

Featured Publication List

(2020.01-2020.12)

1. Cai, D., Wang, Z., Bo, T., Yan, S., Liu, Y., Liu, Z., Zeljic, K., Chen, X., Zhan, Y., Xu, X., Du, Y., Wang, Y., Cang, J., Wang, G., Zhang, J., Sun, Q., Qiu, Z., Ge, S. *, Ye, Z., **Wang, Z.** * (2020) MECP2 Duplication Causes Aberrant GABA Pathways, Circuits and Behaviors in Transgenic Monkeys: Neural Mappings to Patients with Autism. *J. Neurosci.* 40:3799-3814.
2. Cao, H., Li, M., Li, G., Wen, B., Lu, Y., Yu, X. * (2020) Retinoid X receptor α regulates DHA-dependent spinogenesis and functional synapse formation in vivo. *Cell Rep.* 31:107649.
3. Chen, A., Yan, J., Zhang, W., Wang, L., Yu, Z., Ding, X., Wang, D., Zhang, M., Zhang, Y., Song, N., Jiao, Z., Xu, C., Zhu, S., **Xu, X.** * (2020) Specific hypothalamic neurons required for sensing conspecific male cues relevant to inter-male aggression. *Neuron* 108:15397.
4. Deng, J. *, Zhou, H., Lin, J., Shen, Z., Chen, W., Wang, L., Li, Q., Mu, D., Wei, Y., Xu, X., **Sun, Y.** * (2020) The parabrachial nucleus directly channels spinal nociceptive signals to the intralaminar thalamic nuclei, but not the amygdala. *Neuron* 107:909-923.
5. Dong, F., Shi, H., Yang, L., Xue, H., Wei, M., Zhong, Y., Bao, L. *, **Zhang, X.** * (2020) FGF13 is required for histamine-induced itch sensation by interaction with Na V 1.7. *J. Neurosci.* 40:9589-9601.
6. Gui, P., Jiang, Y., Zang, D., Qi, Z., Tan, J., Tanigawa, H., Jiang, J., Wen, Y., Xu, L., Zhao, J., Mao, Y., Poo, M., Ding, N., Dehaene, S., Wu, X. *, **Wang, L.** * (2020) Assessing the depth of language processing in patients with disorders of consciousness. *Nat. Neurosci.* 23:761-770.
7. He, B., Peng, W., Huang, J., Zhang, H., Zhou, Y., Yang, X., Liu, J., Li, Z., Xu, C., Xue, M., **Yang, H.** *, Huang, P. * (2020) Modulation of metabolic functions through Cas13d-mediated gene knockdown in liver. *Protein Cell* 11:518-524.
8. He, X., Chen, W., Liu, Z., Yu, G., Chen, Y., Cai, Y., Sun, L., Xu, W., Zhong, L., Gao, C., Chen, J., Zhang, M., Yang, S., Yao, Y., Zhang, Z., Ma, F., Zhang, C., Lu, H., Yu, B., Cheng, T., Qiu, J., Sheng, Q., Zhou, H., Lv, Z., Yan, J., Zhou, Y., Qiu, Z., Cui, Z., Zhang, X., Meng, A., **Sun, Q.** *, Yang, Y. * (2020) Efficient and risk-reduced genome editing using double nicks enhanced by bacterial recombination factors in multiple species. *Nucleic. Acids. Res.* 48:e57.
9. Huang, J., Cheng, X., Zhang, S., Chang, L., Li, X., **Liang, Z.** *, **Gong, N.** * (2020) Having infants in the family group promotes altruistic behavior of marmoset monkeys. *Curr. Biol.* 30:4047-4055.
10. Ji, B., Ge, C., Guo, Z., Wang, L., Wang, M., Xie, Z., Xu, Y., Li, H., Yang, B., Wang, X., **Li, C.** *, Liu, J. (2020) Flexible and stretchable opto-electric neural interface for low-noise electrocorticogram recordings and neuromodulation *in vivo*. *Biosensors Bioelectron.* 153:112009.
11. Jiang, L., Li, Y., Yang, K., Wang, Y., Wang, J., Cui, X., Mao, J., Gao, Y., Yi, P., Wang, L. *, **Liu, J.** * (2020) FRMD7 mutations disrupt the Interaction with GABRA2 and may result in infantile nystagmus syndrome. *Invest. Ophthalmol. Vis. Sci.* 61:41.
12. Li, C., Li, X., Bi, Z., Sugino, K., Wang, G., Zhu, T., **Liu, Z.** * (2020) Comprehensive transcriptome analysis of cochlear spiral ganglion neurons at multiple ages. *eLife* 9:e50491.
13. Li, J., Lin, X., Tang, C., Lu, Y., Hu, X., Zuo, E., Li, H., Ying, W., Sun, Y., Lai, L., Chen, H., Guo, X., Zhang, Q., Wu, S., Zhou, C., Shen, X., Wang, Q., Lin, M., Ma, L., Wang, N., Krainer A.R., Shi, L. *, **Yang, H.** *, Chen W. * (2020) Disruption of splicing-regulatory elements using CRISPR/Cas9 rescues spinal muscular atrophy in human iPSCs and

