

## Special Issue on **Role of Visual Cortical Plasticity in the Development and Treatment of Amblyopia and other Neurodevelopmental Disorders**

# CALL FOR PAPERS

Early visual experience has enduring effects on brain development, and when that experience is abnormal, the maladaptive impact on the central visual pathway and visual perception can be profound. Abnormal vision during a critical period in early development can cause amblyopia (lazy-eye) which is the leading cause of vision impairment in children. Early treatment with patching therapy can improve visual acuity, but visual deficits persist in almost 50% of amblyopic children. Furthermore, the visual deficits are not restricted to acuity but impact all aspects of visual perception and may not emerge until late childhood or teens years.

Studies using animal models or humans with amblyopia have found cortical changes linked to poor vision and a loss of plasticity that may be the culprit hindering recovery. A range of treatment paradigms have also been examined, but it is still an open question how best to harness visual cortical plasticity to promote good long-lasting recovery of vision.

Recent studies have also found other types of abnormal early experience, including abnormal gene expression that can cause poor visual perception and loss of visual cortical plasticity. These new models suggest other mechanisms that may be used to promote recovery.

Therefore, there is a need to understand the visual and neural changes linked with amblyopia and other neurodevelopmental disorders. Furthermore, comparing the similarities and differences among neurodevelopmental disorders may help to identify new types of biologically inspired therapies for poor visual perception.

Potential topics include but are not limited to the following:

- ▶ Experience-dependent plasticity mechanisms in visual cortical areas during development or adults
- ▶ Molecular mechanisms that enhance or hinder plasticity in visual cortical areas in amblyopia or other neurodevelopmental disorders (e.g., Rett syndrome, Angelman syndrome, Schizophrenia, Fragile X, ASD, and dyslexia)
- ▶ Visual perception changes associated with amblyopia or other neurodevelopmental disorders
- ▶ Genetic variants in neurodevelopmental disorders that cause maladaptive visual cortical plasticity and poor vision
- ▶ Preclinical models for treatments that improve vision in amblyopia or other neurodevelopmental disorders

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/np/vcpy/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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