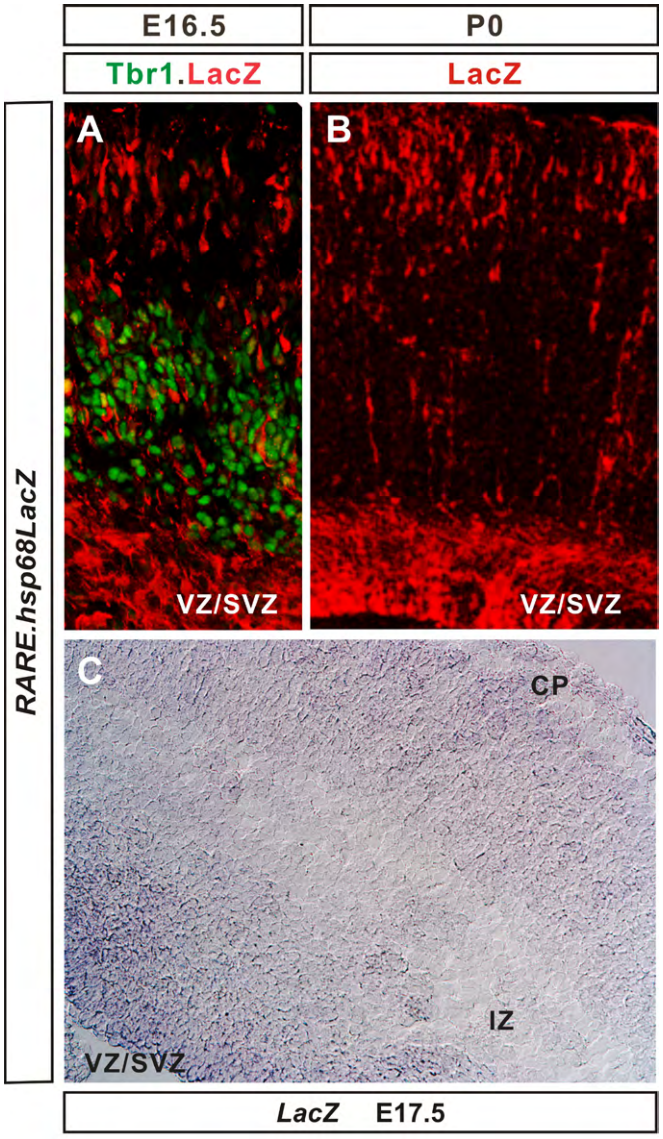

Figure S1. Activated RARs are present within cortical progenitors.
(A, B) Confocal images of coronal sections of *RARE.hsp68LacZ* mouse cortices. LacZ expression is evident within Ventricular zone/ Subventricular zone (VZ/SVZ) progenitor cells at embryonic and early postnatal stages. (C) In situ hybridization showing distribution of LacZ transcripts at E17.5. Higher LacZ expression is observed in VZ/SVZ regions with scattered expression in the intermediate zone (IZ) and cortical plate (CP).

