Rapid Communication: Variable Number of Tandem Repeat Marker, RVF9303, in Rainbow Trout

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Polymorphism. A variable number of tandem repeat (VNTR; Nakamura et al., 1987) polymorphism was detected in rainbow trout (Oncorhynchus mykiss Walbaum) using MspI and BglII. The probe, RVF9303, was isolated from a genomic DNA cosmid library developed from the RTG-2 cell line (Wolf and Quimby, 1962).

Method of Detection. Nylon filters containing rainbow trout genomic DNA digested with MspI or BglII were prehybridized in 7% PEG, 10% SDS, and 200 μg/mL of sheared rainbow trout sperm DNA at 65°C overnight. Random-primed labeled probe (1.5–2.0 x 10⁶ cpm/mL) was added to 5 mL of the prehybridization solution and the filters hybridized in this solution at 65°C overnight. The filters were washed in 2x SSC for 15 min at room temperature and in .1x SSC/.1% SDS for 20 min at 65°C.

Description of Polymorphism. Four bands were detected using MspI and BglII. Allele sizes (and frequencies) for MspI were 5.5 kb (.2), 9.0 kb (.1), 9.5 kb (.1), and 16.0 kb (.6) (Figure 1). Allele sizes (and frequencies) for BglII were 18.0 kb (.2), 20.0 kb (.1), 22.0 kb (.1), and 25.0 kb (.6). Heterozygosity was 80.0%. Frequencies were estimated using five unrelated rainbow trout.

Inheritance Pattern. Codominant inheritance of the MspI and BglII alleles was demonstrated in two rainbow trout parents and their 16 offspring.

Probe Availability. The probe is available from N. Okamoto.

Literature Cited


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Figure 1. VNTR patterns of five unrelated rainbow trout after genomic DNA was digested with MspI and hybridized to the RVF9303 probe. Fragment sizes in kilobases are given at left.