

CURRICULUM VITAE

Elias Utreras, PhD

Personal Information

Nationality: Chilean
Birth date: December 25th, 1974
Degree: PhD
Position: Assistant Professor
Contact: Department of Biology, Faculty of Science, Universidad de Chile
Phone: (56) (9) 73888762, e-mail elias.utreras@uchile.cl
Web pages: minuspain.cl; ORCID: <https://orcid.org/0000-0002-1004-0466>
RG: https://www.researchgate.net/profile/Elias_Utreras

Education:

1993-2000 Bachelor in Biochemistry, Universidad de Santiago de Chile, Santiago, Chile
2001-2006 PhD in Molecular Biology, Cellular Biology and Neuroscience, Faculty of Sciences, University of Chile, Chile
2006-2011 Visiting Fellow, Functional Genomics Section, NIDCR, NIH, Bethesda MD, USA.

Position:

2011-2014 Academic Instructor, Department of Biology, Faculty of Science, University of Chile.
2014-present Assistant Professor, Department of Biology, Faculty of Science, University of Chile.
2018-present Teacher coordinator of Bachelor in Sciences mention in Biology, University of Chile.
2020-present Deputy Director of Millennium Nucleus for Study of pain (MiNuSPain).

Research line

My research is focused in the study of the molecular and cellular mechanisms involved in orofacial pain. In particular, we are studying the role of cyclin dependent kinase 5 (Cdk5) in important processes such as modulation of ion channels (TRPV1, P2X2/3R), peripheral and central sensitization, inflammation-mediated pain increased, among others. I have led or been part of 24 well-cited publications in important journals, including *Pain*, *Journal of Dental Research*, *The Journal of Biological Chemistry*, *The Journal of Neuroinflammation*, *Neuroscience*, *Molecular Pain*, among others. Altogether, these publications have received more than 750 citations. I have been invited to 8 Symposia of the field in three countries including Chile and also I have been invited to 16 national and international conferences. In addition, I presented more than 75 abstracts in national and international meetings. I am a member of several international societies (Society for Neuroscience (SFN), International Association for the Study of Pain (IASP), International Association of Dental Research (IADR) and national societies (Chilean Society for Cellular Biology (SBCCh), Chilean Society for Neuroscience). I have led several grants in the field, including Initiation FONDECYT and two Regular FONDECYT Grants, among others, together with my participation as co-investigator in ANILLO Associative Project (PIA-CONICYT) Grants. I have mentored two PhD students, one MSc, two undergraduate students, and several national undergraduate students visiting my lab in the last years. In my laboratory we use multistrategic approaches, that include immunofluorescence of primary culture of sensory neurons, heterologous expression in cell lines, Ca²⁺ imaging, several molecular and cell biology tools including western blot, co-immunoprecipitation assays, biotinylation assays, and behavioral tests in modified genetically mouse models. I am Deputy Director of the Millennium Nucleus for the Study of Pain (MiNuSPain), centers supported by the Ministry of Science, Technology, Knowledge and Innovation of Chile.

Selected publications

H-index₀₁₋₂₀₂₁:16

1. Delgado-Acevedo C, Estay SF, Radke AK, Sengupta A, Escobar AP, Henríquez-Belmar F, Reyes CA, Haro-Acuña V, **Utreras E**, Sotomayor-Zárate R, Cho A, Wendland JR, Kulkarni AB, Holmes A, Murphy DL, Chávez AE, Moya PR. 2019. Behavioral and synaptic alterations relevant to obsessive-compulsive disorder in mice with increased EAAT3 expression. *Neuropsychopharmacology*. 44(6):1163-1173.
2. Sandoval R, Lazcano P, Ferrari F, Pinto-Pardo N, González-Billault C, **Utreras E**. 2018. TNF- α Increases Production of Reactive Oxygen Species through Cdk5 Activation in Nociceptive Neurons. *Front Physiol*. 6;9:65.

