

# The influence of genetic factors on brain plasticity and recovery after neural injury.

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**PURPOSE OF REVIEW:** The fields of clinical genetics and pharmacogenetics are rapidly expanding. Genetic factors have numerous associations with injury and with treatment effects in the setting of neural plasticity and recovery.

**RECENT FINDINGS:** Evidence is reviewed that established genetic variants, as well as some more recently described variants, are related to outcome after neural injury and in some cases are useful for predicting clinical course. In many cases, the interaction of genetics with clinical factors such as experience and therapy may be important. As an extension of this, genetic factors have been associated with differential response to a number of forms of therapy, including pharmacological, brain stimulation, psychotherapy, and meditation. Genetic variation might also have a significant effect on plasticity and recovery through key covariates such as depression or stress. A key point is that genetic associations might be most accurately identified when studied in relation to distinct forms of a disorder rather than in relation to broad clinical syndromes.

**SUMMARY:** Understanding genetic variation gives clinicians a biological signal that could be used to predict who is most likely to recover from neural injury, to choose the optimal treatment for a patient, or to supplement rehabilitation therapy.

Curr Opin Neurol. 2012 Dec;25(6):682-8. doi: 10.1097/WCO.0b013e32835a360a. Pearson-Fuhrhop KM, Burke E, Cramer SC. Department of Anatomy and Neurobiology bDepartment of Neurology, University of California, Irvine, Orange, California, USA.

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