Structure of a fish (rainbow trout) growth hormone gene and its evolutionary implications.

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Abstract We have isolated and sequenced a clone from a rainbow trout (Salmo gairdneri) genomic library that carries a gene encoding a fish growth hormone (GH). This gene spans a region of approximately equal to 4 kilobases, nearly twice that of mammalian GH genes. The trout GH gene is comprised of six exons, in contrast with five exons in mammals. The additional intron in the fish gene interrupts translated regions that are analogous to the last exon of its mammalian counterpart. In addition, the alleged internally repeating sequence in mammalian GH, prolactin (Prl), or placental lactogen (PL) is not observed in the predicted polypeptide sequence of fish GH. Direct repeats that flank exons I, III, and V of the mammalian GH, Prl, and PL genes are absent in the fish GH gene. These findings indicate that the rainbow trout GH gene structure does not support the current hypothesis that internally repeated regions in GH, Prl, and PL arose from a small primordial gene.
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