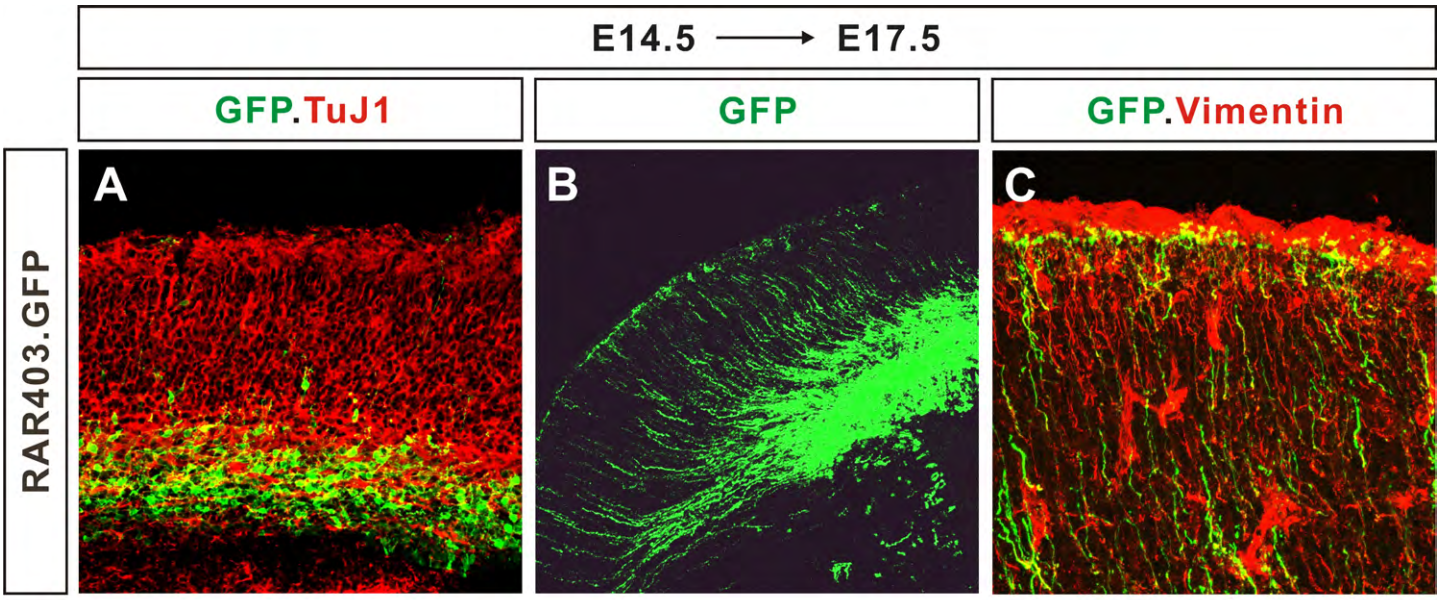

Figure S2. RAR403 disrupts radial migration in postmitotic neurons without affecting radial glial scaffolds.
(A-C) Confocal images of coronal sections of mouse cortices electroporated with constructs expressing RAR403.GFP at E14.5 and analyzed at E17.5. In (A) RAR403.GFP$^+$ cells express the neuronal marker TuJ1. (B, C) GFP staining shows that cells expressing RAR403.GFP extend normal processes to contact the pial surface and that neighboring vimentin$^+$ radial glia show grossly normal formation of the radial scaffold.

