

## The inductive properties of mesoderm suggest that the neural crest cells are specified by a BMP gradient

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We have analyzed the role of mesoderm in the induction of the neural crest in *Xenopus* using expression of neural plate (*Xsox-2*) and neural crest (*Xslug* and *ADAM*). Conjugation experiments using different kinds of mesoderm together with embryonic dissection experiments suggest that the dorsolateral mesoderm is capable of specifically inducing neural crest cells. Neural crest markers can be induced in competent ectoderm at varying distances from the inducing mesoderm, with dorsal tissue inducing neural crest at a distance while dorsolateral tissue only induces neural crest directly in adjacent ectoderm. The results suggest that dorsal mesoderm has a high level of inducer and dorsolateral mesoderm has a lower level, consistent with an inductive gradient. We explored the possible role of BMP and noggin in the generation of such a hypothetical gradient and found that: (1) progressively higher levels of BMP activity are sufficient for the specification of neural plate, neural crest, and nonneural