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High-efficiency gene knockdown using chimeric ribozymes in fish embryos [☆]

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Abstract

We report an effective gene knockdown technique in rainbow trout embryos using additional RNA components combined with ribozymes (R_z s). Chimeric R_z s (tR_z Cs) containing $tRNA^{Val}$, R_z against GFP, and a constitutive transport element were microinjected into transgenic embryos. tR_z Cs induced greater gene interference than R_z s alone. Control tR_z Cs did not affect unpaired bases of target RNA, and the tR_z C did not interfere with non-relevant gene expression, suggesting that the tR_z C-mediated gene-interference effects were sequence-specific. Furthermore, the tR_z C-containing expression vector specifically suppressed target GFP expression in transgenic trout. tR_z Cs enhance R_z cleavage and could therefore be powerful tools for studying unknown gene function in vertebrates.

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