Requirement of nuclear localization and transcriptional activity of p53 for its targeting to the yolk syncytial layer (YSL) nuclei in zebrafish embryo and its use for apoptosis assay.(in press)

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摘要

Abstract

We expressed zebrafish p53 protein fused to GFP by a neuron-specific HuC promoter in zebrafish embryos. Instead of displaying neuronal expression patterns, p53-GFP was targeted to zebrafish YSL nuclei. This YSL targeting is p53 sequence-specific because GFP fusion proteins of p63 and p73 displayed neuronal-specific patterns. To dissect the underlying mechanisms, various constructs encoding a series of p53 mutant proteins under the control of different promoters were generated. Our results showed that expression of p53, in early zebrafish embryo, is preferentially targeted to the nuclei of YSL, which is mediated by importin. Similarly, this targeting is abrogated when p53 nuclear localization signal is disrupted. In addition, the transcriptional activity of p53 is required for this targeting. We further showed that fusion of pro-apoptotic BAD protein to p53-GFP led to apoptosis of YSL cells, and subsequent imperfect microtubule formation and abnormal blastomere movements.