Dinucleotide repeat polymorphism at the DXYS1X locus

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Source and Description of Clone: Cosmid ICRFc101E021 was isolated by hybridization to the DSYS1X probe pDP34 (1). pDXYS1/4−1 is a 2.1 kb PstI subclone of this cosmid which contains a $(CA)_{14}$ dinucleotide repeat. pDXYS1/4−1 was partially sequenced and the sequences flanking the repeat (EMBL accession number X56252) were used to design PCR primers.

PCR Primers: DXYS1/4−1A = 5'-ATATCTCTGTTCACTTCTG-3'
DXYS1/4−1B = 5'-GGATTCAAGGTGTCAGTA-3'

Polymorphism: Allelic fragments were detected on DNA sequencing gels. Lengths (nt) are: B1 = 174, B2 = 172, B3 = 170. Cosmid ICRFc101E021 contains allele B1.

Frequencies: From 25 unrelated female and 19 unrelated male Caucasians: B1 = 0.54, B2 = 0.42, B3 = 0.04.

Mendelian Inheritance: Mendelian inheritance was observed in 3 informative CEPH families with a total of 23 children. These families are also informative with the pDP34 TaqI RFLP; the concordant inheritance of these markers confirms the physical evidence for the DXYS1X location of this CA repeat.

Chromosomal Localization: DXYS1X has been localized to Xq21.31 (2).

Linkage Disequilibrium: The pDP34 TaqI RFLP genotypes reported in the CEPH database v4 allowed us to haplotype 49 chromosomes from 15 females and 19 males. The allele frequencies in this sample predict haplotype frequencies of B2/pDP34A1 = 0.20 and B3/pDP34A1 = 0.02. In fact, we observed no examples of these haplotypes. Despite the absence of these haplotypes, heterozygosity at DXYS1X is 0.76 when both polymorphisms are considered.

PCR Conditions: PCR was performed according to (3) except that the products were labelled internally with α-^{32}P-dCTP. Annealing temperature was 51°C. Amplified alleles were resolved on denaturing polyacrylamide gels and detected by autoradiography.

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Dinucleotide repeat polymorphism at the PGK1 locus

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Source and Description of Clone: Cosmid ICRFc100F0059 was isolated by hybridization to the PGK1 probe pHPGK-7C (1). pPGK/5 is a Sau3aI subclone of this cosmid which contains a $(CA)_{14}$ dinucleotide repeat. pPGK/5 was partially sequenced and the sequences flanking the repeat (EMBL accession number X56251) were used to design PCR primers.

PCR Primers: PGK/5A = 5'-TCTACATGTACTTAACCTGC-3'
PGK/5B = 5'-AACTCAGTTTTGAGCTCCTA-3'

Polymorphism: Allelic fragments were detected on DNA sequencing gels. Lengths (nt) are: E1 = 204, E2 = 202, E3 = 198.

Frequencies: From 37 unrelated female and 9 unrelated male Caucasians: E1 = 0.05, E2 = 0.73, E3 = 0.22. The heterozygosity calculated from these frequencies is 0.42.

Chromosomal Localization: PGK1 has been localized to Xq13 (2).

Mendelian Inheritance: Mendelian inheritance was observed in 4 families with a total of 46 children. Two of these families with 20 children are also informative with the PstI RFLP at the PGK1 locus. Concordant inheritance of the $(CA)_n$ and RFLP haplotypes in these families confirms the physical evidence for the PGK1 location of the CA repeat.

Linkage Equilibrium: Using reported PGK1 PstI RFLP genotypes in the CEPH database v4 together with our own data on the CA repeat, we haplotyped 69 chromosomes from unrelated individuals. Observed and expected haplotype frequencies were in close agreement (χ^2 = 1.58, P > 95%), indicating linkage equilibrium. Using these haplotypes, the observed heterozygosity was 0.60.

PCR Conditions: PCR was performed according to (3) except that the products were labelled internally with α-^{32}P-dCTP. Annealing temperature was 51°C.

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