

# Immunology of Psychiatric Disorders

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Recent reports on the Global Burden of Diseases, Injuries and Risk Factors Study 2010 [1, 2] demonstrated the significant burden associated with psychiatric disorders, with growing challenges for health systems. For instance, psychiatric disorders, including substance use disorders, were the leading cause of years lived with disability (YLD) worldwide, accounting for 22.9% of all YLD [2]. To change this picture the prevention and treatment of psychiatric disorders must be regarded as a social priority.

Complicating the scenario, the advancement of knowledge on the neurobiology of psychiatric disorders has not been translated into new or more effective pharmacological interventions. Facing growing costs and the exhaustion of amine-based strategies, part of the pharmaceutical industry has even withdrawn research and development in psychiatry. Furthermore, the promises of understanding the genetic basis of individual psychiatric disorders with genome-wide association studies did not materialize as shared genetic etiology for major psychiatric disorders was reported [3].

The immune system is traditionally regarded as a host defense system. In recent years, however, its homeostatic role has been emphasized [4]. The immune system works in association with other systems, particularly nervous and endocrine systems, to maintain body homeostasis. Corroborating this view, immune changes have been described in association with several noninfectious conditions, like physical exercise, weight gain/obesity, aging and psychiatric disorders.

The initial approach to the role of the immune system in behavior dates back to the study of 'sickness behavior', i.e. a set of depressive-like cognitive and behavioral

changes that take place after an inflammatory condition. Subsequently, great interest was directed towards investigating a pathogenic role of infectious (e.g. toxoplasmosis) and noninfectious (e.g. autoimmunity) mediated inflammation in psychiatric disorders. Now, immune system-related molecules are being regarded either as putative biomarkers or as pharmacological targets.

This supplement of *Neuroimmunomodulation* presents the 'state of the art' of the immunology of psychiatric disorders. The manuscripts discuss the available data on the characterization of the immune/inflammatory dysfunction in the most relevant psychiatric disorders, associations with cognitive and behavioral symptoms, and potential biomarkers and targets for therapeutic development.

## References

- 1 Degenhardt L, Whiteford HA, Ferrari AJ, Baxter AJ, Charlson FJ, Hall WD, Freedman G, Burstein R, Johns N, Engell RE, Flaxman A, Murray CJ, Vos T: Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010. *Lancet* 2013;382:1564–1574.
- 2 Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, Charlson FJ, Norman RE, Flaxman AD, Johns N, Burstein R, Murray CJ, Vos T: Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet* 2013;382:1575–1586.
- 3 Cross-Disorder Group of the Psychiatric Genomics Consortium: Identification of risk loci with shared effects on five major psychiatric disorders: a genome-wide analysis. *Lancet* 2013;381:1371–1379.
- 4 Medzhitov R: Origin and physiological roles of inflammation. *Nature* 2008;454:428–435.