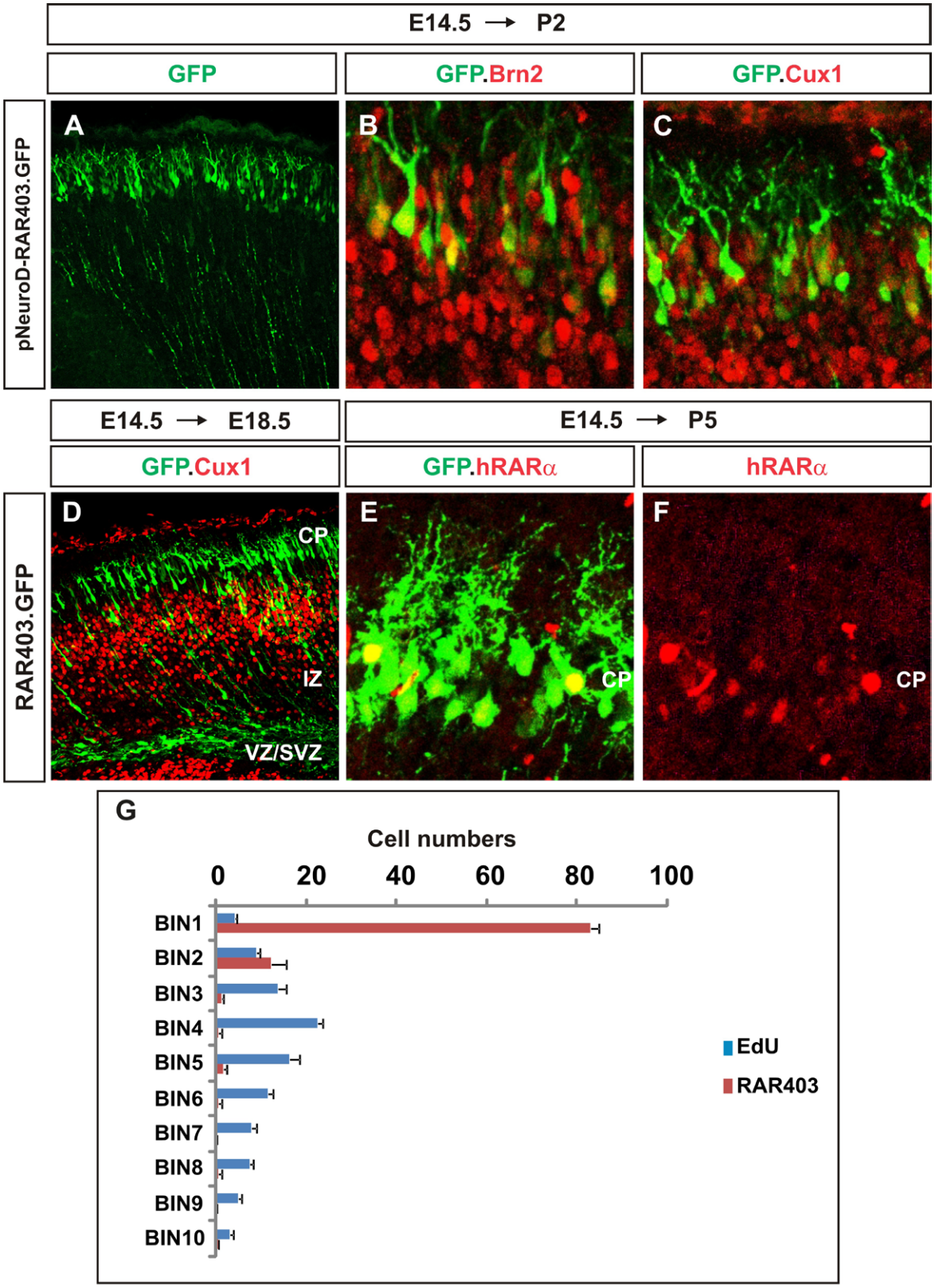

Figure S3. RAR403.GFP expressing neurons adopt layer II cortical neuronal fates.
(A-C) Images showing that expression of RAR403.GFP in postmitotic neurons using the NeuroD promoter mimic the phenotype of cells that initiate expression of RAR403.GFP in progenitors when CAGGS promoter constructs are used. (D) Electroporation of RAR403.GFP at E14.5 retards initial migration; however, RAR403.GFP$^+$ cells exhibit radial migration 4 days after electroporation. (E, F) Cells electroporated with RAR403.GFP at E14.5 maintain expression of RAR403 at P5 as visualized by antibodies directed against hRARα. CP: cortical plate; VZ: ventricular zone; SVZ: subventricular zone; IZ: intermediate zone. (G) The dorsal-ventral extent of the cortex was divided into 10 bins as described in Figure 5C. Graphs quantify the numbers in each bin of EdU$^+$ cells on the contralateral unelectroporated cortex (blue) compared with RAR403.GFP$^+$ cells (red). RAR403$^+$ cells are present in the most superficial bins in contrast to unelectroporated EdU$^+$ neurons. Mean ± SEM. n = 6-8 animals.

