM, Garcia-Martinez LF, Akopian AN, **Price TJ**, Dussor G (2020) Repetitive stress in mice causes migraine-like behaviors and CGRP-dependent hyperalgesic priming to a migraine trigger. *Pain.* 161(11) 2539-2550.
134. Mody PH, Dos Santos NL, Barron LR, **Price TJ**, Burton MD (2020) eIF4E phosphorylation modulates pain and neuroinflammation in the aged. *GeroScience.* 42(6) 1663-1674.
135. Shiers SI, Klein RM, **Price TJ** (2020) Quantitative differences in neuronal subpopulations between mouse and human dorsal root ganglia demonstrated with RNAscope in situ hybridization. *Pain,* 161 (10) 2410-2424.
136. Shiers S, **Price TJ** (2020) Molecular, circuit, and anatomical changes in the prefrontal cortex in chronic pain. *Pain,* 161 1726-1729*.*
137. Franco-Enzástiga U, García G, Murbartián J, González-Barrios R, Salinas-Abarca AB, Sánchez-Hernández B, Tavares-Ferreira D, Herrera LA, Barragán-Iglesias P, Delgado-Lezama

R, **Price TJ**, Granados-Soto V (2021) Sex-dependent antiallodynic effect of α_5-$GABA_A$ receptors and its epigenetic regulation in neuropathic rodents. *Journal of Neurochemistry.* 156(6) 897-916.

138. Paige C, Barba-Escobedo PA, Mecklenberg J, Patil M, Goffin V, Grattan DR, Dussor G, Akopian AN, **Price TJ** (2020) Neuroendocrine mechanisms governing sex-differences in hyperalgesic priming involve prolactin receptor sensory neuron signaling. *Journal of Neuroscience.* 40(37) 7080-7090.
139. Shiers S, Ray PR, Wangzhou A, Sankaranarayanan, Esteves Tatsui C, Rhines LD, Li Y, Uhelski M, Dougherty PM, **Price TJ** (2020) ACE2 and SCARF expression in human DRG nociceptors: implciations for SARS-CoV-2 virus neurological effects. *Pain.* 161(11) 2494-2501.
140. Yousuf MS, **Price TJ** (2020) The importins of pain. *Science.* 369(6505) 774-775.
141. Yousuf MS, **Price TJ** (2020) Chapter 4: The Basics – Translation Regulation and Pain. In R.E. Sorge (Ed.), *Dynamics of Pain*. Great River Learning. https://uab.grlcontent/dynpain
142. Mecklenberg J, Zou Y, Wangzhou A, Garcia D, Lai Z, Tumanov A, Dussor G, Price TJ, Akopian AN (2020) Transcriptomic sex differences in sensory neuronal populations of mice. *Scientific Reports.* 10(1) 15278.
143. Tavares-Ferreira D, Ray PR, Sankaranarayanan I, Mejia GL, Wangzhou A, Shiers S, Uttarkar R, Megat S, Barragan-Iglesias P, Dussor G, Akopian AN, **Price TJ** (2020) Sex difference in nociceptor translatomes contribute to divergent prostaglandin signaling in male and female mice. *Biological Psychiatry.* 3223(20) 31952-1.
144. Rudjito R, Agalave NM, Farinotti AB, Lundback P, Szabo-Pardi T, **Price TJ**, Harris HE, Burton MD, Svensson CI (2021) Sex- and cell-dependent contribution of peripheral HMGB1 and TLR4 in arthritis-induced pain. *Pain.* 162(2) 459-470.
145. Agalave NM, Rudjito R, Farinotti AB, Khoonsari PE, Sandor K, Nomura Y, Szabo-Pardi TA, Urbina CM, Palada V, **Price TJ**, Harris HE, Burton MD, Kultima K, Svensson CI (2021) Sex-dependent role of microglia in disulfide HMGB1-mediated mechanical hypersensitivity. *Pain.* 162(2) 446-458.
146. Lackovic J, **Price TJ**, Dussor G (2021) *De novo* protein synthesis is necessary for priming in preclinical models of migraine. *Cephalalgia.* 41(2) 237-246.
147. Kim WS, Hong S, Gamero M, Jeevakumar V, Smithhart C, **Price TJ**, Palmiter R, Campos C, Park SI (2021) Organ-specific multimodal, wireless optoelectronics for high-throughput phenotyping of peripheral neural pathways. *Nature Communications.* 12(1) 157.
148. Wangzhou A, Paige C, Neerukonda SV, Naik DK, Kume M, David ET, Dussor G, Ray PR, **Price TJ** (2021) A pharmacological interactome platform for discovery of pain mechanisms and targets. *Science Signaling.* 14(647) eabe1648.
149. Middleton SJ, Barry AM, Comini M, Li Y, Ray PR, Shiers S, Themistocleous AC, Uhelski ML, Yang X, Dougherty PM, **Price TJ**, Bennett DL (2021) Studying human nociceptors: from fundamentals to the clinic. *Brain.* 144(5) 1312-1335.
150. Yousuf MS, Shiers S, Sahn JJ, **Price TJ** (2021) Pharmacological manipulation of translation as a therapeutic target for chronic pain. *Pharmacological Reviews.* 73(1) 59-88.
151. Mwirigi J, Kume M, Hassler SN, Ahmad A, Ray PR, Jiang C, Chamessian A, Mseeh N, Ludwig BP, Rivera BD, Nieman MT, Van de Ven T, Ji RR, Dussor G, Boitano S, Vagner J, **Price TJ** (2021) A role for protease activated receptor type 3 (PAR3) in nociception demonstrated through development of a novel peptide agonist. *Journal of Pain.* S1526-5900(21)1-8.

