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The riddle of the pharynx

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The pharynx of *Caenorhabditis elegans* is a neuromuscular organ responsible for pumping food in from the environment and for initiating digestion. Organogenesis of the pharynx involves complex patterning and morphogenesis events, and the differentiation of distinct precursor cells. In the February 1 Science, Gaudet and Mango from the University of Utah report a genomic analysis of the role of the PHA-4 protein, a homologue of the forkhead box A (FoxA/HNF3) transcription factor involved in pharyngeal development (*Science* 2002, **295:**821-825). They screened C. elegansmicroarrays with material from embryos that have either excess or no pharyngeal cells and identified 240 genes of interest. The vast majority (over 80%) of the genes they identified were expressed selectively in the pharynx. Many of these genes have clusters of PHA-4 binding sequences in their promoter regions, and these were critical for pharyngeal expression. Analysis of a *pha-4(ts)*mutant confirmed that PHA-4 is essential for pharynx organogenesis and expression of pharyngeal genes. Furthermore, the onset of expression of pharyngeal genes was related to the affinity of the PHA-4-binding elements in their promoters.

References

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