

The relationship between the melanin-concentrating hormone (MCH) and the orexin (OX) neurons in the lateral hypothalamus with the parvafox nucleus

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Narcolepsy is a neurodegenerative disorder that affects predominately the orexin (OX) subpopulation of nerve cells in the lateral hypothalamus. In addition, patients can suffer cataplexy, sudden muscle tone loss triggered by positive emotions. It has been proposed in recent years that the parvafox nucleus influences positive emotional responses. Since the OX neurons are intermingled with the melanin-concentrating hormone (MCH) neurons, which are hypothesised to have a compensatory role in the disorder, the connection between these two-nerve cell cluster and the neurons of the parvafox were studies in this thesis.

Various methods were employed to visualize a possible interaction of axon terminals deriving from OX and MCH-neurons with parvalbumin neurons of the parvafox nucleus. Mice were injected stereotactically with adeno-associated viral vector constructs, in the OX, respectively, MCH clysters of neurons, followed by immunofluorescence targeting the parvalbumin (PV) neurons. Classical sectioning techniques were used, and in a few cases the brains got clarification using the CLARITY-method to get a 3D overview of the entire brain.

The preliminary findings of this study indicated that both MCH and OX neurons are co-localized with PV neurons of the parvafox nucleus.

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