152. Alexander JF, Seua AV, Arroyo LD, Ray PR, Wangzhou A, Heib-Luckemann L, Schedlowski M, **Price TJ**, Kavelaars A, Heijnen CJ (2021) Nasal administration of mitochondria reverses chemotherapy-induced cognitive deficits. *Theranostics*. 11(7) 3019-3130.
153. Barragan-Iglesias P, Kunder N, Wangzhou A, Black B, Ray PR, Lou TF, de la Pena JB, Atmaramani, Shukla T, Pancrazio JJ, **Price TJ**, Campbell ZT (2021) A peptide encoded within a 5' untranslated region promotes pain sensitization in mice. *PAIN.* 162(6) 1864-1875.
154. Shiers S, Sankaranarayanan I, Jeevakumar V, Cervantes A, Reese JC, **Price TJ** (2021) Convergence of peptidergic and non-peptidergic protein markers in the human dorsal root ganglion and spinal dorsal horn. *Journal of Comparative Neurology.* 529(10) 2771-2788.
155. McFarland AJ, Yousuf MS, Shiers S, **Price TJ** (2021) Neurobiology of SARS-CoV-2 interactions with the peripheral nervous system: implications for COVID-19 and pain. *Pain Reports*. 6(1) e885.
156. Renthal W, Chamessian A, Curatolo M, Davidson S, Burton M, Dib-Hajj S, Dougherty PM, Ebert A, Gereau RW, Ghetti A, Gold MS, Menichella DM, Mercier P, Ray W, Salvemini D, Seal RP, Waxman S, Woolf C, Stucky C, **Price TJ** (2021) Human cells and networks of pain: transforming pain target identification and therapeutic development. *Neuron.* 109. 1426-1429.
157. Avona A, Mason BN, Burgos-Vega C, Hovhannisyan AH, Belugin SN, Mecklenberg J, Goffin V, Wajahat N, **Price TJ**, Akopian AN, Dussor G (2021) Meningeal CGRP-prolactin interaction evokes female-specific migraine behavior. *Annals of Neurology.* 89(6) 1129-1144.
158. Voisin T, Perner C, Messou M, Shiers S, Ualiyeva S, Kanaoka Y, **Price TJ**, Sokol CL, Bankova LG, Austen KF, Chiu IM (2021) The $CysLT_2R$ receptor mediates leukotriene C_4-driven acute and chronic itch. *PNAS* 118(12) e2022087118.
159. Johnston KJA, Ward J, Ray PR, Adams MJ, McIntosh AM, Smith BH, Strawbridge RJ, **Price TJ**, Smith DJ, Nicholl BI, Bailey MES (2021) Sex-stratified genome-wide association study of multisite chronic pain in UK Biobank. *PLOS Genetics*. 1009428. 1-27.
160. Wangzhou A, Paige C, Ray PR, Dussor G, **Price TJ** (2021) Diversity of receptor expression in central and peripheral mouse neurons estimated from single cell RNA sequencing. *Neuroscience.* 463. 86-96.
161. Sadler KE, Moehring F, Shiers SI, Laskowski LJ, Mikesell AR, Plautz ZR, Brezinski AN, Mecca CM, Dussor G, **Price TJ**, McCorvy JD, Stucky CL (2021) Transient receptor potential canonical 5 mediated inflammatory mechanical and spontaneous pain in mice. *Science Translational Medicine*. 13(595) eabd7702. *Selected for cover.*
162. de la Pena JB, Barragan-Iglesias P, Tzu-Fang L, Kunder N, Loerch S, Shukla T, Basavarajappa L, Song J, James D, Megat S, Moy J, Wangzhou A, Ray PR, Hoyt O, Steward O, **Price TJ**, Shepherd J, Campbell Z (2021) Intercellular Arc signaling regulates vasodilation. *Journal of Neuroscience*. 41(37) 7712-7726.
163. Avona A, **Price TJ**, Dussor G (2021) Interleukin-6 induces spatially dependent whole-body hypersensitivity in rats: implications for extracephalic hypersensitivity in migraine. *Journal of Headache Pain.* 22(1): 70.
164. Yang HJ, Insensee J, Neel D, Qadros AU, Zhand HXB, Lauzadis J, Liu SM, Shiers S, Belu S, Palan S, Marlin S, Maignel J, Kennedy-Curran A, Tong VS, Moayeri M, Roderer P, Nitzsche A, Lu M, Pentelute BL, Brustle O, Tripathi V, Foster KA, **Price TJ**, Collier RJ, Leppla SH, Puopolo M, Bean BP, Cunha TM, Hucho T, Chiu IM (2021) Anthrax toxins regulate pain signaling and can deliver molecular cargoes into Antxr2+ DRG sensory neurons. *Nature Neuroscience.* 25(2) 168-179.

165. Rivas C, Yee M, Addison K, Lovett M, Pal K, Ledford J, Dussor G, **Price TJ**, Vagner J, DeFea K, Boitano S (2021) Novel proteinase-activated receptor-2 (PAR2) antagonist C391 blocks Alternaria-induced human airway epithelial signaling and asthma indicators in murine models. *British Journal of Pharmacology.* 179 (10). 2208-2222.
166. Shiers S, Elahi H, Hennen S, **Price TJ** (2021) Evaluation of calcium-sensitive adenylyl cyclase AC1 and AC8 mRNA expression in the anterior cingulate cortex of mice with neuropathic pain. *Neurobiology of Pain.* 11: 100081.
167. Rivas CM, Schiff HV, Moutal A, Khanna R, Kiela PR, Dussor G, **Price TJ**, Vagner J, DeFea K, Boitano S (2021) Alternaria alternata-induced airway epithelial signaling and inflammatory responses via protease-activated receptor 2 expression. *Biochemical and Biophysical Research Communications.* 591: 13-19.
168. Mason BN, Kallianpur R, **Price TJ**, Akopian AN, Dussor G (2022) Prolactin signaling modulates stress-induced behavioral responses in a preclinical mouse model of migraine. *Headache.* 62(1) 11-25.
169. Li J, **Price TJ**, Baccei M (2022) D1/D5 dopamine receptors and mGluR5 jointly enable non-Hebbian long-term potentiation at sensory synapses onto lamina I spinoparabrachial neurons. *Journal of Neuroscience.* 42(3): 350-361.
170. Gokcinar AH, Adams M, **Price TJ**, Cakanyildirim M (2022) Balanced opioid prescribing via a clinical tradeoff: pain relief versus adverse effects of discomfort, dependent and tolerance/hypersensitivity. *Decision Analysis.* 19(4) 297-318.
171. McFarland AJ, Ray PR, Bhai S, Levine B, **Price TJ** (2022) RNA sequencing on muscle biopsy from a 5-week bedrest study reveals the effect of exercise and potential interactions with dorsal root ganglion neurons. *Physiological Reports.* 10(3) e15176.
172. Tavares-Ferreira D, Shiers S, Ray PR, Wangzhou A, Jeevakumar V, Sankaranarayanan I, Cervantes A, Reese JC, Chamessian A, Copits BA, Dougherty PM, Gereau RW, Burton MD, Dussor G, **Price TJ** (2022) Spatial transcriptomics of human sensory neurons identifies molecular fingerprints of human nociceptors. *Science Translational Medicine.* 16 (14) 632.
173. Mecklenberg J, Wangzhou A, Hovhannisyan AH, Barba-Escobedo P, Shein SA, Zou Y, Weldon K, Lai Z, Goffin V, Dussor G, Tumanov AV, **Price TJ**, Akopian AN. (2022) Sex-dependent pain trajectories induced by prolactin require an inflammatory response for pain resolution. *Brain, Behavior and Immunity.* 101: 246-263.
174. Paige C, Plasencia-Fernandez I, Kume M, Papalampropoulou-Tsiridou M, Lorenzo LE, David ET, He L, Mejia GL, Driskill C, Ferrini F, Feldhaus AL, Garcia-Martinez LF, Akopian AN, De Koninck Y, Dussor G, **Price TJ** (2022) A female-specific role for Calcitonin Gene-Related Peptide (CGRP) in rodent pain models. *Journal of Neuroscience.* 42(10): 1930-1944
175. Allahyari RV, Heinsinger NM, Hwang D, Jaffe DA, Rasouli J, Shiers S, Thomas SJ, **Price TJ**, Rostami A, Lepore AC (2022) Response of astrocyte subpopulations following spinal cord injury. *Cells.* 11(4) 721.
176. Hall BE, Macdonald E, Cassidy M, Yun S, Sapio MR, Ray PR, Doty M, Nara P, Burton MD, Shiers S, Ray-Chaudhury A, Mannes AJ, **Price TJ**, Iadarola MJ, Kulkarni AB (2022) Transcriptomic analysis of human sensory in painful diabetic neuropathy reveals inflammation and neuronal loss. *Scientific Reports*. 12: 4729.
177. Vidal A, Jha S, Hassler S, **Price TJ**, Busso C (2022) Face detection and grimace scale prediction of white furred mice. *Machine Learning with Applications.* 8: 100312.
178. Schiff HV, Rivas CM, Pederson WP, Sandoval E, Gillman S, Prisco J, Kume M, Dussor G, Vagner J, Ledford JG, **Price TJ**, DeFea KA, Boitano S. β-arrestin-biased proteinase-activated

receptor-2 antagonist C781 limits allergen-induced airway hyperresponsiveness and inflammation. *British Journal of Pharmacology. In press.*

