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### Apoptosis in the Developing Zebrafish Embryo

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#### Abstract

Apoptosis is a major part of the normal development of many organ systems and tissues. The zebrafish (*Danio rerio*) has become a useful model for studying early development, and recent advances in techniques used to label apoptotic cells have made it possible to visualize apoptotic cells in this model system. We have used the *in situ* terminal deoxynucleotidyl transferase (TdT)-mediated dUTP nick-end labeling (TUNEL) to describe the temporal and spatial distribution of apoptotic cells during normal development of the zebrafish embryo from 12 to 96 h postfertilization. By counting labeled apoptotic cells, we have demonstrated transient high rates of cell death in various structures during development, and we have correlated these peaks with previously described developmental changes in these structures. Our analysis has focused on the nervous system and associated sensory organs including the olfactory organ, retina, lens, cornea, otic vesicle, lateral line organs, and Rohon–Beard neurons. Apoptosis is also described in other non-neural structures such as the notochord, somites, muscle, tailbud, and fins.

#### Keywords




cell death; nervous system; morphogenesis; TUNEL; brain; olfactory; visual; lateral line; Rohon–Beard; otocyst





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