
Localization of monoamine oxidase A and B genes on the mouse X chromosome

J.M.J.Derry, N.C.Lan¹, J.C.Shih¹, E.A.Barnard and P.J.Barnard

MRC Molecular Neurobiology Unit, Medical Research Council Centre, Hills Road, Cambridge CB2 2QH, UK and ¹University of Southern California School of Pharmacy, Los Angeles, CA 90033, USA

SOURCE/DESCRIPTION: A 700bp *SacI* fragment of the 2.1 kb human monoamine oxidase A(MAOA) cDNA, cloned in the *EcoRI* site of pUC19, and a 2.5 kb cDNA of the human monoamine oxidase B gene(MAOB) in the *EcoRI* site of pSP6T719 (1).

POLYMORPHISM: The MAOA probe recognises a 14 kb S allele and two M alleles at 6.6 and 4.4 kb in *Taq* digests. The MAOB cDNA recognises two S alleles at 6.6 and 4.8 kb and two M alleles at 9.0 and 5.1 kb in *Taq* digests (Fig.1).

FREQUENCY: The M alleles are detected in the inbred *Mus musculus* (C57BL/10) strain, and the S alleles in the *Mus spretus* mouse.

NOT POLYMORPHIC FOR: *PstI*, *MspI*.

CHROMOSOMAL LOCALISATION: The mouse genes homologous for MAOA and MAOB have been mapped to the *Cybb* - *Timp* interval of the proximal mouse X chromosome by genetic breakpoint analysis. This predicts a human localisation of Xp21.1-p11.21 for both genes, and is in agreement with published human mapping data (2) showing conservation of gene order.

MENDELIAN INHERITANCE: Segregation of the restriction fragments was followed in 60 recombinant backcross progeny, resulting from an interspecific backcross between *Mus musculus* x *Mus spretus* mice. 6 animals in this pedigree recombine in the *Cybb* - *Timp* interval and both *Maoa* and *Maob* co-segregate with *Timp* in 5 of 6 recombinant animals. This suggests *Maoa* and *Maob* lie close together on the mouse X-chromosome and centromeric to *Timp*.

PROBE AVAILABILITY: Contact Dr J.C. Shih.

OTHER COMMENTS: We propose the gene symbols *Maoa* and *Maob* to identify the mouse equivalents of MAOA and MAOB.

REFERENCES: 1. Bach *et al.*, *Proc.Natl.Acad.Sci. USA* 85, 4934-4938 (1988).
2. Lan *et al.*, *Genomics* 4, 552-559 (1989).

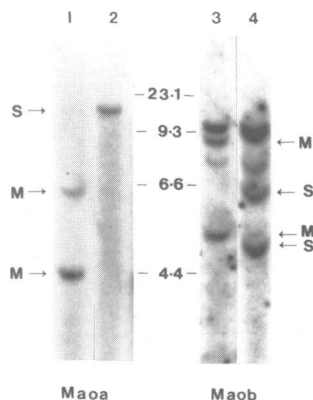


Fig. 1. Autoradiogram of a southern blot of *Taq I* digested murine DNA probed with a 700bp *Maoa* cDNA probe (lanes 1 and 2), and a 2.5 kb *Maob* cDNA probe (lanes 3 and 4). Lanes 1 and 3 show the *musculus* alleles (M) and lanes 2 and 4 the *spretus* alleles (S). Common bands are seen in lanes 3 and 4 at 9.5 kb and 7.5 kb.