

**ANALYSIS OF PATHWAYS AND PROTEINS THAT PATTERN *OLIG2*⁺ CELLS
WITHIN THE ZEBRAFISH CENTRAL NERVOUS SYSTEM**

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The cerebellum, which forms from anterior hindbrain, coordinates motor movements and balance. Sensory input from the periphery is relayed and modulated by cerebellar interneurons, which are organized into layers. The mechanisms that specify the different neurons of the cerebellum and direct its layered organization remain poorly understood. Drawing from investigations of spinal cord, we hypothesized that the embryonic cerebellum is patterned on the dorsoventral axis by opposing morphogens. We tested this using zebrafish. Here we show that expression of *olig2*, which encodes a bHLH transcription factor, marks a subset of neurons within the cerebellum. In combination with other markers, *olig2* reveals a dorsoventral organization of cerebellar neurons in embryos. Disruption of Hedgehog signaling, which patterns the ventral neural tube, or Wnt signaling, which patterns dorsal neural tube, disrupt cerebellar organization and *olig2*⁺ neuron development within the spinal cord.

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