

Supplementary Information on

Maturation of postnatally generated olfactory bulb granule cells depends on functional γ -protocadherin expression

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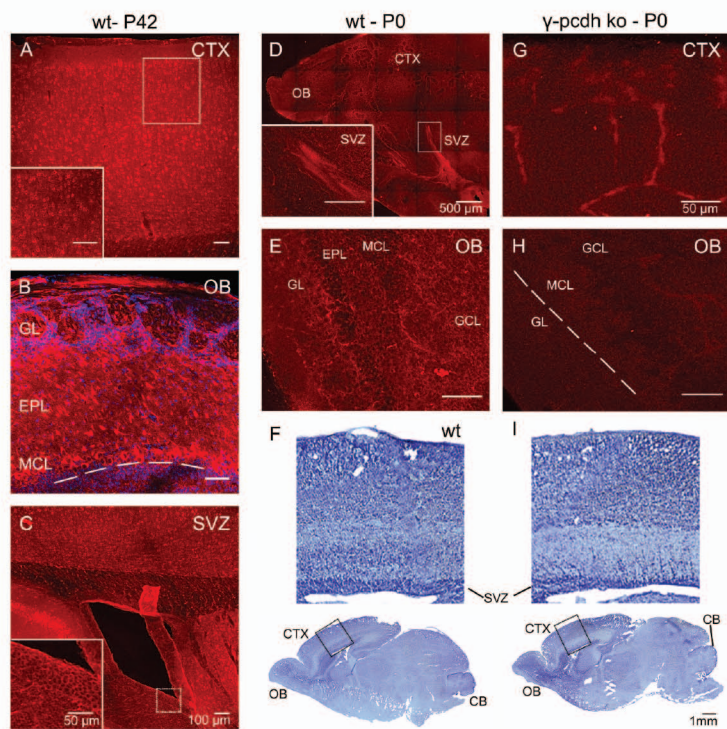


Figure S1. Expression of γ -pcdhs in the adult and postnatal mouse brain. (A-C) Abundant γ -pcdh expression is found throughout the adult mouse brain, in the cortex (A), in the OB (B) and in the SVZ (C), as shown for γ -pcdh immunolabeling on parasagittal sections of adult wt mice at P42. Insets showing magnification of cortex (A) and SVZ (C). (D, E) Ubiquitous γ -pcdh expression in the SVZ (D) and in the OB (E), shown on parasagittal sections of postnatal wt brain at P0. Inset in (D) showing magnification of SVZ. (G, H) No expression of γ -pcdhs is found in the postnatal γ -pcdh ko brain at P0. (F, I) Nissl staining on parasagittal sections revealed no gross defects in cortical layering in wt mice nor in their γ -pcdh ko siblings at P0. Abbreviations: CTX, cortex, EPL, external plexiform layer; GL, glomerular cell layer; GCL, granular cell layer; MCL, mitral cell layer; OB, olfactory bulb, SVZ, subventricular zone. Scale bars in A-C, 100 μm , in insets 50 μm , in D 500 μm , in inset 50 μm , in E, G, H 50 μm , in F, I 1 mm.

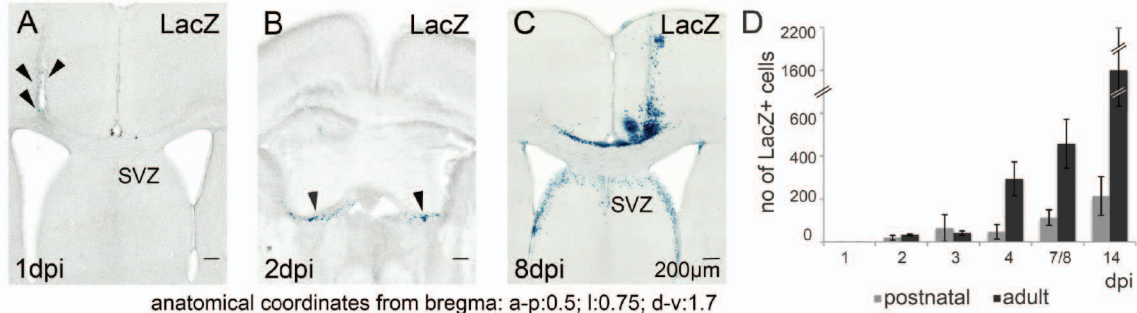


Figure S2. Onset of Cre recombinase activity. (A-C) Injection of LV-Cre-EGFP in the SVZ of Rosa26 reporter mice showing the onset of Cre recombinase activity by LacZ staining in the SVZ as early as 1 dpi (black arrows, A) with increasing signal intensity, here shown on a light microscopy image for 2 and 8 dpi on coronal sections (black arrows, B). Injection coordinates at the bottom of the images (a-p, anterior-posterior; l, lateral; d-v, dorso-ventral). (D) Quantification of cell numbers in postnatal and adult injected Rosa26 reporter mice at different stages after injection. Scale bars in A-C 200 μ m.