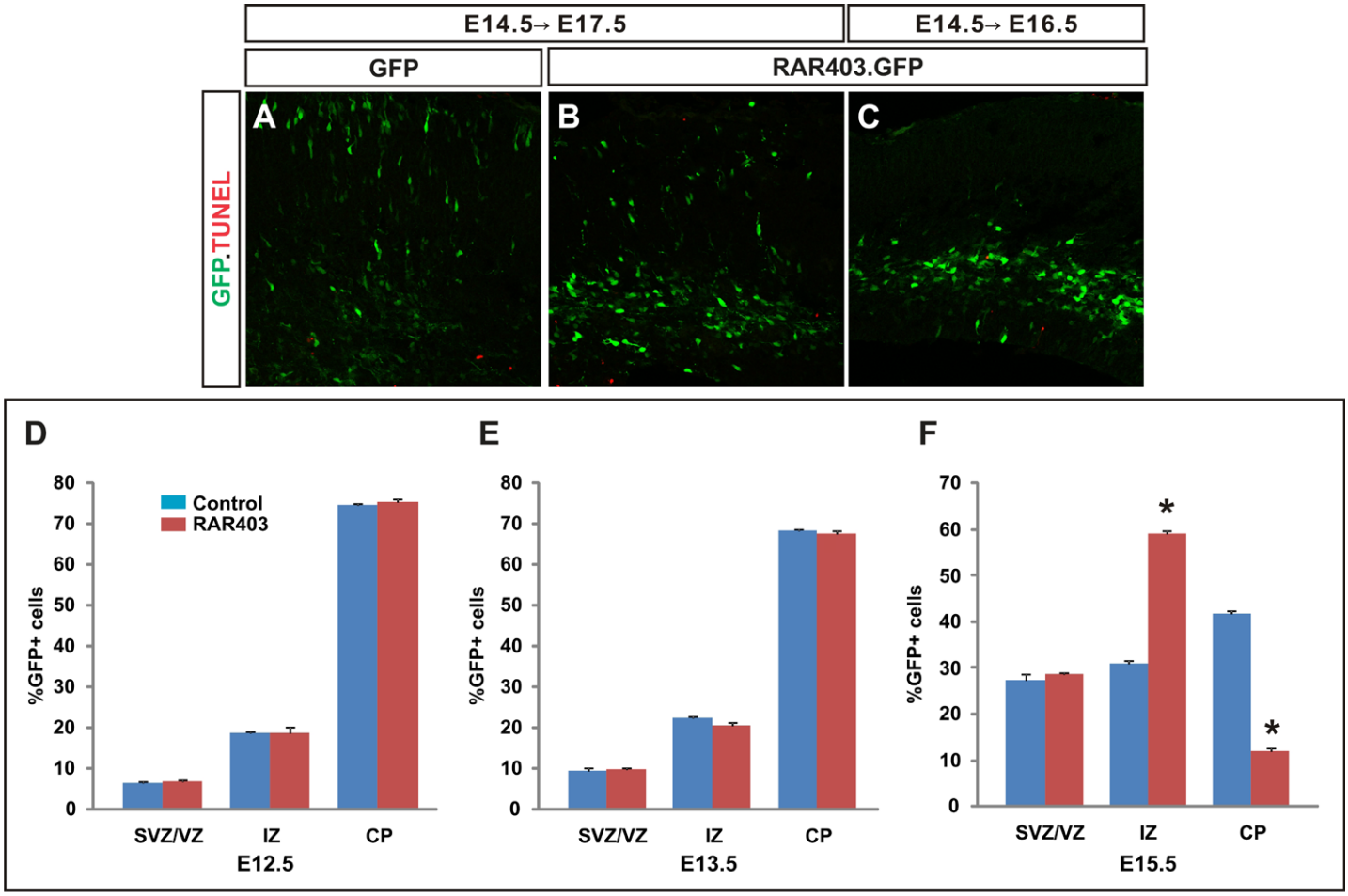

Figure S4. RAR403 alters neuronal migration of specific subsets of cortical neurons and does not cause cell death.
(A-C) Sections of mouse cortices show that comparable amounts of TUNEL positive cells are evident between control and RAR403. GFP electroporated conditions. (D-F) Graphs quantifying the distribution of GFP+ cells in the ventricular/subventricular zones VZ/SVZ, intermediate zone (IZ) and cortical plate (CP) when cortices are electroporated at E12.5, E13.5 or E15.5 and analyzed 3 days later. Mean ± SEM. n = 6-8 animals. In (D) and (E), $p > 0.05$; (F) SVZ/VZ $p=0.3730$; IZ $*p=5.939 \times 10^{-6}$; CP $*p=8.734 \times 10^{-6}$.

