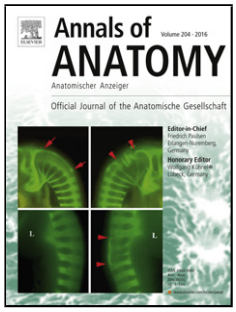

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Anatomical features for the adequate choice of experimental animal models in biomedicine: I. Fishes

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ABSTRACT

Fish constitute the oldest and most diverse class of vertebrates, and are widely used in basic research due to a number of advantages (e.g., rapid development ex-utero, large-scale genetic screening of human disease). They represent excellent experimental models for addressing studies on development, morphology, physiology and behaviour function in other related species, as well as informative analysis of conservation and diversity. Although less complex, fish share many anatomical and physiological features with mammals, including humans, which make them an important complement to research in mammalian models.

In this review we describe and compare the most relevant anatomical features of the most used teleostean species in research, to be taken into consideration when selecting an animal model: zebrafish (*Danio rerio*), medaka (*Oryzias latypes*), the turquoise killifish (*Nothobranchius furzeri*), and goldfish (*Carassius auratus*).

Zebrafish and medaka are the mainstream models for genetic manipulability and studies on developmental biology; the turquoise killifish is an excellent model for aging research; goldfish has been largely employed for neuroendocrine studies.

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