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Motor circuits in the spinal cord integrate information from various sensory and descending pathways to control appropriate motor behavior. Recent work has revealed that target-derived retrograde signaling mechanisms act to influence sequential assembly of motor circuits through combinatorial action of genetic and experience-driven programs. These parallel activities imprint somatotopic information at the level of the spinal cord in precisely interconnected circuits and equip animals with motor circuits capable of reacting to changing demands throughout life.

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