

Jong-Woo Sohn, M.D., Ph.D.

Curriculum Vitae

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Contact Information

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Professional Experience

2020. 09 – present **Associate Professor**
Department of Biological Sciences, KAIST, Daejeon, Korea
2020. 03 – 2021. 02 **Visiting Assistant Professor**
Center for Hypothalamic Research, Department of Internal Medicine,
University of Texas Southwestern Medical Center, Dallas, TX, USA
2014. 03 – 2020. 08 **Assistant Professor**
Department of Biological Sciences, KAIST, Daejeon, Korea
2009. 07 – 2014. 01 **Postdoctoral Researcher**
Division of Hypothalamic Research, Department of Internal Medicine,
University of Texas Southwestern Medical Center, Dallas, TX, USA
2008. 09 – 2009.07 **Postdoctoral Fellow**
BK21 Research Division of Human Life Science,
Seoul National University, Seoul, Korea
2008. 03 – 2008.09 **Senior Researcher**
Neuroscience Research Institute,
Seoul National University Medical Research Center, Seoul, Korea
2003. 03 – 2008. 02 **Teaching Assistant**
Department of Physiology,
Seoul National University College of Medicine, Seoul, Korea

Education

2003. 09 – 2008. 02 **Ph. D.** from Department of Physiology,
Seoul National University College of Medicine, Seoul, Korea
1997. 03 – 2003. 02 **M.D.** from Seoul National University College of Medicine, Seoul, Korea

Activities

2021. 01 – present **Associate Editor**, Molecules and Cells

Honors and Awards

2022. 03: Hamchoon Medical Award, Seoul National University College of Medicine Alumni Association
2021. 10: Young Physiologist Award, The Korean Physiological Society
2015. 01: TJ Park Science Fellowship for Junior Faculty, POSCO TJ Park Foundation
2013. 03: Finalist in Excellence Award in Postdoctoral Research at UT Southwestern: 2012-2013
2009. 04: Academic Award in Basic Medical Science (Physiology), Korea Medical Association
2008. 02: Excellent Graduate Student Award, BK21 Research Division of Human Life Science, Seoul National University
2007. 11: Excellence in Research Award: Student Category, AKN (Association of Korean Neuroscientists) Annual Symposium at the 2007 Society for Neuroscience meeting

Publications

51. Lee B, Park SJ, Lee S, Lee J, Lee EB, Yoo ES, Chung WS, Sohn JW, Oh BC, Kim S. (2022) Lomitapide, a cholesterol-lowering drug, is an anticancer agent that induces autophagic cell death via inhibiting mTOR. **Cell Death & Disease**, 13(7): 603.
50. Li L, Wyler SC, Leon-Mercado LA, Xu B, Oh Y, Swati, Chen X, Wan R, Arnold AG, Jia L, Wang G, Nautiyal K, Hen R, Sohn JW*, Liu C*. (2022) Delineating a serotonin 1B receptor circuit for appetite suppression in mice. **Journal of Experimental Medicine**, 219(8): e20212307. (*co-corresponding authors)
49. Park S, Williams KW, Sohn JW. (2022) Leptin-inhibited neurons in the lateral parabrachial nucleus do not alter food intake or glucose balance. **Animal Cells and Systems**, 26(3): 92-98.
48. Hyun U, Sohn JW. (2022) Autonomic control of energy balance and glucose homeostasis. **Experimental & Molecular Medicine**, 54(4): 370-376.
47. Park S*, Sohn JW*. (2021) Protocol for sodium depletion and measurement of sodium appetite in mice. **STAR Protocols**, 2(4): 101026. (*co-corresponding authors)
46. Yoo ES, Li L, Jia L, Lord CC, Lee CE, Birnbaum SG, Vianna CR, Berglund ED, Cunningham KA, Xu Y, Sohn JW*, Liu C*. (2021) $G\alpha_{i/o}$ -coupled *Htr2c* in the paraventricular nucleus of the hypothalamus antagonizes the anorectic effect of serotonin agents. **Cell Reports**, 37(7): 109997. (*co-corresponding authors)
45. Valiulahi P, Vidyawan V, Puspita L, Oh Y, Juwono VB, Sittipo P, Friedlander G, Yahalomi D, Sohn JW, Lee YK, Yoon JK, Shim JW. (2021) Generation of caudal-type serotonin neurons and hindbrain fate organoids from hPSCs. **Stem Cell Reports**, 16(8): 1938-1952.
44. Koh HY, Jang J, Ju SH, Kim R, Cho GB, Kim DS, Sohn JW*, Paik SB*, Lee JH*. (2021) Non-cell autonomous epileptogenesis in focal cortical dysplasia. **Annals of Neurology**, 90(2): 285-299. (*co-corresponding authors)