179. Ray PR, Shiers S, Caruso JP, Tavares-Ferreira D, Sankaranarayanan I, Uhelski ML, Li Y, North RY, Tatsui C, Dussor G, Burton MD, Dougherty PM, **Price TJ**. (2022) RNA profiling of human dorsal root ganglia reveals sex-difference in mechanisms promoting neuropathic pain. *Brain. In press*.
180. Rodriguez-Palma EJ, De la Luz-Cuellar YE, Islas-Espinoza AM, Felix-Leyva AE, Shiers S, Garcia G, Torres-Lopez JE, Delgado-Lezama R, Murbartian J, **Price TJ**, Granados-Soto V. (2022) Activation of α6-containg GABAA receptor induces antinociception under physiological and pathological conditions. *PAIN. In press*.
181. Lackovic J, **Price TJ**, Dussor G (2022) MNK1/2 contributes to periorbital hypersensitivity and hyperalgesic priming in preclinical migraine models. *Brain. In press*.
182. Papalampropoulou-Tsiridou M, Shiers S, Wang F, Godin AG, **Price TJ**, De Koninck Y (2022) Distribution of acid-sensing ion channel subunits in human sensory neurons contrasts with that in rodents. *Brain Reports.* 4(6):fcac256.
183. Hegarty DM, Carrol JR, Nguyen D, Halls VS, Robbins DI, **Price TJ**, Dussor G, Aicher SA (2022) Resveratrol increases tear production and ocular pain after corneal abrasion in male, but not female, rats using a photorefractive keratectomy model. *Experimental Eye Research.* 225:109281.
184. Sankaranarayanan I, Tavares-Ferreira D, He L, Kume M, Mwirigi JM, Madsen TM, Petersen KA, Munro G, **Price TJ**. (2022) Meteorin alleviated paclitaxel-induced peripheral neuropathic pain in mice. *Journal of Pain.* S1526-5900(22)-0441-2.
185. Kume M, Ahmad A, Shiers S, Burton MD, DeFea KA, Vagner J, Dussor G, Boitano S, **Price TJ**. (2022) C781, a β-arrestin biased antagonist at protease-activated receptor-2 (PAR2), displays *in vivo* efficacy against protease-induced pain in mice. *Journal of Pain.* S1526-5900(22)00454-0.

Scholarly Presentations

Symposia

1. *Beyond the messenger: Role of translational regulation in pain processing. American Pain Society 2007 Meeting Symposia. Washington DC. May 5, 2007.
2. Defining the role of NKCC1 in nociceptive processing. International Association for the Study of Pain World Congress. Glasgow, UK. August 21, 2008.
3. Translational control as a novel mechanism of nociceptive sensitization. University of Helsinki, Finland. Federation of Neurosciences Graduate Programs Symposia. October 6, 2008. *Invited*
4. *Translation control in pain processing. Spring Pain Research Conference. Grand Cayman Island. April 18, 2010.
5. *Emerging role of translation control in nociceptive processing. International Association for the Study of Pain World Congress. Montreal, QC. Sept 3, 2010.
6. *Novel treatment approaches for pain in areas of great clinical need. American Pain Society 2011 Meeting Symposia. Austin TX. May 19, 2011
7. *The future of drug discovery for pain. American Pain Society 2011 Dinner Symposia. Austin TX. May 20, 2011
8. Novel role for PKMζ in pain. International Association for the Study of Pain 2012 Congress Symposia. Milan, Italy. Aug 28, 2012

9. *Targeting spinal GABAergic mechanisms to Develop Novel Analgesics. American Pain Society 2013 Meeting Symposium. New Orleans, LA. May 11, 2013.
10. *Targeting translation control for the treatment of pain. American Pain Society 2014 Meeting Symposium. Tampa, FL. May 1, 2014
11. Descending dopaminergic control of pathological pain plasticity. Winter Conference on Brain Research. Breckenridge, CO. January 26, 2016
12. *Descending dopaminergic circuits and D1/D5 receptors in the transition to chronic pain. American Pain Society. Austin, TX. May 12, 2016
13. Mechanisms of neuropathic pain from mice to human; from AMPK to transcriptomics. International Association for the Study of Pain. Yokohama, Japan. Sept 29, 2016
14. New mechanisms of latent pain sensitization and hyperalgesic priming: Clinical implications. American Pain Society. Pittsburgh, PA. May 19, 2017.
15. *The pain biography: what early life injury and hyperalgesic priming teaches us about how pain becomes chronic. Neuropathic Pain Special Interest Group Meeting (NeuPSIG). Gothenburg, Sweden. June 15, 2017
16. Neuro-immune interactions driving chronic pain from mice to humans. American Pain Society. Anaheim, CA. March 5, 2018.
17. Sex differences in pain mechanisms across the lifespan. Canadian Pain Society Annual Meeting. Montreal, QC. May 23, 2018.
18. *Next generation sequencing reveals sex-specific mechanisms of chronic pain in mice and humans. International Association for the Study of Pain. Boston, MA. Sept 13, 2018.
19. *Pain plasticity mechanisms along the neuroaxis. Neuropathic Pain Special Interest Group Meeting. London, UK. May 10, 2019
20. Sex difference in nociceptor translatomes contribute to divergent prostaglandin signaling in male and female mice. National Academies of Science (US). Online. Sept 23, 2020.
21. A debate on Central and Peripheral Mechanisms of Neuropathic Pain. US Association for Study of Pain. Online. Dec 11, 2020.
22. Transcriptomic (and mostly other) findings from human DRG and spinal cord. IASP Meeting. Toronto Canada. Sept 19, 2022.
23. Basic Science Refresher Course. IASP Meeting. Toronto Canada. Sept 19, 2022.
24. *SILENT NOCICEPTORS The answer is all in the genes – RNA sequencing on human nociceptors. IASP Meeting. Toronto Canada. Sept 20, 2022.
25. *Using Human Molecular Neuroscience to Increase the Translational Potential of Preclinical Pain Research**.** IASP Meeting. Toronto Canada. Sept 21, 2022.
26. * Pain Target Identification in Human DRG and Spinal Cord Studies. ACNP Annual Meeting. Phoenix AZ. Dec 1, 2022.

*Symposia organizer

Conferences

1. Axonal Plasticity, FMRP and pain. New Developments in Fragile X Syndrome: From Basic Mechanisms to Therapeutics. The Banbury Center, Cold Spring Harbor Laboratory, NY. April 6, 2009. *Invited*
2. IL-6-induced nociception: role of ERK – MNK – eIF4E signaling. American Pain Society Annual Meeting. San Diego, CA. May 8, 2009.

