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Figure legends

Fig. 1. PLP-positive cells in adult optic nerves of wild-type and CST-deficient mice. (*A-D*) The mRNA expression pattern of the oligodendrocyte marker PLP in 4- (A, B) and 22-week-old (C, D) wild-type (WT; +/+) and CST-deficient (CSTKO; -/-) mice were examined by *in situ* hybridization. Scale bar indicates 100 μm. (*E*) Comparative cell densities of PLP mRNA-positive cells in the optic nerves are shown. Each value represents the mean ± SEM of the data obtained from four animals. *, $P < 0.05$; ***, $P < 0.001$ vs. control.

Fig. 2. NG2-positive cells in the optic nerve of 4-week-old wild-type and CST-deficient mice. (*A, B*) The expression pattern of the oligodendrocyte precursor cell marker, NG2, in wild-type (WT; +/+) and CST-deficient (CSTKO; -/-) mouse optic nerves were examined using an antibody specific to NG2. Scale bar indicates 50 μm. (*C*) Comparative cell densities of NG2-positive cells are shown. (*D*) The total cell number and number of NG2-positive cells were counted in each nerve area and the percentage of NG2-positive cells was calculated. Each value represents the mean ± SEM of the data obtained from four animals. *, $P < 0.05$; ***, $P < 0.001$ vs. control.

Fig. 3. GLAST- and *c-fms*-positive cells in optic nerves of wild-type and CST-deficient adult mice. The cell densities of astrocytes and microglia were examined by *in situ* hybridization using the cell-specific markers, GLAST (A) and *c-fms* (B), respectively. Each value represents the mean ± SEM of the data obtained from four animals.

Fig. 4. Number of OPCs and the proportion of dying or proliferating cells in 5-day-old optic nerves of wild-type and CST-deficient mice. (*A-F*) Double labeling of NG2 (green)/PI (red) was performed on optic nerves from 5-day-old wild-type (+/+; A-C) and CST-deficient (-/-; D-F) mice. Scale bar represent 25 μm. (*G-I*) Total cell numbers (G) or the number of NG2-positive cells (H) per area, and percentages of NG2-positive cells (I) in both wild-type (WT) and CST-deficient (CSTKO) optic nerves are shown. (*J, K*) One day after BrdU injection, the densities of dying cells (J) and proliferating cells (K) were

examined using specific antibodies against ssDNA or BrdU, respectively. Each value represents the mean ± SEM of the data obtained from three individual animals of each genotype. *, $P < 0.05$; ***, $P < 0.001$ vs. control.

Fig. 5. Regional differences in OPC numbers during early development of optic nerves in wild-type and CST-deficient mice. Transverse serial cryosections (10 μm) were prepared by cutting 1-day-old (H-J) and 3-day-old (B-G; K-M) optic nerves of wild-type and CST-deficient mice from the retinal to the chiasmal side. (*A*) A schematic representation of the optic nerve regions (positions 1 to 6) is illustrated. Optic nerves of wild-type (+/+) and CST-deficient (-/-) mice were divided into six regions (250 μm each, for a total of 1.5 mm; see the materials and methods for details). (*B-G*) The 10-μm-thick sections from each region were triple stained with NG2 (red), BrdU (green) and DAPI (blue). Representative pictures in B/C, D/E, and F/G were obtained from positions 1, 3 and 6, respectively. (*H- M*) The average number of NG2-positive cells per nerve area (H, K), percentages of NG2-positive cells (I, L) and percentages of BrdU-positive cells in NG2-positive cell populations (J, M) from three sections at each optic nerve position are represented as mean ± SEM. Each value represents the mean of the data obtained from two individual animals (H-J; 1-day-old mice) and three individual animals (K-M; 3-day-old mice) of each genotype. *, $P < 0.05$; ***, $P < 0.001$ vs. control.

Fig. 6. Myelinated axons in 10-day-old CST-deficient optic nerves. (*A, B*) Optic nerves prepared from 10-day-old wild-type (A) and CST-deficient (B) mice were examined by electron microscopy. (*C*) The percentages of myelinated axons are shown. Each value represents the mean ± SEM of the data obtained from two animals of each genotype. *, $P < 0.001$ vs. control.