3. Coddou C, Sandoval R, Castro P, Lazcano P, Hevia MJ, Rokic M, Hall B, Terse A, Gonzalez-Billault C, Kulkarni AB, Stojilkovic SS, **Utreras E**. 2017. Cyclin-dependent kinase 5 modulates the P2X2a receptor channel gating through phosphorylation of C-terminal threonine 372. *Pain*. 158(11):2155-2168.
4. Rozas P, Lazcano P, Piña R, Cho A, Terse A, Pertusa M, Madrid R, Gonzalez-Billault C, Kulkarni AB, **Utreras E**. 2016. Targeted overexpression of Tumor Necrosis Factor- α increases Cyclin-dependent kinase 5 activity and TRPV1-dependent Ca²⁺ influx in trigeminal neurons. *Pain*. 157(6):1346-62
5. Hall BE, Zhang L, Sun ZJ, **Utreras E**, Prochazkova M, Cho A, Terse A, Arany P, Dolan JC, Schmidt BL, Kulkarni AB. 2016. Conditional TNF- α Overexpression in the Tooth and Alveolar Bone Results in Painful Pulpitis and Osteitis. *J Dent Res*. 95(2):188-95
6. Palacios-García I, Lara-Vásquez A, Montiel JF, Díaz-Véliz GF, Sepúlveda H, **Utreras E**, Montecino M, González-Billault C, Aboitiz F. 2015. Prenatal stress down-regulates reelin expression by methylation of its promoter and induces adult behavioral impairments in rats. *PLoS One*. 10(2):e0117680.
7. Quintanilla RA, **Utreras E**, Cabezas-Opazo F. 2014. Role of PPAR γ in the Differentiation and Function of Neurons. *PPAR Research* 2014:768594.
8. Contreras-Vallejos E., **Utreras E**, Bórquez DA, Prochazkova M, Terse A, Jaffe H, Toledo A, Arruti C, Pant HC, Kulkarni AB, González-Billault C. 2014. Searching for novel Cdk5 substrates in brain by comparative phosphoproteomics of wild type and Cdk5^{-/-} mice. *Plos One* 9(3):e90363
9. Rudrabhata P, **Utreras E**., Jaffe H, Kulkarni AB. 2014. Regulation of Sox6 by cyclin dependent kinase 5 in brain. *Plos One* 9(3):e89310
10. **Utreras E**, Hamada R, Prochazkova M, Terse A, Takahashi S, Ohshima T, Kulkarni AB. 2014. Suppression of neuroinflammation in forebrain-specific Cdk5 conditional knockout mice by PPAR γ agonist improves neuronal loss and early lethality. *J Neuroinflammation*. 11(1):28.
11. Prochazkova M, Terse A, Amin ND, Hall B, **Utreras E**, Pant HC, Kulkarni AB. 2013. Activation of cyclin-dependent kinase 5 mediates orofacial mechanical hyperalgesia. *Mol Pain*. 9(1):66.
12. **Utreras E**, Prochazkova M, Terse A, Gross J, Keller J, Iadarola MJ, Kulkarni AB. 2013. TGF- β 1 sensitizes TRPV1 through Cdk5 signaling in odontoblast-like cells. *Mol Pain*. 9:24.
13. **Utreras E**, Henriquez D, Contreras-Vallejos E, Olmos C, Di Genova A, Maass A, Kulkarni AB, Gonzalez-Billault C. 2013. Cdk5 regulates Rap1 activity. *Neurochem Int*. 62(6):848-53.
14. Futatsugi A, **Utreras E**, Rudrabhatla P, Jaffe H, Pant HC, Kulkarni AB. 2012. Cyclin dependent kinase 5 regulates E2F transcription factor through phosphorylation of Rb protein in neurons. *Cell Cycle* 11(8):1603-10.
15. **Utreras E**, Keller J, Terse A, Prochazkova M, Iadarola MJ, Kulkarni AB. 2012. Transforming Growth Factor-beta1 Regulates Cdk5 Activity in Primary Sensory Neurons. *J Biol Chem* 287(20):16917-29.
16. Contreras-Vallejos E, **Utreras E**, Gonzalez-Billault C. 2012. Going out of the brain: Non-nervous system physiological and pathological functions of Cdk5. *Cell Signal*. 24(1):44-52.
17. **Utreras E**, Terse A, Keller J, Iadarola MJ, Kulkarni AB. 2011. Resveratrol inhibits Cdk5 activity through regulation of p35 expression. *Mol Pain*. 7:49.
18. Maldonado H, Ramírez E, **Utreras E**, Pando ME, Kettlun AM, Chiong M, Kulkarni AB, Collados L, Puente J, Cartier L, Valenzuela MA. 2011. Inhibition of Cyclin-dependent kinase 5 but not glycogen synthase kinase 3- β prevents neurite retraction and tau hyperphosphorylation caused by secretable products of human T-cell leukemia virus type I-infected lymphocytes. *J Neurosci Res*. 89(9):1489-98.
19. **Utreras E**, Futatsugi A, Pareek TK, Kulkarni AB. 2009. Molecular Roles of Cdk5 in Pain Signaling. *Drug Discov Today Ther Strateg*. 6(3):105-111.
20. **Utreras E**, Maccioni R, González-Billault C. 2009. Cdk5 activator p35 over-expression and amyloid beta synergism increase apoptosis in cultured neuronal cells. *Neuroscience*. 161(4): 978-87.
21. **Utreras E**, Futatsugi A, Rudrabhatla P, Keller J, Iadarola MJ, Pant HC, Kulkarni AB. 2009. Tumor necrosis factor-alpha regulates cyclin-dependent kinase 5 activity during pain signaling through transcriptional activation of p35. *J Biol Chem*. 284(4): 2275-84.
22. **Utreras E**, Jiménez-Mateos EM, Contreras-Vallejos E, Tortosa E, Pérez M, Rojas S, Saragoni L, Maccioni RB, Avila J, González-Billault C. 2008. Microtubule-associated protein 1B interaction with tubulin tyrosine ligase contributes to the control of microtubule tyrosination. *Dev Neurosci*. 30(1-3): 200-10.
23. Cardenas H, Carvajal A, **Utreras E**, Nelson P, Moenne A, Imarai M. (1998) Lactation inhibits the potentiating effect of galanin upon the GnRH-induced LH release observed in diestrous-1 rat. *Biol Res* 31(4):351-8.