3. Decreased nociceptive sensitization in fragile X mental retardation knockout mice. The Gatlinburg Conference on Intellectual Disabilities Research. Annapolis, MD. March 19, 2010. *Invited*
4. IL-6 and NGF rapidly control gene expression in sensory neurons via signaling to translation machinery. Spring Pain Research Conference. Grand Cayman Island. April 18, 2010.
5. IL-6 and NGF rapidly control gene expression in sensory neurons via signaling to translation machinery. American Pain Society Annual Meeting. Baltimore, MD. May 8, 2010.
6. Targeting mTOR for novel opportunities for pain control. Pain Society of Oregon Annual Meeting. Portland, OR. May 21, 2010. *Invited*
7. Cytokines, growth factors and nerve injury rapidly alter gene expression in sensory neurons via mTOR and ERK signaling to elongation initiation factors. International Association for the Study of Pain World Congress. Montreal, QC. Sept 3, 2010.
8. Closing opened pain gates by regulating spinal inhibition. Reflex Sympathetic Dystrophy Association Workshop on Activated Glia. Chicago, IL. Oct 9, 2010. *Invited*
9. PKMζ maintains persistent nociceptive sensitization. American Pain Society Annual Meeting. Austin TX. May 19, 2011.
10. Maintenance mechanisms of persistent pain states. Rita Allen Foundation Scholars Meeting. Princeton, NJ. June 22, 2011. *Invited*
11. Role of PKMζ in the maintenance of spinal nociceptive plasticity: role of brain derived neurotrophic factor (BDNF). NeuPSIG. Toronto, ON. May 24, 2013.
12. Pharmacological strategies to mitigate limitations of GABAergic modulation for the treatment of neuropathic pain. NeuPSIG. Toronto, ON, May 26, 2013.
13. Molecular mechanisms driving chronic pain: from sea slugs to memory molecules. BIT NeuroTalk. Nanjing, China. May 17, 2014.
14. Translation control of neuropathic pain. International Association for the Study of Pain World Congress. Buenos Aires, Argentina. October 8, 2014. *Invited*
15. AMPK, an emerging target for pain. Pain and Migraine Therapeutics Summit. San Francisco, California. November 5, 2014. *Invited*
16. Methylglyoxal induces the integrated stress response in nociceptors to promote diabetic neuropathic pain. Mexican Academy of Physiology Meeting. Campeche, Mexico. August 17, 2016. *Invited*
17. Neuro-immune interactions in chronic pain. Advances in Pain Management CME Conference. University of Rochester. Rochester NY. April 14, 2018. *Invited Plenary Lecture.*
18. Targeting translation regulation for the treatment of neuropathic pain. Pain Mechanisms and Therapeutics Conference. Taormina, Italy. June 6, 2018. *Invited.*
19. Nociceptor translational profiling reveals MNK1-eIF4E signaling as a novel target for treatment of neuropathic pain. American College of Neuropsychopharmacology (ACNP). Miami, Fl. Dec 12, 2018. *Invited*
20. Primitive and recently evolved mechanisms driving persistent pain. Evolution of mechanisms and behavior important for pain conference. Royal Society UK. Newport Pagnell, Buckinghamshire, UK. Feb 12, 2019. *Invited*
21. Harnessing the RNA sequencing revolution to find new targets and biomarkers for pain drug discovery. Drug Discovery Re-Invented Conference. Nassau, Bahamas. Feb 21, 2019. *Invited.*
22. Mechanisms of transition to chronic pain. Challenge of Chronic Pain Meeting. Cambridge, UK. March 5, 2019. *Invited.*

23. Using Human Nerves to Identify New Pain Targets. Texas Pain Research Consortium Meeting. San Antonio, TX. Sept 13, 2019. *Invited.*
24. Sex-specific therapeutics based on gene discovery and mechanistic studies. NIH Pain Consortium. Washington DC (online webinar). June 3, 2020. *Invited*
25. Strategies and Pitfalls in Advancing Novel Analgesic Drugs. Study Group. American College of Neuropsychopharmacology. Dec 9, 2020. *Invited*.
26. Molecular profiling of the human peripheral nervous system in chronic pain states. To be at Pain Austria. Jan 30, 2021. *Invited Plenary Speaker*.
27. The impact of COVID-19 on the nervous system – thoughts on long-COVID. Canadian Pain Society Annual Meeting. April 28, 2021. *Invited*.
28. Basic Science of Sickle Cell Pain. Approaches to effective therapeutic management of pain for people with Sickle Cell Disease, NIH. July 21, 2021. *Invited.*
29. Using RNA sequencing on human peripheral nerves to understand mechanisms driving painful neuropathies. Peripheral Nerve Society Annual Meeting. June 13, 2021. *Invited*.
30. Molecular profiling of the human peripheral nervous system in chronic pain states. To Be At Pain Austria Meeting. Online. Jan 30, 2022. *Invited*.
31. Molecular characterization of the human DRG and its implications for pain therapeutic development. Acute to Chronic Pain Transitions Working Group (NIH project) Annual Scientific Meeting. Online. March 18, 2022. *Invited.*
32. Exploiting human DRG explants and spatial transcriptomics for modeling neuropathic pain. European Federation of IASP Chapters Annual Meeting. Dublin, Ireland. April 29, 2022, *Invited*.
33. Spatial transcriptomics on human DRG defines nociceptor transcriptomes and arrangement of immune cell types. United States Association for the Study of Pain annual meeting. Cincinnati, OH. May 12, 2022. *Invited*.
34. Unique pain targets and mechanisms emerging from single cell and spatial sequencing of the human DRG. Pain Mechanisms and Targets Meeting. Verona, Italy. June 3, 2022.
35. Understanding human nociceptors, their molecular makeup, functional regulation and innervation targets**.** FOP Forum. Dallas, TX. Nov 10, 2022. *Invited.*
36. Using Human Transcriptomics to Better Understand Headache Mechanisms. Pain and Therapeutics Summit. Washington DC. Nov 14, 2022.

Seminars

1. RNA Binding Proteins in the Pain Pathway: Perspectives on RNA Transport and Local Translation. The University of Texas Health Science Center at San Antonio. June 24, 2005. *Invited*
2. RNA Transport and Local Translation in the Peripheral Nervous System. McGill Centre for Research on Pain / Astra Zeneca Research Meeting. December 20, 2005. *Invited*
3. Translational regulation in sensory neurons and the spinal cord: Implications for pain processing. University of Arizona Health Sciences Center: Depts of Pharmacology and Physiology. February 19, 2007. *Invited*
4. Translational regulation in sensory neurons and the spinal cord: Implications for pain processing. Harvard University Medical School: Dept of Anesthesia. March 12, 2007. *Invited*
5. Translational regulation in sensory neurons and the spinal cord: Implications for pain processing. Pittsburgh University Pain Center: Neurobiology Department. March 21, 2007. *Invited*

