Chen, Jeng-Rung

Professor

Professional specialty: *Anatomy, Neuroanatomy, Histology, Embryology*

Courses Taught:

Undergraduate: *Veterinary anatomy, Embrology*

Graduate: *Seminar in Neural science*

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Educational Background

Ph. D., National Taiwan University (1998.9 ~ 2003.6)
M. S., National Taiwan University (1994.9 ~ 1996.6)
B. S., National Cheng-Kung University (1990.9 ~ 1994.6)

Professional Experiences

Professor, National Chung-Hsing University (2014.2 ~)
Associate Professor, National Chung-Hsing University (2010.8 ~2014.1)
Assistant Professor, National Chung-Hsing University (2004.2 ~2010.7)
Assistant Professor, Chung-Shan Medical University (2003.8 ~ 2004.1)
Teaching assistant, National Taiwan University (2000.8 ~2003.7)

Areas of Interest

Our lab focuses on the plasticity of central cortical neurons under normal or disease conditions (sex hormone deficiency, hepatic encephalopathy, hydrocephalus, aging, stroke, and fetal alcohol syndrome), particularly the cortical pyramidal neurons, which are the main regulators of cognitive function. Currently, our research focuses on the effects of estrogen therapy on cognitive function and neuronal morphological changes. We used hyaluronic acid combined with 17β-estradiol to alleviate cognitive deficits in postmenopausal rats. This study found that hyaluronic acid combined with 17β-estradiol improved cholinergic innervation and synaptic transmission in hippocampal neurons, showing therapeutic potential for cognitive impairment. We also utilized exogenous astaxanthin to combat oxidative stress and neuroinflammation, thereby improving cognitive function in rat models of fetal alcohol spectrum disorder and Alzheimer's disease.

Publication List

1. **Chen JR***, Wang BN, Tseng GF, Wang YJ, Huang YS, Wang TJ* (2014) Morphological changes of cortical pyramidal neurons in hepatic encephalopathy. BMC Neuroscience doi:10.1186/1471-2202-15-15 (**SCI**)
2. Wang TJ, **Chen JR**, Wang WJ, Wang YJ*, Tseng GF* (2014) Genistein partly eases aging and estropause-induced primary cortical neuronal changes in rats. Plos One 9(2): e89819. doi:10.1371/journal.pone.0089819 (**SCI**)
3. **Chen JR***, Tseng GF, Wang YJ, Wang TJ* (2014) Exogenous dehydroisoandrosterone sulfate reverses the dendritic changes of the central

neurons in aging male rats. Experimental Gerontology doi:10.1016/j.exger.2014.06.010 (**SCI**)

4. Chen LJ**,** Wang, YJ, **Chen JR**, Tseng GF (2015) NMDA receptor triggered molecular cascade underlies compression-induced rapid dendritic spine plasticity in cortical neurons. Experimental neurology 266:86-98 (**SCI**)
5. Chen LJ**,** Wang, YJ, **Chen JR**, Tseng, GF (2016) Hydrocephalus compacted cortex and hippocampus and altered their output neurons in association with spatial learning and memory deficits in rats. Brain pathology 2017:419-436 (**SCI**)
6. **Chen JR**, Lim SH, Chung SC, Lee YF, Wang YJ, Tseng GF, Wang TJ (2017) Reproductive experience modified dendritic spines on cortical pyramidal neurons to enhance sensory perception and spatial learning in rats. Experimental animals. 66:59-72 (**SCI**)
7. Yu CH, Hsieh YS, Chen PN, **Chen JR**, Kuo DY (2018) Knockdown of the transcript of extracellular signal-regulated kinase in the brain modulated hypothalamic neuropeptide-mediated appetite control in amphetamine-treated rats. British Journal of Pharmacology DOI: 10.1111/bph.14120 (**SCI**)
8. Chu SC, Chen PN, **Chen JR**, Yu CH, Hsieh YS, Kuo DY (2018) Role of hypothalamic leptin-LepRb signaling in NPY-CART-mediated appetite suppression in amphetamine-treated rats. Hormones and Behavior 98(2):173-182 (**SCI**)
9. Chen MH, Wang TJ, Chen LJ, Jiang MY, Wang YJ, Tseng GF, **Chen JR** (2021) The effects of astaxanthin treatment on a rat model of Alzheimer's disease. Brain Research Bulletin 172: 151-163 (**SCI**)
10. Chen MH, Hong CL, Wang YT, Wang TJ*, **Chen JR*** (2022) The effect of astaxanthin treatment on the rat model of fetal alcohol spectrum disorders (FASD). Brain Research Bulletin 183: 57-72 https://doi.org/10.1016/j.brainresbull.2022.02.017
11. Chen LJ**, Chen JR**, Tseng GF* (2022) Modulation of striatal glutamatergic, dopaminergic and cholinergic neurotransmission pathways concomitant with motor disturbance in rats with kaolin-induced hydrocephalus. Fluids and Barriers of the CNS 19:95 https://doi.org/10.1186/s12987-022-00393-1
12. Chen MH, Lin HC, Chao T, Lee Viola SY, Hou CL, Wang TJ*, **Chen JR*** (2023) Hyaluronic Acid Conjugated with 17β-Estradiol Effectively Alleviates Estropause-Induced Cognitive Deficits in Rats. International Journal of Molecular Sciences 24(21):15569 https://doi.org/10.3390/ijms242115569

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