43. Park J, Choi Y, Jung E, Lee SH, Sohn JW, Chung WS. (2021) Microglial MERTK eliminates phosphatidylserine-exposed inhibitory post-synapses. **The EMBO Journal**, 40(15): e107121.
42. Li L, Yoo ES, Li X, Wyler SC, Chen X, Wan R, Arnold AG, Birnbaum SG, Jia L, Sohn JW*, Liu C*. (2021) The atypical antipsychotic risperidone targets hypothalamic melanocortin 4 receptors to cause weight gain. **Journal of Experimental Medicine**, 218(7): e20202484. (*co-corresponding authors)
41. Jang Y, Heo JY, Lee MJ, Zhu J, Seo C, Go DH, Yoon SK, Yukari D, Oike Y, Sohn JW, Shong M, Kweon GR. (2021) Angiopoietin-like growth factor involved in leptin signaling in the hypothalamus. **International Journal of Molecular Sciences**, 22(7): 3443.
40. Yoo ES, Yu J, Sohn JW. (2021) Neuroendocrine control of appetite and metabolism. **Experimental & Molecular Medicine**, 53(4): 505-516.
39. Lee CH, Song DK, Park CB, Choi J, Kang GM, Shin SH, Kwon I, Park S, Kim S, Kim JY, Dugu H, Park JW, Choi JH, Min SH, Sohn JW*, Kim MS*. (2020) Primary cilia mediate early life programming of adiposity through lysosomal regulation in the developing hypothalamus. **Nature Communications**, 11(1): 5772. (*co-corresponding authors)
38. Sohn JW*, Ho WK*. (2020) Cellular and systemic mechanisms for glucose sensing. **Pflügers Archiv - European Journal of Physiology**, 472(11): 1547-1561. (*co-corresponding authors)
37. Park S, Williams KW, Liu C*, Sohn JW*. (2020) A neural basis for tonic suppression of sodium appetite. **Nature Neuroscience**, 23(3): 423-432. (*co-corresponding authors)
36. NamKoong C, Song WJ, Kim CY, Chun DH, Shin S, Sohn JW, Choi HJ. (2019) Chemogenetic manipulation of parasympathetic neurons (DMV) regulates feeding behavior and energy metabolism. **Neuroscience Letters**, 712: 134356.
35. Yun S, Reyes-Alcaraz A, Lee YN, Yong HJ, Choi J, Ham BJ, Sohn JW, Kim DH, Son GH, Kim H, Kwon SG, Kim DS, Kim BC, Hwang JI, Seong JY. (2019) Spexin-based galanin receptor type 2 agonist for comorbid mood disorders and abnormal body weight. **Frontiers in Neuroscience**, 13: 391.
34. Kim J, Lee S, Fang YY, Shin A, Park S, Hashikawa K, Bhat S, Kim D, Sohn JW, Lin D, Suh GS. (2019) Rapid, biphasic CRF neuronal responses encode positive and negative valence. **Nature Neuroscience**, 22(4): 576-585.
33. Yu W*, Sohn JW*, Lee SH, Kim S, Ho WK. (2018) Enhancement of dendritic persistent Na⁺ currents by mGluR5 leads to an advancement of spike timing with an increase in temporal precision. **Molecular Brain**, 11(1): 67. (*equal contribution)
32. Lee CH, Kim HJ, Lee YS, Kang GM, Lim HS, Lee SH, Song DK, Kwon O, Hwang I, Son M, Byun K, Sung YH, Kim S, Kim JB, Choi EY, Kim YB, Kim K, Kweon MN, Sohn JW, Kim MS. (2018) Hypothalamic macrophage inducible nitric oxide synthase mediates obesity-associated hypothalamic inflammation. **Cell Reports**, 25(4): 934-946.