6. Is chronic pain a memory of pain? Translational regulation in the pain pathway. University of Texas at Dallas: Dept of Brain and Behavioral Sciences. April 30, 2007. *Invited*
7. What can Self-Injurious Behavior tell us about chronic pain? University of Arizona, Department of Neurology Grand Rounds. June 27, 2008.
8. Role of NKCC1 in pain and hyperalgesia. University of Helsinki, Finland. Department of Neurosciences. October 8, 2008. *Invited*
9. What can Self-Injurious Behavior tell us about chronic pain? University of Arizona, Department of Psychiatry Grand Rounds. October 22, 2008.
10. Translational control as a novel mechanism of nociceptive sensitization. Johnson and Johnson Pharmaceuticals R&D, Spring House, PA. November 13, 2008. *Invited*
11. Role of NKCC1 in Pain Processing. NeuroTherapeutics Pharma, Miami, FL. January 24, 2009. *Invited*
12. Chronic Pain: Found in Translation? Department of Pharmacology, University of Arizona Seminar Series. Tucson, AZ. March 10, 2010.
13. Translation Control of Nociceptive Sensitization. Washington University Department of Anesthesia and Washington University Pain Center Seminar Series. St. Louis, MO. Jan 18, 2011. *Invited*
14. Metformin for Neuropathic Pain. University of Arizona School of Medicine, Department of Endocrinology. Tucson, AZ. Jan 25, 2011.
15. PAR_2 Drug Discovery. University of Arizona School of Medicine, Department of Pharmacology. Tucson, AZ. Feb 16, 2011.
16. Translation Control of Nociceptive Sensitization. Indiana University School of Medicine, Department of Pharmacology Seminar Series. Indianapolis, IN. April 12, 2011. *Invited*
17. PKMζ in the control of persistent pain states. University of Helsinki, Department of Biological Sciences and Neurosciences Center. Helsinki, Finland. August 30, 2011. *Invited*
18. PKMζ in the control of persistent pain states. University of Arizona, Department of Physiology. Tucson, AZ. September 23, 2011
19. What can learning and memory mechanisms tell us about chronic pain? University of Arizona, Department of Neurosurgery. Tucson, AZ. October 5, 2011.
20. What can learning and memory mechanisms tell us about chronic pain? Veterans Administration Hospital Mental Health Division. Tucson, AZ. October 14, 2011. *Invited*
21. Maintenance Mechanisms of Nociceptive Sensitization. University of Innsbruck. Innsbruck, Austria. December 13, 2011. *Invited*
22. Protease Activated Receptor Type 2 (PAR_2) Drug Discovery for the Treatment of Pain. Frontiers in Biomedical Sciences Seminar Series. University of Arizona School of Medicine. January 31, 2012.
23. Maintenance Mechanisms of Chronic Pain. Johns Hopkins University, Blaustien Pain Seminar Series. Baltimore, MD. March 9, 2012.
24. Maintenance Mechanisms of Chronic Pain. Dartmouth University, Department of Pharmacology. Hanover, NH. March 21, 2012.
25. Maintenance Mechanisms of Chronic Pain. University of Illinois, Neuroscience Program. Champaign-Urbana, IL. April 3, 2012.
26. Targeting AMPK for Chronic Pain. University of Arizona Cancer Center Collaborative Grand Rounds. Tucson, AZ. April 6, 2012.
27. Making a career of hypothesis testing. University of Texas at Dallas. Senior Launch. Dallas, TX. Sept 26, 2012

28. PKMζ maintains chronic pain. University of Texas at Dallas. Brain and Behavior Sciences School Seminar Series. Dallas, TX. Sept 28, 2012.
29. Mechanisms of chronic pain maintenance. Gillette Children's Hospital Pain Conference. Minneapolis, MN. Nov 1, 2012
30. PAR_2 Drug Discovery. Theravance. San Francisco, CA. Nov 8, 2012
31. The role of atypical protein kinase Cs in maintenance of chronic pain states. University of Heidelberg, Heidelberg, Germany. March 2, 2013
32. AMPK as a novel target for pain. University of Heidelberg, Heidelberg, Germany. March 2, 2013
33. Plasticity mechanisms of chronic pain. University of Texas at Dallas. Brain and Behavioral Sciences School Seminar Series. Dallas, TX. March 22, 2013
34. Maintenance mechanisms of chronic pain. National Institutes of Health. Bethesda, MD. April 17, 2013
35. Targeting translation control mechanisms for the development of novel pain therapeutics. UTHSCSA. San Antonio, TX. October 25, 2013.
36. Maintenance mechanisms of chronic pain. University of Maryland School of Dentistry. Baltimore, MD. April 18, 2013
37. Targeting AMPK for chronic pain. MD Anderson Cancer Center. Houston, TX. July 26, 2013.
38. Targeting translation control mechanisms to Ease Pain. Pain Research Forum Webinar. January 14, 2014.
39. Targeting translation control mechanisms to alleviate chronic pain. Cornell Burke Rehabilitation Center. White Plains, NY. January 27, 2014.
40. Targeting AMPK for the alleviation of chronic pain. Rigel INC. South San Francisco, CA. February 12, 2014.
41. Mechanisms of chronic pain, from translation control to descending circuits. Gulf Coast Pain Consortium, MD Anderson Cancer Center. Houston, TX. April 4, 2014.
42. Targeting translation control for the treatment of chronic pain. University of Cincinnati, Cincinnati, OH. April 17, 2014.
43. Mechanisms of Chronic Pain, from translation control to descending circuits. Baylor College of Dentistry, Dallas, TX. January 7, 2015.
44. Mechanisms controlling the transition to a chronic pain state. UTMB, Galveston, TX, January 28, 2015.
45. Descending Control of the Transition to a Chronic Pain Sate. University of Kentucky, Lexington, KY. March 4, 2015
46. Mechanisms controlling the transition to a chronic pain state. Texas Tech Health Sciences Center, Lubbock, TX. March 24, 2015.
47. Hypothalamic dopaminergic projections to the dorsal horn control the transition to chronic pain. UTSW, Division of Hypothalamic Research, Dallas, TX, July 21, 2015.
48. Translation Control of Chronic Pain. Texas Women's University, Department of Biology. Denton, TX, September 18, 2015.
49. An Update on AMPK and Pain. Rigel Pharmaceuticals, San Francisco, CA, September 6, 2015.
50. Mechanisms of the transition from acute to chronic pain. University of Calgary, Calgary, AB, Canada. February 26, 2016.
51. Targeting mRNA translation control mechanisms to understand chronic pain. Duquesne University. Department of Biology. Pittsburgh, PA, April 15, 2016.

52. Comparative transcriptomic analysis of human and mouse DRG: implications for translational research. Merck. Department of Neuroscience. West Point, PA, August 26, 2016.
53. Mechanisms of neuropathic pain; from preclinical models to human transcriptomics. University of Albany, Albany, NY, Oct 15, 2016.
54. From neuropathic pain to hyperalgesic priming to human transcriptomics: searching for novel pain targets. University of Iowa Pain Interest Group. Iowa City, IA, Nov 8, 2016.
55. Targeting pain plasticity to create next generation analgesics. Thomas Jefferson University, Department of Neuroscience. Philadelphia, PA, Dec 6, 2016.
56. Translation regulation in chronic pain: therapeutic targets and new insight from next generation sequencing. University of Maryland School of Medicine. Baltimore, MD, Feb 21, 2017.
57. Translation regulation in chronic pain: therapeutic targets and new insight from next generation sequencing. University of California San Francisco. San Francisco, CA, Mar 9, 2017.
58. Mechanisms of chronic pain: from switching circuits to human transcriptomics. University of California San Francisco. San Francisco, CA, Mar 9, 2017.
59. Translation regulation in chronic pain: therapeutic targets and new insight from next generation sequencing. University of Texas Medical Branch. Galveston, TX, Mar 21, 2017.
60. Mechanisms that promote chronic pain. University of Copenhagen. Copenhagen, Denmark, September 6, 2017.
61. Drivers and targets for neuropathic pain. Texas Tech University Health Science Center in El Paso, TX. Oct 18, 2017.
62. Mechanisms governing the transition to chronic pain. University of Connecticut Medical School and Jackson Laboratories Center for Human Genetics. Farmington, CT. Nov 30, 2017.
63. Translating Ribosome Affinity Purification (TRAP) for target identification for pain. MundiPharm. London, UK. Dec 7, 2017.
64. Translation regulation in peripheral neuropathies, from mice to humans. Duke University, Department of Anesthesia. Raleigh NC. March 15, 2018.
65. RNA-seq-based insights into neuropathic pain pathology in human DRG. Eli Lilly and Company, London, UK. March 26, 2018.
66. Sex differences in mechanisms of chronic pain. University of Minnesota, School of Veterinary Medicine. Minneapolis MN. March 28, 2018.
67. Translation regulation in neuropathic pain from mice to humans. University of Pittsburgh. Center for Pain Research. Pittsburgh PA. April 11, 2018.
68. Translation regulation in neuropathic pain from mice to humans. McGill University Frontiers in Pain Research Seminar Series. Montreal QC. May 22, 2018.
69. Translation regulation in neuropathic pain from mice to humans. Laval University CERVO Brain Research Center. Quebec City, QC. May 25, 2018.
70. Harnessing next generation sequencing for the identification of new pain targets. University of Toronto. Toronto, ON. Aug 30, 2018.
71. Harnessing next generation sequencing for the identification of new pain targets. University of Buffalo. Buffalo, NY. Oct 12, 2018.
72. Mechanisms of cognitive dysfunction in neuropathic pain. MD Anderson Cancer Center. Houston, TX. Dec 18, 2018.
73. RNA sequencing technologies reveal new mechanisms of neuropathic pain from mice to humans. Nottingham University Medical Center. Nottingham, UK. Feb 13, 2019.
74. RNA Sequencing in mice and patients and how to use these findings in neuropathic pain drug development. University College London. London, UK. May 7, 2019

