

## WNT家族在脊椎动物骨骼发育中的作用机制

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**摘要** 脊椎动物骨骼系统起源于中胚层间充质细胞, 起初, 这些细胞定向分化形成软骨原基, 后者经软骨内骨化发育为成熟的骨骼系统。近年来, 很多研究表明, WNT家族与其相关作用成分在骨发育过程中发挥了重要作用, 通过在细胞分化不同阶段的正向或负向调控机制, 保证了软骨细胞在特定的位置以合适的速率有序分化。在WNT家族及其作用途径的相关信号分子中, 无论何种亚型或分子的异常表达都可能破坏WNT系统维系的正负平衡机制, 导致骨骼系统畸形。了解WNT系统的作用机制有助于深入探究骨骼系统发生的相关调控机理。

**关键词** [WNT](#) [骨发生](#) [间充质细胞](#) [软骨细胞分化](#)

分类号

## Mechanism of the WNT Family in Vertebrate Skeleton Development

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### Abstract

Skeletal elements of vertebrate limb are derived from mesenchymal cells. Initially, these cells differentiate into chondrocytes which form the initial anlage element. Subsequently, chondrocytes in the middle of the cartilage element exit the cell cycle and are eventually replaced by bone through endochondral ossification. Recently, it is shown that the secreted signaling molecules encoded by members of the wnt gene family and their related elements play pivotal roles in the process of the skeleton system development. These molecules ensure the chondrocytes can differentiate continuously at proper speed in the definitive space by the negative and positive control effect on different steps of the chondrocyte differentiation and form the natural skeleton system possessing normal function and structure. However, both the members of WNT family and their related molecules in the signaling pathway expressing abnormally can disrupt the balance remained by the WNT family and result in skeleton malformation. Understanding the roles of the WNT family is helpful to explore the mechanism of vertebrate skeleton development.

**Key words** [WNT](#) [skeleton development](#) [mesenchymal cell](#) [chondrocyte differentiation](#)

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