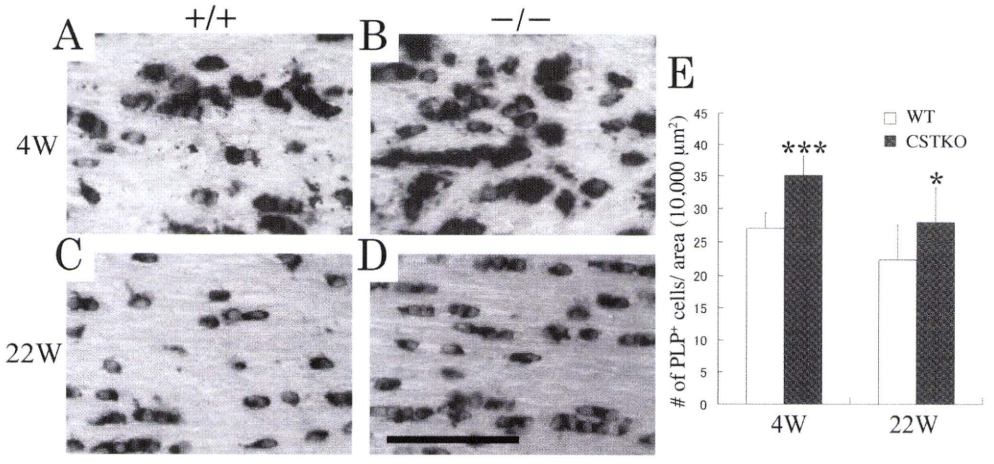


Fig.1 Kajigaya et al. Oligodendrocytes in sulfatide-null optic nerve. black and white

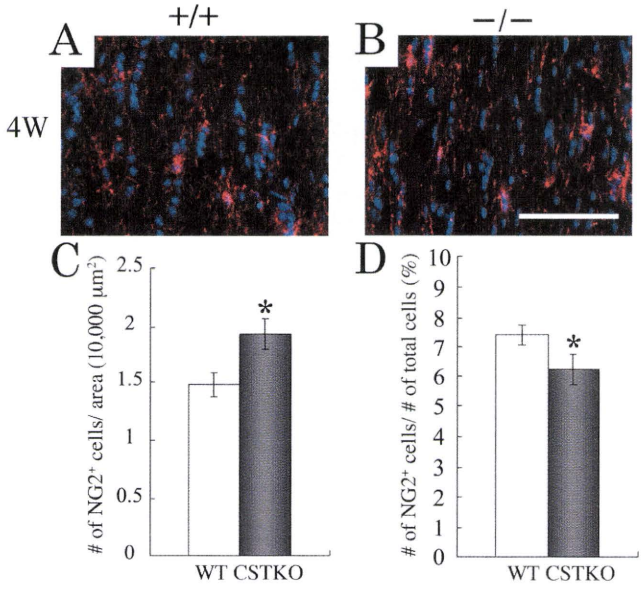


Fig. 2 kajigaya et al. Oligodendrocytes in sulfatide-null optic nerve color

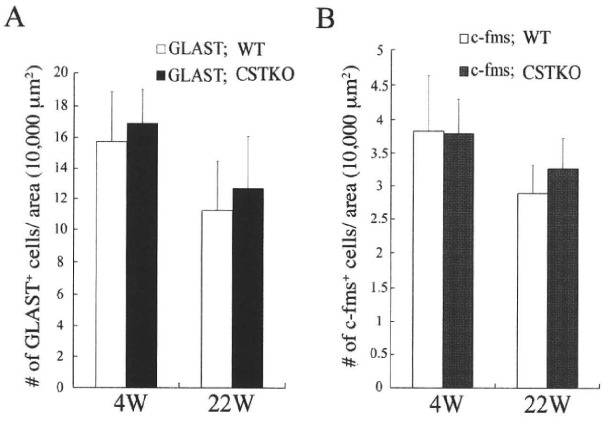


Fig. 3 Kajigaya et al, Oligodendrocytes in sulfatide-null optic nerve
black and white

