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Where do jaws come from?

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The origin of the vertebrate jaw is something of a mystery. In the March 28 Nature, Martin Cohn from the University of Reading suggests that *Hox* gene expression may be at the origin of jaw evolution (*Nature* **416:**386-387). In jawed vertebrates (gnathostomes) the jaw and pharyngeal skeleton is derived from migrating cranial neural crest cells. Cohn studied the lamprey, a primitive jawless fish related to gnathostomes, in which the branchial arch is also neural-crest-derived. He cloned lamprey *Hox* genes and found gene expression in the mandibular arch (not seen in other vertebrates). He also noted a loss of *Hox* gene colinearity, as the *HoxL6* expression domain extends anterior to the boundary of *HoxL5*. This loss of spatial colinearity was also seen in the cephalochordate amphioxus. As *Hox* gene expression can inhibit jaw formation, he proposes that loss of *Hox*expression in early gnathostomes may have facilitated the chondrification of the first arch crest that led to the formation of ventral madibular cartilage.

References

1. *Nature*, [http://www.nature.com]

2. University of Reading , [http://www.reading.ac.uk]