31. Yu W, Kwon J, Sohn JW, Lee SH, Kim S, Ho WK. (2018) mGluR5-dependent modulation of dendritic excitability in CA1 pyramidal neurons mediated by enhancement of persistent Na⁺ currents. **Journal of Physiology (London)**, 596(17): 4141-4156.
30. Lee JG, Ryu JH, Kim SM, Park MY, Kim SH, Shin YG, Sohn JW, Kim HH, Park ZY, Seong JY, Kim JI. (2018) Replacement of the C-terminal Trp-cage of Exendin-4 with a fatty acid improves therapeutic utility. **Biochemical Pharmacology**, 151: 59-68.
29. Ju SH, Cho GB, Sohn JW. (2018) Understanding melanocortin-4 receptor control of neuronal circuits: toward novel therapeutics for obesity syndrome. **Pharmacological Research**, 129: 10-19.
28. Gao Y*, Yao T*, Deng Z*, Sohn JW*, Sun J, Huang Y, Kong X, Yu KJ, Wang RT, Chen H, Guo H, Yan J, Cunningham KA, Chang Y, Liu T, Williams KW. (2017) *TrpC5* mediates acute leptin and serotonin effects via *Pomc* neurons. **Cell Reports**, 18(3): 583-592. (*equal contribution)
27. Yu SB, Baek J, Choi M, Oh Y, Lee HR, Yu SJ, Lee E, Sohn JW, Im SG, Jon S. (2016) Polymer thin films with tunable acetylcholine-like functionality enable unprecedented long-term culture of primary hippocampal neurons. **ACS Nano**, 10(11): 9909-9918.
26. Kim Y, Kim H, Ko UH, Oh Y, Lim A, Sohn JW, Shin JH, Kim H, Han YM. (2016) Islet-like organoids derived from human pluripotent stem cells efficiently function in the glucose responsiveness *in vitro* and *in vivo*. **Scientific Reports**, 6: 35145.
25. Kim HJ, Jeong MH, Kim KR, Jung CY, Lee SY, Kim H, Koh J, Vuong TA, Jung S, Yang H, Park SK, Choi D, Kim SH, Kang K, Sohn JW, Park JM, Jeon D, Koo SH, Ho WK, Kang JS, Kim ST, Cho H. (2016) Protein arginine methylation facilitates KCNQ channel-PIP₂ interaction leading to seizure suppression. **eLife**, 5: e17159.
24. Sohn JW*, Oh Y, Kim KW, Lee S, Williams KW*, Elmquist JK. (2016) Leptin and insulin engage specific PI3K subunits in hypothalamic SF1 neurons. **Molecular Metabolism**, 5(8): 669-679. (*co-corresponding authors)
23. Kim HH, Lee KH, Lee D, Han YE, Lee SH, Sohn JW*, Ho WK*. (2015) Co-stimulation of AMPA and metabotropic glutamate receptors underlies PLC activation by glutamate in hippocampus. **Journal of Neuroscience**, 35(16): 6401-6412. (*co-corresponding authors)
22. Sohn JW. (2015) Network of hypothalamic neurons that control appetite. **BMB Reports**, 48(4): 229-233.
21. Williams KW, Liu T, Kong X, Fukuda M, Deng Y, Berglund ED, Deng Z, Gao Y, Liu T, Sohn JW, Jia L, Fujikawa T, Kohno D, Scott MM, Lee S, Lee CE, Sun K, Chang Y, Scherer PE, Elmquist JK. (2014) Xbp1s in POMC neurons connects ER stress with energy balance and glucose homeostasis. **Cell Metabolism**, 20(3): 471-482.

