

## A restriction fragment length polymorphism at murine *Glud* locus co-segregates with *Rib-1*, *Es-10*, and *Tera* on chromosome 14

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**SOURCE/DESCRIPTION:** The plasmid, pGB2862, contains a 2.0 kb Eco RI fragment of a glutamate dehydrogenase (GLUD) cDNA which was cloned from a human brain expression library (1).

**POLYMORPHISM:** Constant Stu I bands were found at 0.8, 3.0 and 11.0 kb in allele **a** and **b**. Three allelic forms of *Glud* were detected by Stu I digestion: bands were found at 8.0 kb in allele **a**, 7.8 kb in allele **b**, and 7.9 kb and 8.3 kb in allele **c** (Fig 1).

**FREQUENCY:** Among inbred *Mus musculus*, allele **a** is found in strains A/J, AKR/A, BALB/cAnPt, BALB/cHeA, BALB/cJ, BUB/BnJ, CE/J, C57BL/6J, C57BL/6KaPt, C57BL/10SnJ, C3H/HeJ, C3H/HeN, DD, MRL/MpJ, NZB/BINJ, NZW/N, 020/A, RF/J, STS/A, SWR/J, and YBR/Ei. Allele **b** is found in DBA/2J, DBA/2N, P/J, and 129/J. Allele **c** is found in a wild derived strain of *Mus musculus domesticus* from Centerville, MD (CLA).

**NOT POLYMORPHIC FOR:** (BALB/cHeA-STs/A): EcoRI, BamHI, HindIII, PvuII, KpnI, StuI, and XbaI.

**CHROMOSOMAL LOCALISATION:** Segregation of the 7.8 and 8.0 kb restriction fragments was followed in 22 BXD recombinant inbred mice. Analysis of the distribution of *Glud* alleles with other markers in the BXD RI strains shows concordancies mapping *Glud* to within  $4.29 \pm 17.56$  cM from *Rib-1* and  $4.84 \pm 21.1$  cM from *Es-10*, each located on chromosome 14. The human *GLUD* gene is located on chromosome 10q23-24 and has a pseudogene (GLUDP1) on human Xq24-26 (2,3).

**MENDELIAN INHERITANCE:** BXD RI strains: *Glud*<sup>a</sup>: 1,5,6,12,13,16,21,22,23,24,25,28,30; *Glud*<sup>b</sup>: 2,9,11,14,15,19,29,31,32. Segregation of the 8.0 and 7.8 kb bands was followed by testing F2 progeny of a CLA x BALB/cJ intercross. Forty-seven F2 progeny, resulting from an intercross between (CLA x BALB/c)F1 mice, were typed for cosegregation of *Glud* alleles with those for *Tera* (4); 8% recombination was detected between *Glud* and *Tera*. The 8.3 kb Stu I fragment found in CLA mice was not localized in this study.

**PROBE AVAILABILITY:** Contact Dr. C. Banner, NINCDS, NIH

**REFERENCES:** 1. Banner *et al.*, J. of Neurochemistry. (1987) 49: 246-252. 2. McKusick, Clinical Genetics. (1986) 29: 574-588. 3. Hanauer *et al.*, Cytogenet. Cell Genet. (1984) 39: 647-648. 4. Davis *et al.*, Nature. (1985) 317: 430-434.

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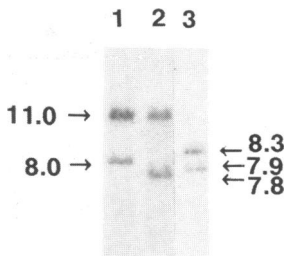


Fig 1. Autoradiogram of a Southern blot of Stu I digested murine DNA probed with the 2.0 kb Eco RI insert of pGB2862. Lane 1 represents C57BL/6J typical of allele **a**. Lane 2 represents DBA/2J typical of allele **b**. Lane 3 represents CLA typical of allele **c**.