Notochord Encyclopedia Article

Notochord

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Notochord

The notochord is a cylindrical column of cells that appears early in embryonic development. The notochord forms on the dorsal side of the embryo and establishes a bilateral longitudinal axis of development before the formation of the neural tube and spinal vertebrae. The formation of the notochord is a common and uniting factor of all chordate animals. In humans, cells forming the notochord later become part of the vertebrae, nasopharynx, and **skull**.

In the early developmental stages of all vertebrates, a notochord forms within the embryonic disk. The notochord lies between the **ectoderm** and **endoderm**. The rod of cells forms between the primitive knot and the prechordal plate of cells.

As **mesoderm** forms, aggregations (clumps or blocks) of cells, derived from mesoderm, form **somites** along the sides of the notochord. Depending on their level these mesodermal somites ultimately develop into **vertebra**, ribs, muscles, and dermal structures.

Formation of the notochord is critical to the proper formation and organization of the neural plate, neural folds, and subsequent development of the **brain** and other neural structures. One of the classic experiments in developmental biology, the **organizer experiment**, showed that in amphibian embryos, cells taken from the notochordal region of one embryo could induce neural structure formation when grafted on to a second embryo.