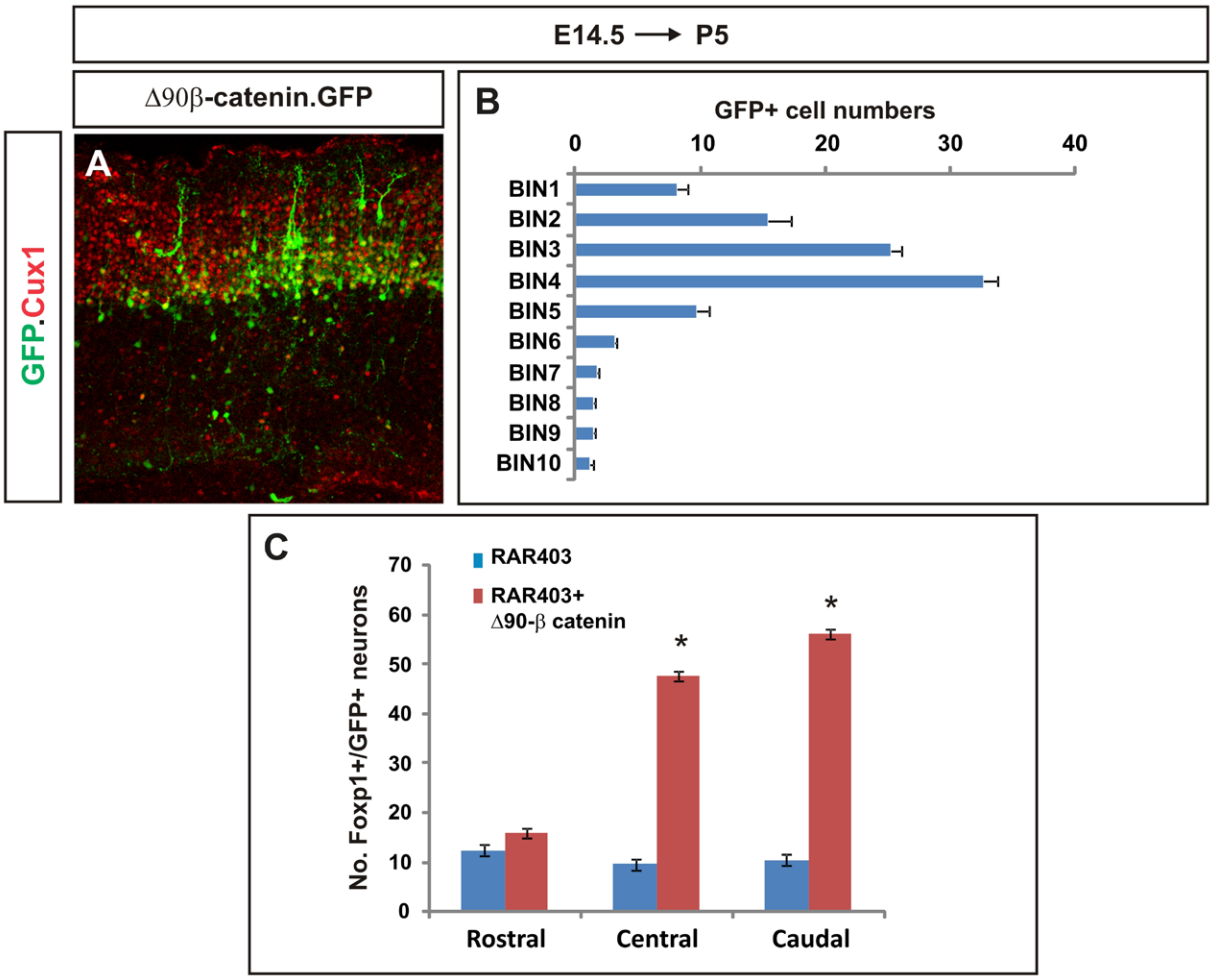

Figure S5. Δ90β-catenin rescues the fates of RAR403.GFP^{+} neurons.
(A) Representative section of mouse cortex electroporated with Δ90 β-catenin. No obvious changes in cell body position or fate are observed. (B) Graphs quantifying the number of neurons located in Bins distributed along the dorsal-ventral axis according to Figure 5C; Δ90 β-catenin GFP^{+} neurons occupy similar positions for control neurons born at the time of electroporation (see Figure S3). (C) Graph quantifying the numbers of GFP^{+} neurons expressing Foxp1 in sections of rostral, central and caudal cortices electroporated with RAR403 alone or RAR403^{+}Δ90-β catenin. Mean ± SEM, n=4 animals; p Rostral=0.089 ; *p Central=$6.54\text{x}10^{-5}$; *p Caudal=$3.667\text{x}10^{-5}$.

