

B6系統にEL系統のけいれん発作感受性QTLを導入したマウス

B6 background congenic strains carrying EL mice-derived epilepsy prone quantitative trait loci.

田中 和明 准教授

麻布大学 獣医学部 動物応用科学科 動物工学研究室

Kazuaki Tanaka / Associate Prof.

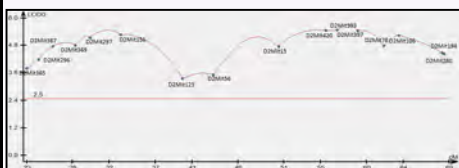
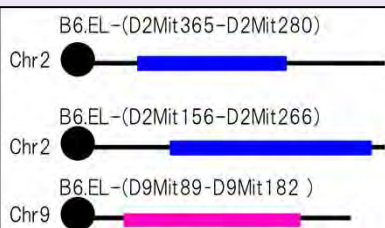
Department of Animal Science and Biotechnology, School of Veterinary Medicine



The EL inbred mouse strain is a model of polygenic epilepsy. Linkage analysis of epilepsy gene of EL mice were reported in the 1990's. In the previous studies, two major QTLs were roughly mapped on the chromosome 2 and 9. However the candidate gene for epilepsy of EL mice remain to be found. One of the serious problems is ABP mice strain that were used as partner in previous genetic analysis. That is because there is insufficient knowledge of the ABP strain.

We developed C57BL/6 background congenic strains that contain the genomic fragments of epilepsy prone QTLs on the chromosomes 2 and 9 of EL mice. These novel congenic strains showed convulsive seizures under gentle rhythmic tossing test. Thus, we confirmed that previously reported QTLs were effective in B6 genetic backgrounds. We expect that these animals will be used by many researchers for understanding of mechanism of epilepsy and for developing antiepileptic drugs.

Our three congenic strains carry genomic intervals from D2Mit365 (27.8Mbp) to D2Mit280 (146Mbp), from D2Mit156 (57.1Mbp) to D2Mit266 (181.8Mbp), and from D9Mit89 (29.5Mbp) to D9Mit182 (101.5Mbp), respectively.



The linkage analysis of B6.EL-(D2Mit365-D2Mit280) using B6-backcross population showed that there were several epilepsy prone genes in the chromosome 2 of EL mice. Thus this congenic strain is a of model polygenic epilepsy.

Strain	Seizure -susceptible animal (%)	
	Female	Male
EL	100	100
C57BL/6	0	0
B6.EL-(D2Mit365-D2Mit280)	58.3	94.3
B6.EL-(D2Mit156-D2Mit266)	25.0	23.5
B6.EL-(D9Mit89 - D9Mit182)	22.2	63.6