Neural crest cell

Neural crest cells are a transient, multipotent, migratory cell population unique to vertebrates that gives rise to a diverse cell lineage including melanocytes, craniofacial cartilage and bone, smooth muscle, peripheral and enteric neurons and glia.

After gastrulation, neural crest cells are specified at the border of the neural plate and the non-neural ectoderm. During neurulation, the borders of the neural plate, also known as the neural folds, converge at the dorsal midline to form the neural tube. Subsequently, neural crest cells from the roof plate of the neural tube undergo an epithelial to mesenchymal transition, delaminating from the neuroepithelium and migrating through the periphery where they differentiate into varied cell types.

The emergence of neural crest was important in vertebrate evolution because many of its structural derivatives are defining features of the vertebrate clade.

Neural crest cells (NCCs) are born during vertebrate embryogenesis within the dorsal margins of the closing neural folds. Initially, they are integrated within the neuroepithelium where they are morphologically indistinguishable from the other neural epithelial cells. Upon induction by signals that come from contact-mediated tissue interactions between the neural plate and the surface ectoderm, NCCs delaminate through an epithelial-to-mesenchymal transition and start migrating extensively to several different locations in the embryo where they contribute to a remarkably diverse array of different tissue types ranging from the peripheral nervous system (PNS) to the craniofacial skeleton [1)].

1)
Sauka-Spengler T, Bronner-Fraser M. A gene regulatory network orchestrates neural crest formation. Nat Rev Mol Cell Biol. 2008 Jul;9(7):557-68. doi: 10.1038/nrm2428. Epub 2008 Jun 4. Review. PubMed PMID: 18523435.