75. RNA Sequencing in mice and patients and how to use these findings in neuropathic pain drug development. MundiPharma Research. Cambridge, UK. May 8, 2019
76. RNA Sequencing in mice and patients and how to use these findings in neuropathic pain drug development. University of Essen Medical School, Department of Neurology. Essen, Germany. June 25, 2019.
77. Using RNA sequencing to gain new insight into neuropathic pain mechanisms and therapeutic targets. Aachen Medical School, Department of Pharmacology and Physiology. Aachen, Germany. June 26, 2019.
78. Using RNA sequencing to gain new insight into neuropathic pain mechanisms and therapeutic targets. Grunenthal GmBH, Aachen, Germany. June 27, 2019.
79. Using RNA sequencing to identify and validate neuropathic pain mechanisms and targets. University of Kansas Medical Center, Midwest Regional Pain Interest Group Meeting, Keynote speaker. Kansas City, KS. Aug 11, 2019.
80. Using RNA sequencing to identify and validate neuropathic pain mechanisms and targets. Escient Pharmaceuticals. San Diego, CA. Aug 22, 2019.
81. Using RNA sequencing to identify and validate neuropathic pain mechanisms and targets. Michigan State Department of Physiology. East Lansing, MI. Sept 5, 2019.
82. Using RNA sequencing to identify and validate neuropathic pain mechanisms and targets. UTSW Department of Endocrinology Grand Rounds. Dallas, TX. Oct 4, 2019.
83. Using RNA sequencing to identify and validate neuropathic pain mechanisms and targets - Gunn-Lok Memorial Lecture. University of Washington Department of Anesthesia. Seattle, WA. Oct 29, 2019
84. Targeting AMPK for pain treatment. MD Anderson Department of Symptom Research. Houston, TX. Nov 14, 2019
85. Molecular profiling of the human dorsal root ganglion from organ donors to neuropathic pain patients. Medical College of Wisconsin. Milwaukee, WI. March 4, 2020.
86. Progress in identifying new pain targets from human molecular neuroscience. Grunenthal. Aachen, Germany (online webinar). May 13, 2020.
87. Human dorsal root ganglion transcriptomics for pain mechanism discovery and therapeutic development. Anabios Corporation. San Diego, CA (online webinar). May 28, 2020.
88. CGRP in chronic pain -and- developing pain targets from molecular profiling of human tissues. Lundbeck Corporation, Copenhagen, Denmark (online webinar). June 23, 2020.
89. Understanding pain mechanisms: RNA expression analysis of peripheral nervous system. Biotechne (online webinar). June 24, 2020.
90. Molecular profiling of the human peripheral nervous system in chronic pain states. Washington University St. Louis Department of Anesthesiology. Sept 17, 2020.
91. Molecular profiling of the human peripheral nervous system in chronic pain states. University of Cincinnati Department of Anesthesiology. Oct 22, 2020.
92. Molecular profiling of the human peripheral nervous system in chronic pain states. Virginia Commonwealth University Pain Center. Nov 19, 2020.
93. Molecular profiling of the human peripheral nervous system in chronic pain states. University of California San Francisco PARC Program. Dec 7, 2020.
94. Molecular profiling of the human peripheral nervous system in chronic pain states. Northwestern University Pain Center. Jan 15, 2021.
95. Molecular profiling of the human peripheral nervous system in chronic pain states. Grunenthal, Aachen Germany. March 1, 2021

96. Molecular profiling of the human peripheral nervous system in chronic pain states. University of Texas Southwestern Medical School. PMNR Dept. March 3, 2021.
97. Molecular profiling of the human peripheral nervous system in chronic pain states. University of Mexico City Medical School and CINVESTAV. March 10, 2021.
98. Molecular profiling of the human peripheral nervous system in chronic pain states. North Carolina State University School of Veterinary Medicine. March 17, 2021.
99. VISIUM profiling of the human DRG. Biogen, Boston, MA. March 19, 2021.
100. Molecular profiling of the human DRG in chronic pain states. Genentech, online seminar. May 4, 2021.
101. Molecular characterization of human nociceptors – insights into chronic pain mechanisms in patients. University of Sheffield. Sheffield, UK. October 21, 2021
102. Unraveling pain mechanisms and targets – a human molecular neuroscience approach. UTHSCSA. San Antonio, TX. October 15, 2021
103. Molecular characterization of human nociceptors – Insights into chronic pain mechanisms in patients. New Orleans, LA. Jan 20, 2022.
104. Molecular characterization of the human DRG and its implications for pain therapeutic development. 10X Genomics online seminar. April 12, 2022.
105. Unique pain targets and mechanisms emerging from single cell and spatial sequencing of the human DRG. NIH NINDS clinical research working group seminar. July 28, 2022.
106. Molecular characterization of the human DRG and its implications for pain therapeutic development. University of Minnesota Pain Interest Group. Online. April 22, 2022. *Invited.*
107. A human molecular neuroscience approach to understanding pain. UTSW O'Donnell Brain Institute. Dallas, TX. Oct 12, 2022. *Invited*.
108. Pain Target Identification in Human DRG and Spinal Cord Studies. NIH Pain Center. Bethesda, MD. Dec 8, 2022. *Invited*.

United States Patents

1. **Price TJ,** Dussor G, Tillu D, Lian B. Topical application of AMPK activators for pharmacological prevention of chronic pain. US9,233,085B1. January 12, 2016.
2. Boitano S Vagner J, **Price TJ**. PAR2 mimetic peptides and uses thereof. WO2017173347. Oct 6, 2017.
3. Pyun D, **Price TJ**, Dussor G, Tillu D, Lian B. Methods and compositions using AMPK activators for pharmacological prevention of chronic pain. US10,016,486B1. July 10, 2018.
4. Boitano SA, Vagner J, **Price TJ.** PAR2 Mimetic Peptides and Uses Thereof. US2019/0117785A1. April 25, 2019
5. Boitano SA, Vagner J, **Price TJ,** Dussor GO**.** PAR3 Mimetic Peptides and Uses Thereof. US2019/0119349A1. April 25, 2019
6. **Price TJ**, Shiers SI. Inhibitor of MNK for the treatment of neuropathic pain. WO2020/237167A1. Nov 26, 2020.