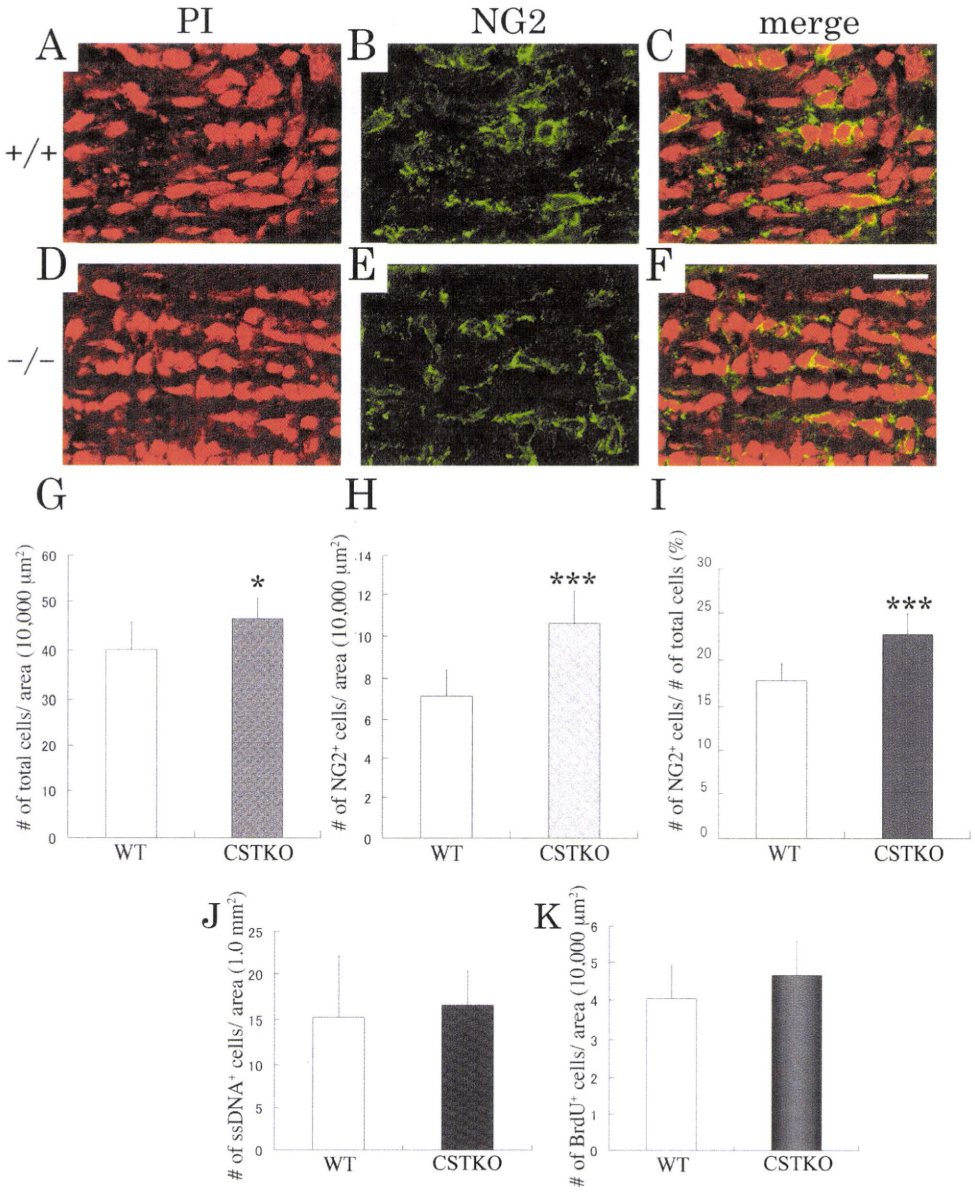
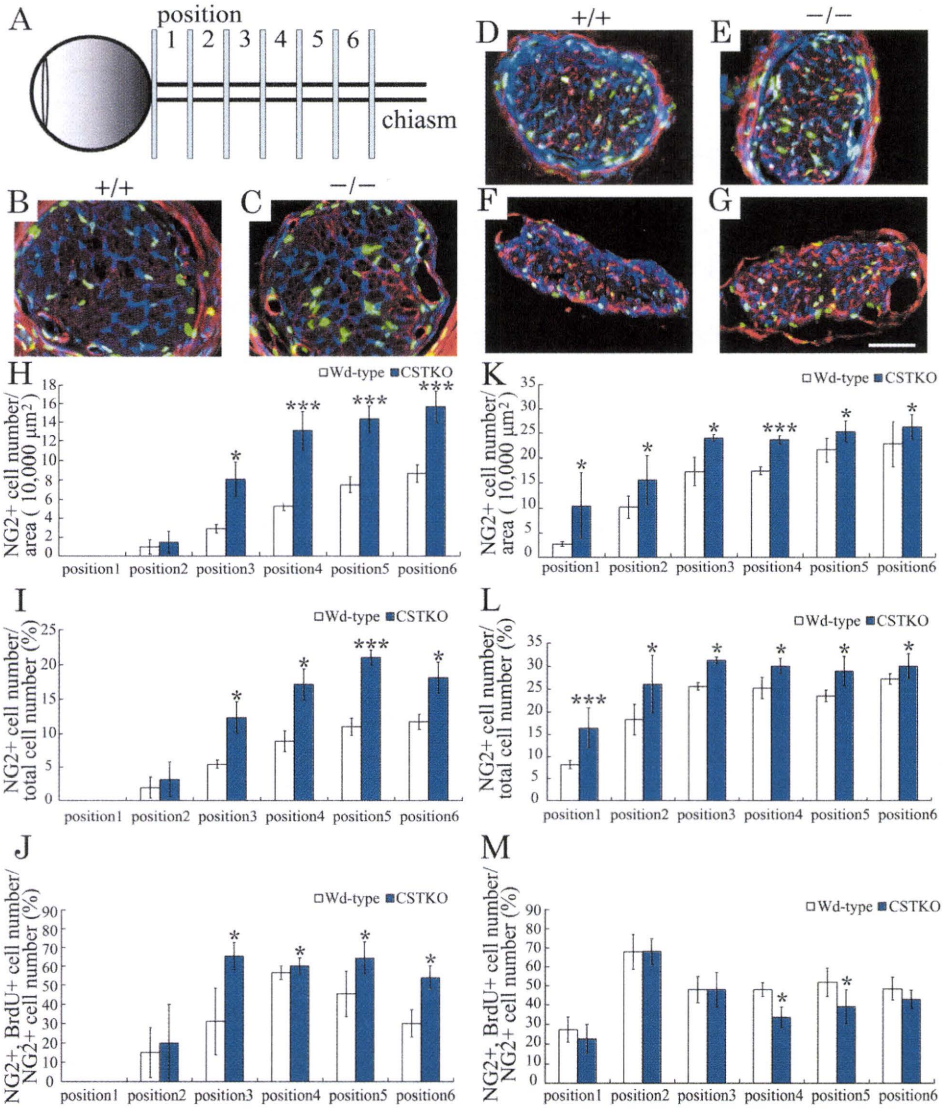