- mice. *Natl. Sci. Rev.* 7:92-101.
14. Li, J., Shi, H., Liu, H., Dong, F., Liu, Z., Lu, Y., Chen, L., Bao, L.*, **Zhang, X.*** (2020) Nerve Injury-Induced Neuronal PAP-I Maintains Neuropathic Pain by Activating Spinal Microglia. *J. Neurosci.* 40:297-310.
 15. Li, S., Yuan, B., Cao, J., Chen, J., Chen, J., Qiu, J., Zhao, X., Wang, X.,* **Qiu, Z.,*** Cheng, T.* (2020) Docking sites inside Cas9 for adenine base editing diversification and RNA off-target elimination. *Nat. Commun.* 11:5827.
 16. Lin, X., Chen, H., Lu, Y., Hong, S., Hu, X., Gao, Y., Lai, L., Li, J., Wang, Z., Ying, W., Ma, L., Wang, N., Zuo, E.*, **Yang, H.***, Chen, W.* (2020) Base editing-mediated splicing correction therapy for spinal muscular atrophy. *Cell Res.* 30:548–550.
 17. Lin, Z., Nie, C., Zhang, Y., Chen, Y., **Yang, T.*** (2020) Evidence accumulation for value computation in the prefrontal cortex during decision making. *PNAS* 117 :30728-30737.
 18. Liu, D., Deng, J., Zhang, Z., Zhang, Z., Sun, Y., Yang, T., **Yao, H.*** (2020) Orbitofrontal control of visual cortex gain promotes visual associative learning. *Nat. Commun.* 11:2784
 19. Liu, J., Pan, L., Shang, C., Lu, B., Wu, R., Feng, Y., Chen, W., Zhang, R., Bu, J., **Xiong, Z.***, Bu, W.*, **Du, J.***, Shi, J.* (2020) A highly sensitive and selective nanosensor for near-infrared potassium imaging. *Sci. Adv.* 6:eaax9757.
 20. Liu, J., Zhang, R., Shang, C., Zhang, Y., Feng, Y., Pan, L., Xu, B., Hyeon, T., Bu, W., Shi, J., **Du, J.*** (2020) Near-infrared voltage nanosensors enable real-time imaging of neuronal activities in mice and zebrafish. *J. Am. Chem. Soc.* 142:7858-7867.
 21. Liu, T., Du, X., Zhang, B., Zi, H., Yan, Y., Yin, J., Hou, H., Gu, S., Chen, Q., **Du, J.*** (2020) Piezo1-mediated Ca²⁺ activities regulate brain vascular pathfinding during development. *Neuron* 108:180-192.
 22. Liu, Y., Li, M., Zhang, X., Lu, Y., Gong, H., Yin, J., Chen, Z., Qian, L., Yang, Y., Andolina, I., Shipp, S., Mcloughlin, N., Tang, S.*, **Wang, W.*** (2020) Hierarchical representation for chromatic processing across macaque V1, V2, and V4. *Neuron* 108:538-550.
 23. Liu, Y., Li, X., He, S., Huang, S., Li, C., Chen, Y., **Liu, Z.***, Huang, X.*, Wang, X.* (2020) Efficient generation of mouse models with the prime editing system. *Cell Discov.* 6:27.
 24. Lu, Z., Liu, Z., Mao, W., Wang, X., Zheng, X., Chen, S., Cao, B., Huang, S., Zhang, X., Zhou, T., Zhang, Y., Huang, X.*, **Sun, Q.***, Li, J.* (2020) Locus-specific DNA methylation of Mecp2 promoter leads to autism-like phenotypes in mice. *Cell Death Dis.* 11:85.
 25. **Mu, Y.***, Narayan, S., Mensh, B., Ahrens, M.* (2020) Brain-wide, scale-wide physiology underlying behavioral flexibility in zebrafish. *Curr. Opin. Neurobiol.* 64:151-160.
 26. Peng, W., Wu, Z., Song, K., Zhang, S., Li, Y., **Xu, M.*** (2020) Regulation of sleep homeostasis mediator adenosine by basal forebrain glutamatergic neurons. *Science* 369:eabb0556.
 27. Qiao, Y., Ren, C., Huang, S., Yuan, J., Liu, X., Fan, J., Lin, J., Wu, S., Chen, Q., Bo, X., Li, X., Huang, X., **Liu, Z.***, Shu, W.* (2020) High-resolution annotation of the mouse preimplantation embryo transcriptome using long-read sequencing. *Nat. Comm.* 11:2653.
 28. Qu, R., Dong, L., Zhang, J., Yu, X.*, Wang, L.*, **Zhu, S.*** (2020) Cryo-EM structure of human heptameric Pannexin 1 channel. *Cell Res.* 30:446-448.
 29. Sun, L., Chen, R., Li, L., Yuan, B., Song, K., Pan, N., Cheng, T., Chang, S., Lin, K., He, X., Wu, Q., Xu, F.*, **Qiu, Z.***, Wang, X.* (2020) Visualization and correction of social abnormalities-associated neural ensembles in adult MECP2 duplication mice. *Sci. Bull.* 65:1192-1202.
 30. Wang, H., Yang, Z., Li, X., Huang, D., Yu, S., **He, J.***, Li, Y.*, **Yan, J.*** (2020) Single-cell in vivo imaging of cellular

