**Supplementary Figure 6** Retinotectal projection at E19 in embryos electroporated with RCAS/PtproΔN(DA).  (a) Schematic representation of structures of the full-length Ptpro, PtproΔN(WT), and PtproΔN(DA). ΔN indicate truncated forms of Ptpro lacking the extracellular domain.  (b) Lack of dephosphorylation of EphA4 by a truncated wild-type Ptpro. NIH3T3 cells were transfected with the indicated amounts of expression plasmids. Amounts of EphA4 were adjusted to easily compare the phosphorylation levels (pEph). Expression of PtproΔN(WT) had little effect on the phosphorylation level of EphA4 (lane 4). Coexpression of PtproΔN(DA) and the full-length Ptpro(WT) showed a small but significant dominant-negative effect of PtproΔN(DA) on the full-length Ptpro(WT) (lanes 6, 7). Lane 1 is a negative control with the empty vectors.  (c) Expression of PtproΔN(DA) in E8 chick retina, which was electroporated with RCAS/PtproΔN(DA) at E1.5. The electroporated retinal section was stained with anti-HA and Alexa488-conjugated secondary antibodies. Almost all cells in the ganglion cell layer (GCL) expressed PtproΔN(DA).  (d) Effects of expression of Ptpro constructs on the tyrosine phosphorylation level of Eph receptors. Lysates prepared from E10 chick retina electroporated with RCAS/EGFP, RCAS/PtproΔN(WT), or RCAS/PtproΔN(DA) constructs were analyzed using anti-phospho Eph receptors (pEph) and anti-EphA4 (EphA4) antibodies. Expression of PtproΔN(DA) in the retina increased the tyrosine-phosphorylation level of Eph receptors, but PtproΔN(WT) failed to decrease the tyrosine-phosphorylation level of Eph receptors. The truncated form of Ptpro thus appears to be inactive, in contrast to the full-length Ptpro (see Fig. 6b).  (e) A typical projection pattern in the control embryo. The dorsonasal axons formed a tight terminal zone (asterisk) at the posterior tectum. Posterior is up and anterior is down.  (f) Typical projection pattern of the dorsonasal retinal axons in the embryo in which PtproΔN(DA) was misexpressed. None of the axons projected to the proper terminal zone (asterisk). The ectopic arborizations and aberrant axonal trajectory are marked by white arrowheads and arrows, respectively. Dorsonasal axons stopped anterior of the tectum and formed diffuse terminal zones (3 out of 6 embryos). On the other hand, dorsotemporal axons formed a tight terminal zone at the proper position (data not shown; n = 6). In embryos in which PtproΔN(WT) was overexpressed, dorsonasal and dorsotemporal axons projected to the normal terminal zone (data not shown; n = 8 and n = 9, respectively).  (g) Schematic drawing of the position of the DiI label in the dorsonasal area of the right retina. D, dorsal; V, ventral; N, nasal; T, temporal.  (h, i) Schematic drawings of (e) and (f), respectively.