

**TITLE****Role of the LPA<sub>1</sub> receptor in mood and emotional regulation****TEXT**

Depression is a debilitating psychiatric condition characterized by anhedonia and behavioural despair among others symptoms. Despite the high prevalence and devastating impact of depression, underlying neurobiological mechanisms of mood disorders are still not well known. Regardless its complexity, central features of this disease can be modelled in rodents in order to better understand the potential mechanisms underlying.

On the other hand, the lack of LPA<sub>1</sub> receptor compromises the morphological and functional integrity of the limbic circuit and the neurogenesis in hippocampus, induces cognitive alterations on hippocampal-dependent tasks and dysfunctional coping of chronic stress, provokes exaggerated endocrine responses to emotional stimuli and impairs adaptation of the hypothalamic-pituitary-adrenal axis after chronic stress. Factors, which all have been related with depression.

Here, we sought to establish the involvement of the LPA<sub>1</sub> receptor in regulation of mood and emotion. To this end, in wild-type and maLPA<sub>1</sub>-null mice active coping responses to stress were examined using the forced swimming test (FST). To assess hedonic behaviour saccharine preference test and female urine sniffing test were used.

Our data indicated that the absence of the LPA<sub>1</sub> receptor significantly affected to coping strategies. Thus, while null mice displayed less immobility than wt in FST, exhibited more climbing and less swimming behaviour, responses that could be interpreted as an emotional over-reaction (i.e., a panic-like response) to stress situations. Concerning hedonic behaviour, the lack of the LPA<sub>1</sub> receptor diminished saccharin preference and female urine sniffing time. Overall, these data supports the role of LPA<sub>1</sub> receptor in mood and emotional regulation. Specially, the lack of this receptor induced emotional dysregulation and anhedonic behaviour, a core symptom of depression.

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