Table S1. Quantitative evaluation [average cell number \pm SEM] of EGFP⁺ and Tom⁺ and EGFP⁺/Tom⁺ double-labeled cells in the SVZ and the OB of postnatal injected wt and γ -pcdh^{lox/lox} mice.

Age [dpi]	wt (SVZ)	wt (SVZ)	wt (SVZ)	wt (OB)	γ -pcdh ^{lox/lox} (SVZ)	γ -pcdh ^{lox/lox} (SVZ)	γ -pcdh ^{lox/lox} (SVZ)	γ -pcdh ^{lox/lox} (OB)
	Tom ⁺	EGFP ⁺	EGFP ⁺ /Tom ⁺	EGFP ⁺ /Tom	Tom ⁺	EGFP ⁺	EGFP ⁺ /Tom ⁺	EGFP ⁺ /Tom
4	61.0 \pm 10.9	66.3 \pm 7.3	2.9 \pm 1.3	0	26.4 \pm 12.8	33.9 \pm 10.2	2.1 \pm 1.4	0.6 \pm 0.4
6	125.3 \pm 45.9	97.3 \pm 33.5	11.0 \pm 5.7	1.1 \pm 0.7	180.8 \pm 39.3	201.4 \pm 37.1	19.9 \pm 8.5	2.4 \pm 1.3
10	115.6 \pm 18.0	149.8 \pm 25.1	5.6 \pm 2.3	1.7 \pm 0.4	120.0 \pm 26.8	134.0 \pm 43.3	5.6 \pm 18.13	0.4 \pm 0.7
14	87.0 \pm 20.9	98.5 \pm 19.9	14.9 \pm 2.9	-	54.0 \pm 47.7	164.3 \pm 28.3	8.13 \pm 2.8	3.6 \pm 1.2
31 (21)*	73.8 \pm 8.5	94.0 \pm 7.3	10.5 \pm 1.5	-	36.8 \pm 4.7	129.4 \pm 23.8	-	-
42	-	-		-	52.4 \pm 32.2	139.4 \pm 38.9	-	-

* 31 dpi for wt injected mice, 21 dpi for γ -pcdh^{lox/lox} injected mice.

Table S2. Quantitative evaluation [%] for EGFP⁺/BrdU⁺ and Tom⁺/BrdU⁺ cells in the SVZ of postnatal injected γ -pcdh^{lox/lox} and wt mice.

Age [dpi]	wt Tom ⁺ /BrdU ⁺	wt EGFP ⁺ /BrdU ⁺		γ -pcdh ^{lox/lox} Tom ⁺ /BrdU ⁺	γ -pcdh ^{lox/lox} EGFP ⁺ /BrdU ⁺	
4	22.5 ± 0.8	28.5 ± 7.2	ns	2.4 ± 1.9	2.4 ± 3.4	ns
6	15.6 ± 5.8	14.0 ± 5.3	ns	25.5 ± 4.6	25.8 ± 4.1	ns
10	21.4 ± 4.6	22.2 ± 4.6	ns	20.2 ± 4.0	20.7 ± 4.6	ns

Table S3. Quantitative evaluation [%] of apical dendritic length, dendrite branching and spine counts of Tom⁺ and EGFP⁺ cells in olfactory GCs in wt and γ -pcdh^{lox/lox} injected mice.

Age [dpi]	Apical dendritic length			Dendritic branching			Spine count		
	Tom ⁺	EGFP ⁺		Tom ⁺	EGFP ⁺		Tom ⁺	EGFP ⁺	
wt									
10	143.2 ± 20.6	155.5 ± 11.3	p= 0.62	-	-	-	-	-	-
14	164.8 ± 22.7	187.3 ± 14.8	p= 0.39	-	-	-	-	-	-
γ -pcdh ^{lox/lox}	Tom ⁺	EGFP ⁺		Tom ⁺	EGFP ⁺		Tom ⁺	EGFP ⁺	
14	242.8 ± 32.1	176.9 ± 18.0	p= 0.08	1.5 ± 0.2	0.8 ± 0.1	p< 0.05	73.3 ± 9.4	13.2 ± 3.0	p< 0.0001
21	227.6 ± 33.5	218.2 ± 35.8	p= 0.08	1.3 ± 0.1	1.0 ± 0.1	ns	44.9 ± 6.6	5.5 ± 2.3	p< 0.05
42	204.2 ± 11.8	78.7 ± 19.3	p< 0.0001	2.1 ± 0.2	0.7 ± 0.1	p< 0.0001	-	-	-