

G-protein-coupled receptors (GPCRs) are one of the most important classes of proteins in living organisms, and they form a remarkable modular system. Understanding how receptors influence neurotransmission and, finally, our behaviour is one of the most intriguing and fundamental research questions in neuropsychopharmacology. Activation of the proper receptor starts up the biochemical machinery that may change our thinking, our behaviour, our lives.

The recently deorphanized G-protein-coupled receptor 39 is activated by zinc, which is the most abundant element in living organisms. Although the role of zinc in mood disorders, anxiety and cognition is widely known and well described, little is known about the mechanisms related to GPR39. The aim of this project is to find a new target for a novel rapid-acting and long-lasting antidepressant. The objectives are: i) to establish GPR39 as a target for rapid-acting and long-lasting antidepressants; ii) to establish the role of GPR39 in depression-related anxiety; iii) to establish GPR39 as a target for the prevention of depression-related progressive neurodegeneration. To achieve these goals, I plan to use transgenic, behavioral, biochemical, molecular and pharmacological tools.

To summarize, activation of GPR39 and its interaction with other receptors in the brain will determine as yet undiscovered novel avenues for the treatment of depression.

In the time it takes to read this text, 3–4 persons somewhere in the world will have committed suicide. Our previous study showed decreased expression of GPR39 in suicide victims. Is GPR39 the goal which will help in sadness and despair?