Fig 4 Kajigaya et al. Oligodendrocytes in sulfatide-null optic nerve. color


A
position
1 2 3 4 5 6
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B +/+
C −/−
D +/+
E −/−
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Wd-type CSTKO
position1 position2 position3 position4 position5 position6
K
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I
NG2+ cell number/ total cell number (%)
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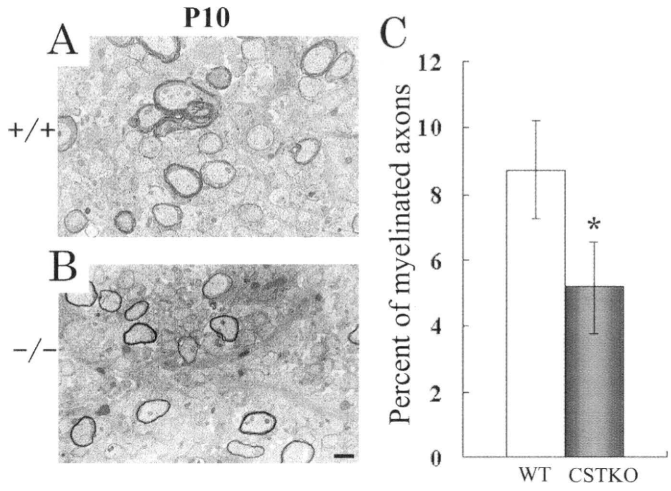

Fig. 6 Kajigaya et al. Oligodendrocytes in sulfatide-null optic nerve.
black and white