HUMANIZED MOUSE MODEL OF BIPOLAR DISORDER FROM NEURAL PRECURSORS OF HUMAN OLFACTORY NEUROEPITHELIUM

A research group from CIBER and UCA has generated a humanized murine model of bipolar disorder that maintains the characteristics of disease symptomatology and treatment response from donors with bipolar disorder, by implanting neural precursors from their olfactory neuroepithelium into the brain of adult rodents.

The Need

There is a need to better understand the biological factors involved in the development of bipolar disorder, as well as identifying their therapeutic response, new therapeutic targets, and improve existing treatment options. Nevertheless, a lack of animal models coupled with the difficulty of obtaining neural samples from living patients, highlight current challenges in the field.

The Solution

The technology provides a method for studying psychiatric illness by replicating bipolar disorder in the hippocampus of nude mice. This may help to better understand the cellular and molecular mechanisms that link genetic and epigenetic deficits with functional deficits leading to the discovery of potential therapeutic targets.

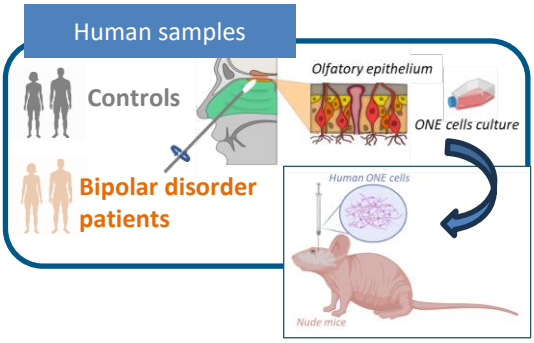
Advantages

- New approach: implantation of olfactory neuroepithelial neural precursors derived from psychiatric patients in mice
- Better understanding of the cellular and molecular mechanisms that link genetic and epigenetic deficits with functional ones

- Discovery of novel neurobiological mechanisms and biomarkers in BD and for lithium response
- Drug screening and optimisation of therapeutic treat or each patient
- Translational approach pipeline usable for other psychiatric diseases

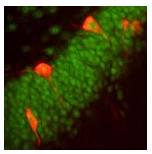
Stage of Development: tested face and predictive validity of the model

Animal model design



1. Implanted human cells **differentiate to neurons** in the mouse hippocampus

Mouse hippocampus



Red: differentiated human neurons

2. FACE VALIDITY: The model mimics **symptoms** of bipolar disorder

3. PREDICTIVE VALIDITY: The model mimics the donor's **response to lithium** treatment.

Intellectual Property: Priority European patent application filed

Aims

Looking for a partner interested in a license and/or a collaboration agreement to develop and exploit this asset.

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