Grants and Contracts

Federal

ACTIVE

*Title: Protease activated receptor type 2 targeting for migraine pain
*Major Goals: The project will study the role of protease activated receptor type 2 in migraine pain using novel medicinal chemistry and genetic approaches
*Status of Support: Active
Project Number: R01NS098826
Name of PD/PI: Price (Contact), Gregory Dussor, Scott Boitano and Josef Vagner mPI
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 8/01/2017 – 4/30/2023
*Total Award Amount (including Indirect Costs): $2,831,747
*Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	1.52 calendar

*Title: Sex-specific regulation of local translation and chronic pain mechanisms in females
*Major Goals: The goal of this project is to gain insight into how sex hormones influence translation regulation in nociceptors to influence sexual dimorphisms in chronic pain mechanisms
*Status of Support: Active
Project Number: R01NS102161
Name of PD/PI: Price (contact) and Armen Akopian mPI
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/01/2018 – 12/31/2022
* Total Award Amount (including Indirect Costs): $2,539,088
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	1.52 calendar
2. 2022	1.52 calendar

*Title: Translation Control of Pain Plasticity
*Major Goals: The goal of this project is to understand how translation regulation signaling is linked to neuropathic pain with a focus on the use of cell-specific translational profiling in vivo.
*Status of Support: Active
Project Number: R01NS065926
Name of PD/PI: Price
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 03/01/2019 – 01/31/2024
* Total Award Amount (including Indirect Costs): $2,699,955
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	1.52 calendar
2. 2022	1.52 calendar
3. 2023	1.52 calendar

*Title: Extracellular mechanisms regulating synaptic function and pain plasticity
*Major Goals: Test the hypothesis that extracellular phosphorylation of EphBs controls NMDAR clustering and function at synapses, examine the molecular mechanisms that govern these events, and determine the impact of these events in models of pain
*Status of Support: Active
Project Number: R01NS111976
Name of PD/PI: Price and Matthew Dalva (Contact) MPI
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/01/2019 – 07/31/2024
* Total Award Amount (including Indirect Costs): $789,905
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.76 calendar
2. 2022	0.76 calendar
3. 2023	0.76 calendar
4. 2024	0.76 calendar

*Title: Novel Mechanisms Regulating Protein Interaction and Pain
*Major Goals: Test the hypothesis that VLK is a key pain mediator linking peripheral pain signaling to NMDAR gain of function via phosphorylation of key residues on the extracellular face of EphB2. Our work will determine the mechanism mediating the VLK-EphB2-NMDAR interaction, characterize how VLK functions in neurons and in the promotion of chronic pain. It will also determine the potential for VLK-targeted biologics to reduce pain in preclinical models
*Status of Support: Active
Project Number: R01NS115441
Name of PD/PI: Price and Matthew Dalva (Contact) mPI
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 12/15/2019 – 11/30/2024
* Total Award Amount (including Indirect Costs): $788,905
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.76 calendar
2. 2022	0.76 calendar
3. 2023	0.76 calendar
4. 2024	0.76 calendar

*Title: Development and optimization of MNK Inhibitors for the Treatment of Neuropathic Pain

*Major Goals: The goal of this project is to develop MNK inhibitors that are optimized for the treatment of neuropathic pain and to take them through to IND enablement.
*Status of Support: Active
Project Number: U44NS115692
Name of PD/PI: James Sahn
*Source of Support: NINH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/15/2019 – 07/31/2024
* Total Award Amount (including Indirect Costs): $626,866
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.76 calendar
2. 2022	0.76 calendar
3. 2023	0.76 calendar
4. 2024	0.76 calendar

*Title: Anatomic, physiologic and transcriptomic mechanisms of neuropathic pain in human DRG
*Major Goals: The goal of this project is to use electrophysiology and RNA sequencing on human DRG to understand causes of neuropathic pain in human patients.
*Status of Support: Active
Project Number: R01NS111929
Name of PD/PI: Price and Patrick Dougherty (Contact) mPI
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/15/2020 – 02/28/2025
* Total Award Amount (including Indirect Costs): $1,488,985
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	2.0 calendar
2. 2022	2.0 calendar
3. 2023	2.0 calendar
4. 2024	2.0 calendar

*Title: Validation of Fibroblast-Derived PI16 as a Novel Target for Pain Treatment
*Major Goals: The goal of this project is to describe PI16 expression in human nerves and DRG, including in diabetic neuropathy.
*Status of Support: Active
Project Number: R01NS116704
Name of PD/PI: Annemieke Kavelaars
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/30/2020 – 08/31/2024
* Total Award Amount (including Indirect Costs): $638,145
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.5 calendar
2. 2022	0.5 calendar

Year (YYYY)	Person Months (##.##)
3. 2023	0.5 calendar
4. 2024	0.5 calendar

*Title: Mechanisms of cough in M. tuberculosis transmission
*Major Goals: The goal of this project is to form insights into the functions of Mtb nociceptive molecules and their host receptors in cough induction and transmission.
*Status of Support: Active
Project Number: R01AI158688
Name of PD/PI: Michael Shiloh
*Source of Support: NIH/NINDS
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 03/08/2021 – 02/28/2026
* Total Award Amount (including Indirect Costs): $557,111
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.6 calendar
2. 2022	0.6 calendar
3. 2023	0.6 calendar
4. 2024	0.6 calendar
5. 2025	0.6 calendar

*Title: Identifying novel therapeutic targets for chronic neck pain: RNA-sequencing in human painful atlanto-axial arthropathy
*Major Goals: We will use RNA sequencing on joint and nerve tissues of patients with chronic and acute neck pain coupled with computational biology methods and careful patient phenotyping to examine how molecules produced in the diseased tissue drive chronic pain. Our work has the potential to reveal new molecular targets for future drug development.
*Status of Support: Active
Project Number: R01AR078192
Name of PD/PI: Michele Curatolo (PI Contact), Christoph Hofstetter (MPI), Theodore Price (MPI)
*Source of Support: NIH
*Primary Place of Performance:
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/01/2021 – 8/31/2026
* Total Award Amount (including Indirect Costs): $1,359,571 subaward
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2022	1.0 calendar
2. 2023	1.0 calendar
3. 2024	1.0 calendar
4. 2025	1.0 calendar
5. 2026	1.0 calendar

*Title: Site-directed RNA editing of Nav1.7 as a novel analgesic

*Major Goals: The goal of this research project is to develop a non-addictive analgesic based on SDRE of the Nav1.7 channel that increases its permeability to K+ ions
*Status of Support: Active
Project Number: U19NS126038
Name of PD/PI: Joshua Rosenthal (Contact), Sulayman Dib-Hajj, Gregory Dussor, and Eli Esienberg mPI
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/2021 – 08/2026
* Total Award Amount (including Indirect Costs): $2,691,685
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2022	0.0 calendar
2. 2023	0.75 calendar
3. 2024	0.75 calendar
4. 2025	1.0 calendar
5. 2026	1.0 calendar

*Title: RNAscope Profiling of the Human DRG
*Major Goals: The project looks at mRNA expression in the human DRG with a focus on targets of mutual interest
*Status of Support: Active
Project Number: N/A
Name of PD/PI: Price
*Source of Support: Merck Sharp & Dohme Corp
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 11/07/2017 – 12/31/2022
* Total Award Amount (including Indirect Costs): $278,292
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2021	0.1 calendar
2. 2022	0.1 calendar

*Title: Testing Agreement
*Major Goals: The advancement of translational pain research through the transcriptomic analysis of the dorsal root ganglia using cutting edge sequencing technologies.
*Status of Support: Active
Project Number: N/A
Name of PD/PI: Price
*Source of Support: Grunenthal GmbH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 03/01/2012 – 02/28/2023
* Total Award Amount (including Indirect Costs): $181,156
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2022	0.0 calendar

*Title: Neuromodulatory regulation of synaptic plasticity in spinal nociceptive circuits