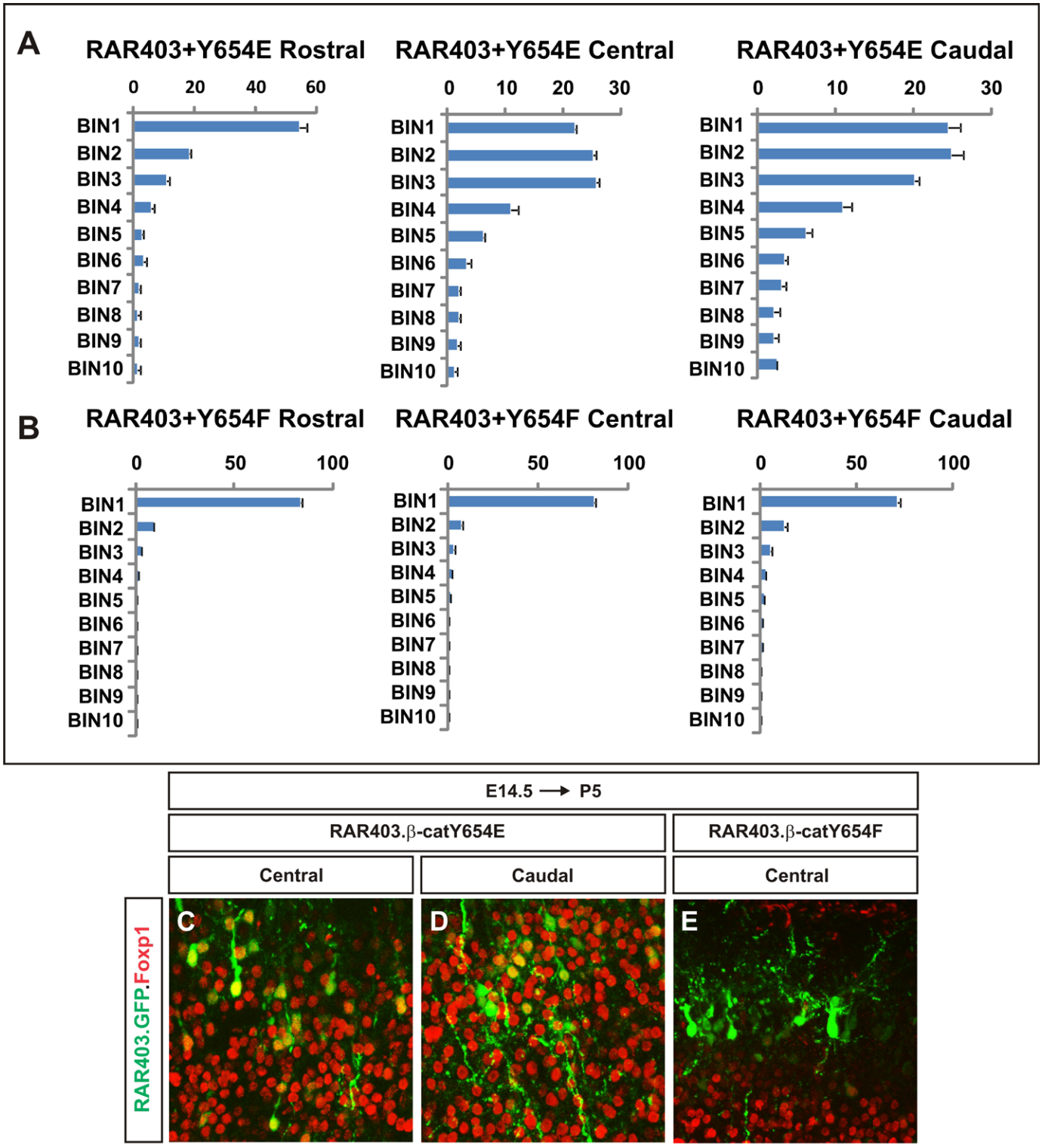

Figure S6. Cortical fate disruption elicited by RAR403.GFP expression is rescued by β-catenin.
(A, B) Analysis of cell body position of RAR403.GFP+ neurons coexpressed with β-catY654E or β-catY654F. Graphs show quantification of the number of neurons located in Bins distributed along the dorsal-ventral axis according to Figure 5C. Mean ± SEM; n= 6-8 animals. β-catY654E partially rescues the cell body position of RAR403 expressing neurons but β-catY654F does not. (C-E) Confocal images of coronal sections of mouse cortices electroporated at E14.5. Analyses