



Principal Investigator Grant

Project

«Neuropeptidergic modulation of serotonin signaling as a basis for differential anxiety and fear responses to SSRI treatments in patients with mild cognitive impairments»

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Duration 36 months



Main applicant

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Gaining insight into possible new Therapies

Dementia is often accompanied by social and emotional distress, which are more difficult to deal with for patients and caregivers than memory loss. Antidepressants such as serotonin reuptake inhibitors (SSRIs) are frequently used for treatment by increasing serotonin release in the brain, but with mixed outcomes. An important region that is activated during emotional distress is the amygdala, the fear center of our brain.

We recently discovered that the amygdala expresses receptors for oxytocin, a neuropeptide released in the blood that was until recently only thought to induce milk release in breastfeeding women. We here propose that an activation of oxytocin receptors in the amygdala can reduce fear by increasing local serotonin release. We will test this hypothesis by using a unique transgenic rat model in which the neurons that express the oxytocin receptor in the amygdala become fluorescent. In this rat we can specifically target these fluorescent neurons with different techniques that allow us to test our hypothesis in precise detail. Translationally, we will correlate this transgenic rat model with findings in humans that suggest that alterations in serotonin and oxytocin signaling in Alzheimer's patients may underlie their social and emotional distress. Outcomes of the study will help to develop personalized strategies for the treatment of Alzheimer's patients suffering from social and emotional distress.