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## Corpus Callosum Size is Influenced by the X Chromosome

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The corpus callosum is the largest fiber tract in the brain that connects the left and right cerebral hemispheres. Corpus callosum size is a complex quantitative trait showing a continuous range of values and is influenced by interactions between multiple genes and environmental effects. Reciprocal crosses between inbred mouse strains BTBR T/+ tf/tf (BTBR) (lacking a corpus callosum) and BALB/cByJ (BALB) (having a corpus callosum) indicate the presence of a gene on the X chromosome affecting corpus callosum size. Midsagittal corpus callosum area was measured, and corrected for brain weight in male and female F1 offspring from reciprocal crosses between BTBR and BALB mice. Analysis of variance (ANOVA) showed significant differences in the midsagittal corpus callosum area between (BTBR x BALB)F1 and (BALB x BTBR)F1 male mice ( $p < .0001$ ), while there was no difference in midsagittal corpus callosum area between reciprocal females ( $p = .9885$ ). Specifically, the presence of the X chromosome derived from BTBR was associated with a decrease in the mean midsagittal area of the corpus callosum. Genotyping of backcross male progeny, at four informative single nucleotide polymorphisms (SNPs) spaced along the X chromosome, showed linkage to SNP X.121.232 (LOD=6.1).