at P5 shows that neurons coelectroporated with RAR403 and β-catY654E express Foxp1 and are distributed throughout lower layers of the central and caudal cortices; however, this is not the case when RAR403 is coelectroporated with β-catY654F

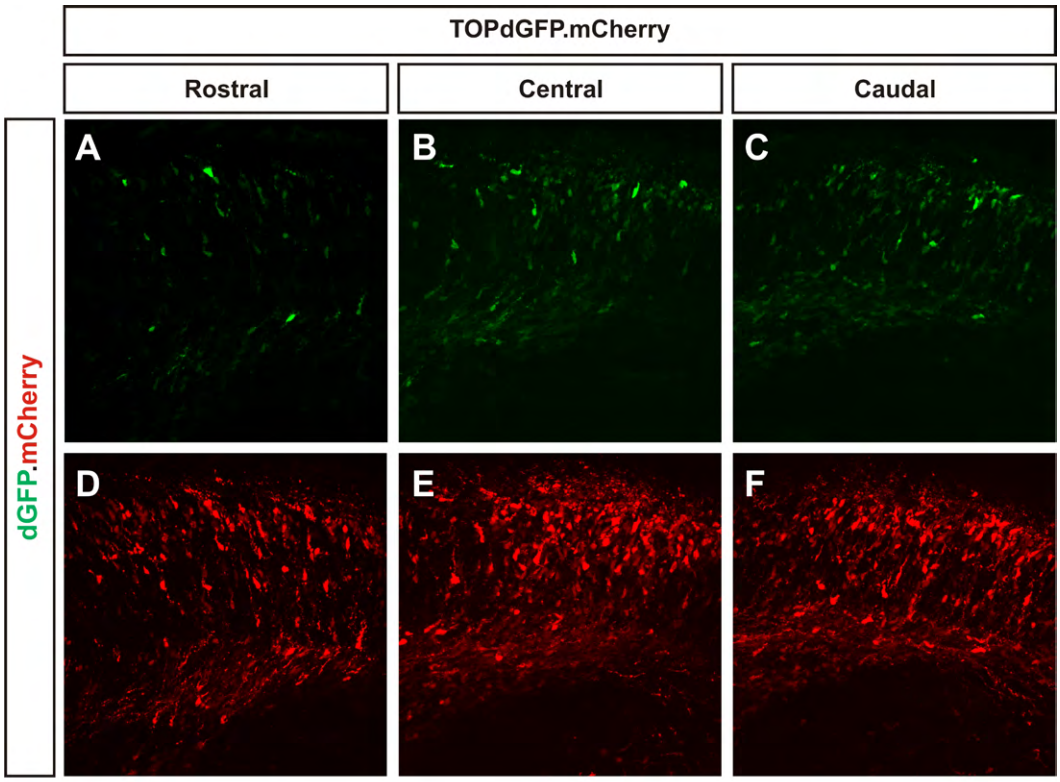

Figure S7. The TOPdGFP reporter gene is activated at central and caudal cortical regions.
(A-F) Representative sections of rostral, central and caudal cortices electroporated with TOPGFP and mCherry show GFP expression at central and caudal regions, consistent with region-specific activation of β-catenin.