20. Berglund ED, Liu T, Kong X, Sohn JW, Vong L, Deng Z, Lee CE, Lee S, Williams KW, Olson DP, Scherer PE, Lowell BB, Elmquist JK. (2014) Melanocortin 4 receptors in autonomic neurons regulate thermogenesis and glycemia. **Nature Neuroscience**, 17(7): 911-913.
19. Berglund ED, Liu C, Sohn JW, Liu T, Kim MH, Lee CE, Vianna CR, Williams KW, Xu Y, Elmquist JK. (2013) Serotonin 2C receptors in pro-opiomelanocortin neurons regulate energy and glucose homeostasis. **Journal of Clinical Investigation**, 123(12): 5061-5070.
18. Park SH, Ryu SY, Yu WJ, Han YE, Ji YS, Oh K, Sohn JW, Lim A, Jeon JP, Lee H, Lee KH, Lee SH, Berggren PO, Jeon JH, Ho WK. (2013) Leptin promotes K_{ATP} channel trafficking by AMPK signaling in pancreatic β -cells. **Proceedings of the National Academy of Sciences USA**, 110(31): 12673-12678.
17. Sohn JW, Elmquist JK, Williams KW. (2013) Neuronal circuits that regulate feeding behavior and metabolism. **Trends in Neurosciences**, 36(9), 504-512.
16. Sohn JW. (2013) Ion channels in the central regulation of energy and glucose homeostasis. **Frontiers in Neuroscience**, 7:85.
15. *Sohn JW, Harris LE, Berglund ED, Liu T, Vong L, Lowell BB, Balthasar N, Williams KW, Elmquist JK. (2013) Melanocortin 4 receptors reciprocally regulate sympathetic and parasympathetic preganglionic neurons. **Cell**, 152(3): 612-619.
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14. Cui H, Sohn JW, Gautron L, Funahashi H, Williams KW, Elmquist JK, Lutter M. (2012) Neuroanatomy of melanocortin-4 receptor pathway in the lateral hypothalamic area. **Journal of Comparative Neurology**, 520(18): 4168-4183.
13. Sohn JW, Williams KW. (2012) Functional heterogeneity of arcuate nucleus pro-opiomelanocortin neurons: implications for diverging melanocortin pathways. **Molecular Neurobiology**, 45(2): 225-233.
12. Sohn JW, Yu WJ, Lee D, Shin HS, Lee SH, Ho WK. (2011) Cyclic ADP ribose-dependent Ca²⁺ release by group I metabotropic glutamate receptors in acutely dissociated rat hippocampal neurons. **PLoS ONE**, 6(10): e26625.
11. Williams KW, Sohn JW, Donato J, Lee CE, Zhao JJ, Elmquist JK, Elias CF. (2011) The acute effects of leptin require PI3K signaling in the hypothalamic ventral premammillary nucleus. **Journal of Neuroscience**, 31(37): 13147-13156.
10. *Sohn JW, Xu Y, Jones JE, Wickman K, Williams KW, Elmquist JK. (2011) Serotonin 2C receptor activates a distinct population of arcuate pro-opiomelanocortin neurons via TRPC channels. **Neuron**, 71(3): 488-497.
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9. Klöckener T, Hess S, Belgardt BF, Paeger L, Verhagen LAW, Husch A, Sohn JW, Hampel B, Dhillon H, Zigman JM, Lowell BB, Williams KW, Elmquist JK, Horvath TL, Kloppenburg P, Brüning JC. (2011) High-fat feeding promotes obesity via insulin receptor/PI3K-dependent inhibition of SF-1 VMH neurons. **Nature Neuroscience**, 14(7): 911-918.
8. Kim KW, Sohn JW, Kohno D, Xu Y, Williams KW, Elmquist JK. (2011) SF-1 in the ventral medial hypothalamic nucleus: a key regulator of homeostasis. **Molecular and Cellular Endocrinology**, 336(1-2), 219-223.
7. Xu Y, Berglund ED, Sohn JW, Holland WL, Chuang JC, Fukuda M, Rossi J, Jones JE, Zigman JM, Lowell BB, Scherer PE, Elmquist JK. (2010) 5-HT_{2C}Rs expressed by pro-opiomelanocortin neurons regulate insulin sensitivity in liver. **Nature Neuroscience**, 13(12): 1457-1459.
6. Xu Y, Hill JW, Fukuda M, Gautron L, Sohn JW, Kim KW, Lee CE, Choi MJ, Lauzon D, Dhillon H, Lowell BB, Zigman JM, Zhao JJ, Elmquist JK. (2010) PI3K signaling in the ventromedial hypothalamic nucleus is required for normal energy homeostasis. **Cell Metabolism**, 12(1): 88-95.
5. Lim A, Park SH, Sohn JW, Jeon JH, Park JH, Song DK, Lee SH, Ho WK. (2009) Glucose deprivation regulates K_{ATP} channel trafficking via AMP-activated protein kinase (AMPK) in pancreatic β -cells. **Diabetes**, 58(12): 2813-2819.
4. Chang SA, Lee EJ, Kang HJ, Zhang SY, Kim JH, Li L, Youn SW, Lee CS, Kim KH, Won JY, Sohn JW, Park KW, Cho HJ, Yang SE, Oh WI, Yang YS, Ho WK, Park YB, Kim HS. (2008) Impact of myocardial infarct proteins and oscillating pressure on the differentiation of mesenchymal stem cells: effect of acute myocardial infarction on stem cell differentiation. **Stem Cells**, 26(7): 1901-1912.
3. Sohn JW, Lim A, Lee SH, Ho WK. (2007) Decrease in PIP₂-channel interactions is the final common mechanism involved in PKC- and arachidonic acid-mediated inhibitions of GABA_B-activated K⁺ current. **Journal of Physiology (London)**, 582(3): 1037-1046.
2. Sohn JW, Lee D, Cho H, Shin HS, Lim W, Lee SH, Ho, WK. (2007) Receptor-specific inhibition of GABA_B-activated K⁺ currents by muscarinic and metabotropic glutamate receptors in immature rat hippocampus. **Journal of Physiology (London)**, 580(2): 411-422.
1. Lee SH, Sohn JW, Ahn SC, Park WS, Ho WK. (2004) Li⁺ enhances GABAergic inputs to granule cells in the rat hippocampal dentate gyrus. **Neuropharmacology**, 46(5): 638-646.

Others

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