- circadian oscillators in zebrafish. *PLOS Biol.* 18:e3000435.
31. Wang, M., Du, L., Lee, A., Li, Y., Qin, H., **He, J.*** (2020) Different lineage contexts direct common pro-neural factors to specify distinct retinal cell subtypes. *J. Cell Biol.* 219: e202003026.
 32. Wang, M., Yu, Z., L, G., Yu, X.* (2020) Multiple morphological factors underlie experience-dependent cross-modal plasticity in the developing sensory cortices. *Cereb. Cortex* 30:2418-2433.
 33. Wang, T., Liu, J., **Yao, H.***(2020) Control of adaptive action selection by secondary motor cortex during flexible visual categorization. *eLife* 9:e54474
 34. Wang, X., Ding, C., Yu, W., Wang, Y., He, S., Yang, B., Xiong, Y., Wei, J., Li, J., Liang, J., Lu, Z., Zhu, W., Wu, J., Zhou, Z., Huang, X., **Liu, Z.***, Yang, L.*, Chen, J.*(2020) Cas12a Base Editors Induce Efficient and Specific Editing with Low DNA Damage Response. *Cell Rep.* 31:107723.
 35. Wen, S., Ma, D., Zhao, M., Xie, L., Wu, Q., Gou, L., Zhu, C., Fan, Y., Wang H., **Yan, J.***(2020) Spatiotemporal single-cell analysis of gene expression in the mouse suprachiasmatic nucleus. *Nat. Neurosci.* 23:456–467.
 36. Zha, X., Wang, L., Jiao, Z., Yang, R., Xu, C., **Xu, X.*** (2020) VMHvl-Projecting Vglut1+ Neurons in the Posterior Amygdala Gate Territorial Aggression. *Cell Rep.* 31:107517
 37. Zhan, Y., Wei, J., Liang, J., Xu, X., He, R. *, Robbins, T., **Wang, Z.*** (2020) Diagnostic classification for human autism and obsessive-compulsive disorder based on machine learning from a primate genetic model. *AM. J. Psychiat.* 31:1.
 38. Zhang, D., Yan, X., She, L., Wen, Y., **Poo, M.***(2020) Global enhancement of cortical excitability following coactivation of large neuronal populations. *PNAS* 117:20254-20264.
 39. Zhang, L., Wu, Q., **Zhang, Y.*** (2020) Early visual motion experience shapes the gap junction connections among direction selective ganglion cells. *PLOS Biol.* 18: e3000692.
 40. Zhang, L., Wu, Q., **Zhang, Y.*** (2020) Early visual motion experience improves retinal encoding of motion directions. *J. Neurosci.* 40:5431-5442.
 41. Zhang, X., Dou, Y., Yuan, L., Li, Q., Zhu, Y., Wang, M., **Sun, Y.***(2020) Different neuronal populations mediate inflammatory pain analgesia by exogenous and endogenous opioids. *eLife* 9:e55289.
 42. Zhang, X., Li, Q., Dong, Y., Yan, W., Song, K., Lin, Y., **Sun, Y.***(2020) Mu-opioid receptors expressed in glutamatergic neurons are essential for morphine withdrawal. *Neurosci. Bull.* 36:1095-1106.
 43. Zhao, S., Li, G., Tong, C., Chen, W., Wang, P., Dai, J., Fu, X., Xu, Z., Liu, X., Lu, L., **Liang, Z.***, Duan, X.* (2020) Full activation pattern mapping by simultaneous deep brain stimulation and fMRI with graphene fiber electrodes. *Nat. Commun.* 11: 1788
 44. Zhou, C., Hu, X., Tang, C., Liu, W., Wang, S., Zhou, Y., Zhao, Q., Bo, Q., Shi, L., Sun, X. *, **Zhou, H.***, **Yang, H.***(2020) CasRx-mediated RNA targeting prevents choroidal neovascularization in a mouse model of age-related macular degeneration. *NSR* 7:835-837.
 45. **Zhou, H.***, Su, J., Hu, X., Zhou, C., Li, H., Chen, Z., Xiao, Q., Wang, B., Wu, W., Sun, Y., Zhou, Y., Tang, C., Liu, F., Wang, L., Feng, C., Liu, M., Li, S., Zhang, Y., Xu, H., Yao, H., Shi, L., **Yang, H.*** (2020) Glia-to-neuron conversion by CRISPR-CasRx alleviates symptoms of neurological disease in mice. *Cell* 181:1-14
 46. Zhou, X., Ma, T., Yang, L., Peng, S., Li, L., Wang, Z., Xiao, Z., Zhang, Q., Wang, L., Huang, Y., Chen, M., Liang, S., Zhang, X., Liu, J., **Liu, Z.***. (2020) Spider venom-derived peptide induces hyperalgesia in Nav1.7 knockout mice by activating Nav1.9 channels. *Nat. Commun.* 11: 2293.
 47. Zhu, J., Cheng, Q., Chen, Y., Fan, H., Han, Z., Hou, R., Chen, Z., **Li, C.*** (2020) Transient Delay-Period Activity of Agranular Insular Cortex Controls Working Memory Maintenance in Learning Novel Tasks. *Neuron* 105:934-946.