24. **Utreras E**, Ossandon P, Acuna-Castillo C, Varela-Nallar L, Muller C, Arraztoa JA, Cardenas H, Imarai M. (2000). Expression of intercellular adhesion molecule 1 (ICAM-1) on the human oviductal epithelium and mediation of lymphoid cell adherence. *J Reprod Fertil* 120(1):115-23.

Selected Grants

Millennium Nucleus for the Study of Pain (MiNuSPain), 2020-2023. **Deputy Director.**

FONDECYT #1191552. 2019-2022. Role of Cdk5 in the cellular and molecular mechanisms involved in dental pain. **Principal Investigator.**

Proyecto Enlaces con Fondecyt ENL20/18. Role of Cdk5 in dental pain. **Principal Investigator.** 2018-2019.

FONDECYT #1151043. 2015-2017. TNF-alpha increases Cdk5 activity regulating orofacial pain through phosphorylation of TRPV1 and P2X2 ion channels. **Principal Investigator.**

FONDECYT Iniciacion #11110136. 2012-2014. Study of the cellular and molecular mechanism of pain signaling pathways: Role of Cdk5 in cytokine-induced hyperalgesia in primary sensory neurons. **Principal Investigator.**

Anillo de Investigación en Estrés Oxidativo del Sistema Nervioso. Aspectos Fisiológicos y Patológicos. 2012-2015. **Associated Researcher.**