The contribution of 5-HT1A receptors in improving plasticity and function of the brain

Statements

belonging to the PhD thesis

THE CONTRIBUTION OF 5-HT$_{1A}$ RECEPTORS IN IMPROVING PLASTICITY AND FUNCTION OF THE BRAIN

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1. Cerebral ischemia is one of the leading causes of death and disability worldwide, however, only limited advances have been made to develop effective therapies. *(This thesis)*

2. Even though classical agonists of 5-HT$_{1A}$ receptors show promising results in pre-clinical studies investigating cerebral ischemia, their clinical application for this indication still needs to be proven. (*This thesis*)

3. Chronic treatment with the *5-HT$_{1A}$* receptor *biased agonist* NLX-101 attenuated cognitive impairments and despair-like behaviors induced by bilateral common carotid artery occlusion (BCCAO) in mice. In addition, NLX-101 blocked the increase in plasma corticosterone levels, promoted dendritic remodeling and restored BDNF, synaptophysin, and PSD-95 protein levels in the hippocampus of mice subjected to BCCAO. *(This thesis)*

4. *5-HT$_{1A}$* receptor *biased agonists* represent a promising novel strategy to provide neuroprotection in cerebral ischemic disease. *(This thesis)*

5. Acute and repeated treatment with NLX-101 improved pattern separation performance in the object pattern separation test in aged rats. In addition, NLX-101 increased the levels of BDNF and PSD-95, and neurogenesis in the hippocampus of these animals. *(This thesis)*

6. A PhD studentship is like a chronic unpredictable stress model. You just hope that the next stressor will not be as hard as the last one.

7. “Every man can, if he so desires, become the sculptor of his own brain”. (*Santiago Ramón y Cajal)*

8. “Every act of perception, is to some degree an act of creation, and every act of memory is to some degree and act of imagination”. (*Oliver Sacks)*

9. “Neuroscience is by far the most exciting branch of science because the brain is the most fascinating object of the universe. Every human brain is different – the brain makes each human unique and defines who he or she is”. *(Stanley B. Prusiner)*

10. A typical neuron makes about ten thousand connections to neighboring neurons. Given the billions of neurons, this means there are as many connections in a single cubic centimeter of brain tissue as there are stars in the Milky Way galaxy. *(David Eagleman)*