IGSN · SYMPOSIUM

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Translational approaches to understanding Bipolar Disorder

NADJA FREUND

Molecular and Experimental Psychiatry, LWL University Hospital, Ruhr-University Bochum

Bipolar disorder-like cycling of behavior induced by D1 receptor manipulation

Bipolar disorder is characterized by recurrent episodes of mania and depression. However, animal models for this severe disorder often investigate either mania- or depressive-like behavior. The characteristic cycling between episodes is rarely shown in animals. Recently, we developed a lentiviral-induced rat model that is able to model both phases.

Rats were manipulated with an inducible lentiviral vector expressing the dopamine D1 receptor (D1R) in the medial prefrontal cortex (mPFC). Lentiviral overexpression of the D1R in rats' mPFC induced mania-like behavior including increased drug seeking and taking, impulsivity, increased sexual activity and sucrose drinking. Termination of D1R overexpression resulted in depressive-like behavior, reflected through normalization of sexual behavior, induced helplessness and reduced activity.

We now started to further characterize the neurobiological mechanisms underlying the switch in behavior. Here, we are specifically interested how the sole termination of the over-expression was efficient enough to induce depressive-like behavior.

Our big goal is to improve and fully establish this animal model for bipolar disorder to advance our understanding of cause, environmental influences and neurobiology of the human condition. Therefore it is crucial to identify the altered mechanism and pathways to improve our knowledge on the changes in the brain, which cause the behavioral changes resembling the dramatic alternations in mood observed in patients with bipolar disorder.

Host:

GEORG JUCKEL
LWL University Hospital, Department of Psychiatry, Psychotherapy and Preventive Medicine, Ruhr University Bochum

Guests are welcome!

International Graduate School of Neuroscience Ruhr-University Bochum