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Preliminary report on intervertebral articulations of salamanders.

Opisthocoelous vertebrae occur in several groups of advanced salamanders and have been cited as evidence of close relationship of the families Salamandridae and Plethodontidae. Histological preparations have been made for ontogenetic series of many species of these families. It is now clear that the opisthocoely encountered in plethodontids is basically different than that found in salamandrids. Salamandrids have bony articular condyles capped with a layer of cartilage. The notochordal canals of salamandrids are invaded by bone in adults and little or no notochordal material persists. All plethodontids have persistent notochords and well developed intervertebral cartilages. Primitive members of the family are amphicoelous throughout life, but intervertebral cartilages of a number of advanced species calcify during varying stages of ontogeny resulting in a condition superficially similar to the opisthocoely encountered in salamandrids. Contrary to numerous literature reports desmognathine salamanders have a heavily calcified, not a bony, condyle. In some advanced neotropical species of plethodontids opisthocoely results from growth of bone into the condylar region, but the condyl itself is calcified cartilage. These data suggest that opisthocoely has arisen in parallel several times in salamanders, and that its presence in different groups of salamanders is not necessarily evidence of close relationship. (Supported by Grant GB-3868 from the N.S.F.)