An endogenous retrovirus expressed in the zebrafish thymus.
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In a search for previously unknown genes that are selectively expressed in the zebrafish thymus, we subtracted cDNA from adult thymus with that from 2-day embryos. Sequence analysis of the subtracted cDNA and of corresponding thymus cDNA revealed many clones homologous to *env* sequences of different vertebrate retroviruses. A provirus of 11.2 kb was amplified by PCR from genomic DNA and found to contain intact open reading frames for the *env*, *gag* and *pol* genes, as well as nearly-identical flanking LTR sequences. The adult thymus contained substantial amounts of the corresponding full-length viral transcripts (9.5 kb). By whole-mount *in situ* hybridization, the *env* gene was found to be expressed predominantly in the thymus beginning at 4 days, coincident with the expression of *rag1*. Southern analysis suggest that there are two to four copies of *env* in the zebrafish genome. Moreover, the pattern of hybridization indicated that the provirus is in the same genomic locus in three individual fish, consistent with integration into the same site, as expected for an endogenous retrovirus. Phylogenetic analysis indicates that this virus is closest to, yet distinct from, the cluster of MLV-related retroviruses, suggesting that it represents a new group of retroviruses.