*Major Goals: The goal of this project is to understand how spinal dopamine signaling regulates nociceptive plasticity in the dorsal horn.
*Status of Support: Pending
Project Number: 1R37NS122141-01A1
Name of PD/PI: Mark Baccei
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/01/2022 – 03/31/2027
* Total Award Amount (including Indirect Costs): $523,710 subaward Y2-Y5
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2022	0.0 calendar
2. 2023	0.36 calendar
3. 2024	0.36 calendar
4. 2025	0.36 calendar
5. 2026	0.36 calendar

*Title: The Joint Medical District UTSW-D FIRST Program
*Major Goals: The objective of this project is to recruit 5 new assistant professor faculty members to UTD in the areas of bioengineering, brain science or cancer. All these new faculty members will be from a diverse background. The second objective is to build a program around this FIRST cohort that will ensure their success in developing their research careers and working through the tenure process. The third objective is for this project to lead to lasting cultural change at UTD in terms of our recruitment and retention of faculty from diverse backgrounds.
*Status of Support: Pending
Project Number: U54CA272200-01
Name of PD/PI: Francesca Filbey
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/2022 – 03/2027
* Total Award Amount (including Indirect Costs): $6,602,920
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2022	0.3 calendar
2. 2023	1.0 calendar
3. 2024	1.0 calendar
4. 2025	1.0 calendar
5. 2026	0.3 calendar

*Title: Human Nociceptor and Spinal Cord Molecular Signature Center
*Major Goals: The goal of this project is to create the scientific foundation that will empower pain researchers around the world to approach the problem of treating pain in a new way, deeply rooted in a fundamental understanding of the first neurons and first synapses in the human pain pathway
*Status of Support: Pending
Project Number:
Name of PD/PI: Price (contact), Curatolo, Dougherty
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas

Project/Proposal Start and End Date: (MM/YYYY) (if available): 01/2023 – 12/2027
* Total Award Amount (including Indirect Costs): $11,721,221
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	1.8 calendar
2. 2024	1.8 calendar
3. 2025	1.8 calendar
4. 2026	1.8 calendar
5. 2027	1.8 calendar

*Title: Impact of age, sex and injury on the subpopulations of afferents signaling temporomandibular joint and knee pain
*Major Goals: The goal of this project is to use gene markers to attempt to identify similar neurons in the human DRG and TG and use this information to help characterize these cells in the in vitro models developed in the Gold lab as part of the re-join project.
*Status of Support: Pending
Project Number:
Name of PD/PI: Michael Gold
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/2022 – 08/2027
* Total Award Amount (including Indirect Costs): $774,140
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	0.2 calendar
2. 2024	0.2 calendar
3. 2025	0.2 calendar
4. 2026	0.4 calendar
5. 2027	0.4 calendar

*Title: A role for pharmaceutical control of protease-activated receptor-2 for the treatment of asthma
*Major Goals: The goal of this project is to culture DRG and nodose neurons from mice and use these tissues for RNA and protein analysis in response to allergens and PAR2 agonists. We will test the ability of PAR2 antagonists to block these effects in vitro. From these experiments we will identify gene markers to attempt to identify similar neurons in the human DRG and nodose.
*Status of Support: Pending
Project Number:
Name of PD/PI: Scott Boitano
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 09/2022 – 08/2027
* Total Award Amount (including Indirect Costs): $774,140
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	0.3 calendar
2. 2024	0.3 calendar

Year (YYYY)	Person Months (##.##)
3. 2025	0.3 calendar
4. 2026	0.3 calendar
5. 2027	0.3 calendar

*Title: Minimally invasive blood-spinal cord barrier modulation for therapeutic delivery in chronic pain
*Major Goals: To advance a new technology with laser and nanoparticles to temporarily overcome the blood-spinal cord barrier without causing significant side effects and apply to transform the current paradigm of therapeutic delivery and treatment to chronic pain. The success of this project will permit the delivery of potentially disease-modifying therapeutics to treat high impact chronic pain.
*Status of Support: Pending
Project Number: -
Name of PD/PI: Zhenpeng Qin
*Source of Support: NIH
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 04/2023 – 03/2028
* Total Award Amount (including Indirect Costs): $3,621,174
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	0.2 calendar
2. 2024	0.2 calendar
3. 2025	0.2 calendar
4. 2026	0.2 calendar
5. 2027	0.2 calendar

*Title: Development of positive TMEM97 modulators for treating neuropathic pain
*Major Goals: The goal of this project is to develop small molecules that target TMEM97/Sigma2 receptor as analgesics for neuropathic pain.
*Status of Support: Pending
Project Number: 1 UG3 NS131304-01
Name of PD/PI: Martin (contact), Sahn, Yousuf, Price
*Source of Support: NIH (UG3/UH3)
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 02/2023 – 01/2028
* Total Award Amount (including Indirect Costs): $6,551,744
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	0.2 calendar
2. 2024	0.2 calendar
3. 2025	0.2 calendar
4. 2026	0.2 calendar
5. 2027	0.2 calendar

*Title: New approach to treat neuropathic pain by modulating TMEM97
*Major Goals: The goal of this project is to develop a bioassay and optimize a small molecule that targets TMEM97/Sigma2 receptor as analgesics for neuropathic pain.
*Status of Support: Pending

Project Number: -
Name of PD/PI: Martin (contact), Sahn, Yousuf, Price
*Source of Support: NIH (SBIR)
*Primary Place of Performance: The University of Texas at Dallas
Project/Proposal Start and End Date: (MM/YYYY) (if available): 02/2023 – 01/2028
* Total Award Amount (including Indirect Costs): $83,165
* Person Months (Calendar/Academic/Summer) per budget period.

Year (YYYY)	Person Months (##.##)
1. 2023	0.1 calendar

Completed
10/1/2000 through 9/30/2003
Individual National Research Service Award Predoctoral: NIDA
Peripheral Mechanisms of Cannabinoid Antinociception
PI: Price

3/2005 through 11/2007
Individual National Research Service Award Postdoctoral: NINDS
Cation Chloride-Cotransporters and Hyperalgesic States
PI: Price

10/2011 through 10/2016
R01 National Institutes of Health / NINDS R01NS073664
PAR-2 targeted drug discovery for the treatment of pain
MPI: Boitano, Vagner and Price

4/2013 through 2/2017
R01 National Institutes of Health / NIGMS R01GM102575
AMPK activators as a novel therapeutic for post-surgical pain
MPI: Price and Dussor

2/2015 through 2/2020
R13 National Institutes of Health / NINDS and NCCIH R13NS092293/R13AT009161
Young investigator travel support for the 2015 - 2020 APS annual scientific meeting
PI: Price

State
Completed
2/2008 through 2/2009
University of Arizona Foundation Small Grant
Carbonic Anhydrase Inhibitors as Novel Analgesics
PI: Price

Industry
Active
1/2018 through 6/2020
Merck
Human DRG in situ hybridization
PI: Price

Completed
8/2014 through 12/2015
Rigel Pharmaceuticals
Complex I Inhibitors for the treatment of pain
MPI: Price and Dussor

12/2010 through 12/2012
MedImmune Corporation
Anti-NGF and –IL-6 therapies for pain
MPI: Price and Porreca

Private Foundations
Completed
6/2009 through 5/2012
Rita Allen Foundation / American Pain Society Scholars in Pain Award
Translation regulation as a novel paradigm for understanding nociceptor sensitization and developing analgesic targets
PI: Price

5/2010 through 5/2012
IASP Scan|Design Foundation BY INGER & JENS BRUUN travel grant
Carbonic anhydrases as novel targets for neuropathic pain
MPI: Price and Kaila (University of Helsinki)

10/2006 through 11/2007
American Pain Society Future Leaders in Pain Research Award
Role of RNA Transport and Local Translation in Nociceptive Processing
PI: Price