group of adults with 22q11.2Ds comparing patients with and without psychotic symptoms. However some interesting trends were present with a decrease of CD3+ T-cells in High Risk adults with 22q11.2DS, but also a higher level of IL17+ T-cells in High Risk adults and the highest levels of IL17+ T-cells in adults with a psychotic episode in the past or present. Further investigation of these results in a larger sample are indicated.

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Interleukin-4$^{-/-}$ mice show a depression-like phenotype

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Introduction: The pathophysiology of depression is intimately connected with inflammatory and immunological processes. The anti-inflammatory Interleukin (IL)-4 avoid hyperactive inflammational reactions and is important for the homeostasis of the immune system. It could be an important protective mechanism against the development of depression. The goal of this work was to investigate the role of IL-4 in the pathogenesis of depression.

Methods: IL4$^{-/-}$ mice were tested in two valid animal models of depression: the Interferon (IFN)-alpha model and learned-helplessness (LH)-model. The animals of the first group received daily injections of IFN-alpha/PBS for two weeks. Depression-like behavior was analyzed by the "forced swim" and "tail suspension test" before and two weeks after treatment.

The animals of the second group underwent a conditioning phase, in which they received inescapable footshocks followed by the test of learned- helplessness, an indicator of depression-like behavior.

Results: IL4$^{-/-}$ mice showed significant depression-like behavior in comparison to wild type mice. In the "forced swim" and "tail suspension test", untreated IL4$^{-/-}$ mice demonstrated a significantly increased "immobility time". Consistently, the unconditioned ("unstressed") IL4$^{-/-}$ mice in the LH-test showed significantly enhanced learned helplessness behavior. Interestingly, neither application of IFN-alpha nor application of stress (footshocks) led to a depressive reaction exceeding that of the wild type mice.

Conclusion: The absence of IL-4 seems to be associated with an enhanced depression-like phenotype in untreated mice. However, the induction of an inflammatory- or stress response in these animals did not result in a stronger depression-like behavior than in wild type mice. Therefore, the assumed reduced ability for down-regulating inflammatory responses does not seem to be relevant.

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Lymphatic drainage of the brain and CSF: Relevance to neuroimmunology and Alzheimer's disease

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The brain lacks conventional lymphatics vessels present in other organs but it does have well-documented lymphatic drainage pathways for its two major extracellular fluids: CSF and interstitial fluid (ISF). Lymphatic drainage of CSF, including antigen presenting cells, is mainly via channels that pass from the subarachnoid space through the cribriform plate of the ethmoid bone and nasal lymphatics to cervical lymph nodes. CSF also drains to lymph nodes along cranial and spinal nerve roots and the dura. Exchange between CSF and ISF occurs as CSF enters the brain along outer aspects of cerebral arteries; exchange with brain ISF is mediated by aquaporin 4. There is a unique and rapid lymphatic drainage of ISF, soluble metabolites and antigens from the brain parenchyma along 100nm-wide basement membranes within the walls of cerebral capillaries and cerebral arteries to deep cervical lymph nodes; a route that is largely independent of CSF. This rapid perivascular route does not allow trafficking of antigen presenting cells from the brain parenchyma to cervical lymph nodes and may thus be a factor in immunological privilege in the brain. Most direct evidence for periarterial lymphatic drainage of ISF is derived from studies in animals. In humans, amyloid-β (Aβ) acts as a natural tracer for periarterial lymphatic drainage pathways. Although there is efficient periarterial lymphatic drainage of soluble Aβ from the brain in young individuals, drainage of Aβ is impaired with age and apolipoprotein ε4; this results in deposition of insoluble Aβ not only as plaques within the brain parenchyma, but also in the walls of cerebral arteries and capillaries as Cerebral Amyloid Angiopathy. Age-related failure of periarterial lymphatic drainage of Aβ appears to trigger loss of homoeostasis in the brain with accumulation of soluble and insoluble Aβ that drives damage to neurons and propagation of tau neurofibrillary tangles in Alzheimer's disease.

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The microglia phenotype in animal models of endophenotypes for psychiatric disorders

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A growing body of literature supports an increased appreciation for the integrated role of microglia in mental disorders. Microglia are resident macrophage-like cells of the brain and represent its main form of active immune defense.

Microglial density and activation have been shown to be increased in different brain regions in post-mortem brains of schizophrenic patients, which were confirmed *in vivo* by PET scans and in animal models of schizophrenic endophenotypes. We have shown that treatment with the broad spectrum antibiotic minocycline, which is able to inhibit microglial activation, rescued increase in pro-inflammatory microglial cytokines, and behavioral deficits in a rodent model of schizophrenia. In a recent controversially discussed study the inhibition of microglial phagocytosis function in the Rett syndrome animal model abolished the amelioration of the disease implicating the importance of microglia function also in autism spectrum disorder. Preclinical and clinical studies suggest that inflammation such as microglial activation potentially can also lead to depression. On the other hand unanticipated reductions in the density and number of