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Assignment[1] of inosine 5′-monophosphate dehydrogenase type 2 (IMPDH2) to human chromosome band 3p21.2 by in situ hybridization

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[1] This is a more precise localization of a gene previously mapped to 3p24.2 → p21.2 by Glesne et al. (1993).

Rationale and significance

Inosine 5′-monophosphate dehydrogenase (IMPDH, E.C. 1.1.1.205) is the rate limiting enzyme in de novo guanine nucleotide biosynthesis, and is encoded by two genes termed types I and II. Increased IMPDH activity has been found in an assortment of tumors (Collart et al., 1992), while decreased IMPDH activity has been observed during differentiation of various cell types (Kiguchi et al., 1990, and references therein). This regulation is reportedly due to changes in the level of the type II mRNA, whereas the type I mRNA is constitutively expressed (Natsumeda and Carr, 1993). We here report the localization of the type II IMPDH gene (IMPDH2) to a region that is either deleted or has undergone loss of heterozygosity in a wide variety of human tumors (reviewed in Naylor et al., 1996).

Materials and methods

Human phytohemagglutinin-stimulated lymphocytes were prepared, synchronized to S phase, stained, and hybridized with biotinylated type II IMPDH probe using methods previously described (Senger et al., 1993; Fedorova et al., 1997).

Probe name: FFE7-*Sst*I
Probe type: genomic DNA
Insert size: 4 kb
Vector: pBluescript-SK(+)
Proof of authenticity: DNA sequencing
Gene reference: GDB:128086; Glesne and Huberman (1994)

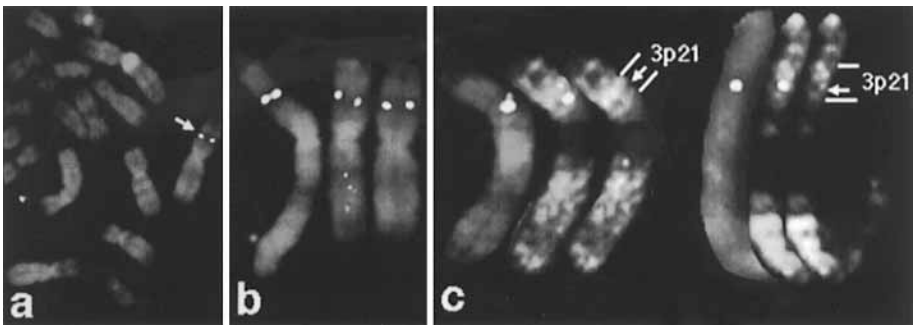

Fig. 1. Fluorescent in situ hybridization with a probe specific to human IMPDH2, detected either with FITC (**a**, **b**) or Texas Red-conjugated avidin (**c**) on metaphase chromosomes stained with DAPI (**a**, **b**) or FITC and R replicative banding (**c**).

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Results

Mapping data
Location: 3p21
Number of cells examined: 25
Number of cells with specific signal: 1 (1), 2 (7), 3 (9), 4 (8) chromatids per cell
Most precise assignment: 3p21.2
Location of background signals: none observed

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