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Article

## Netrin-1 Is Required for Commissural Axon Guidance in the Developing Vertebrate Nervous System

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### Abstract

During nervous system development, spinal commissural axons project toward floor plate cells and trochlear motor axons extend away from these cells. Netrin-1, a diffusible protein made by floor plate cells, can attract spinal commissural axons and repel trochlear axons in vitro, but its role in vivo is unknown. Netrin-1 deficient mice exhibit defects in spinal commissural axon projections that are consistent with netrin-1 guiding these axons. Defects in several forebrain commissures are also observed, suggesting additional guidance roles for netrin-1. Trochlear axon projections are largely normal, predicting the existence of additional cues for these axons, and evidence is provided for a distinct trochlear axon chemorepellent produced by floor plate cells. These results

establish netrin-1 as a guidance cue that likely collaborates with other diffusible cues to guide axons in vivo.



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