48. Zuo, E.*, Sun, Y., Yuan, T., He, B., Zhou, C., Ying, W., Liu, J., Wei, W., Zeng, R., Li, Y.*, **Yang, H.*** (2020) A rationally engineered cytosine base editor retains high on-target activity while reducing both DNA and RNA off-target effects. *Nat. Methods* 17:600–604.
49. Zuo, Y.*, Huang, Y., Wu, D., Wang, Q., **Wang, Z.*** (2020) Spike phase shift relative to beta oscillations mediates modality selection. *Cereb. Cortex* 30:5431-5448.

Review Articles:

1. Chen, X., **Sun, Y.*** (2020) Central circuit mechanisms of itch. *Nat. Commun.* 11:3052.
2. Chen, W., Cheng, X., Fu, Y., Zhao, M., McGinley, J., Westenberger, A., **Xiong, Z.*** (2020) Rethinking monogenic neurological diseases. *BMJ.* 371:m3752.
3. **Xu, N.*** (2020) Deciphering pyramidal neuron diversity: delineating perceptual functions of projection-defined neuronal types. *Neuron* 105:209-211.
4. Zuo, E., Sun, Y., Wei, W., Yuan, T., Ying, W., Sun, H., Yuan, L., Steinmetz, L.*, Li, Y.*, **Yang, H.*** (2020) GOTI, a method to identify genome-wide off-target effects of genome editing in mouse embryos. *Nat. Protoc.* 15:3009-3029.