

Supplementary figure legends

Fig S1. *Δ113p53* expresses in the ventricular zone of zebrafish telencephalon. (A) Top left panel: A schematic diagram representing zebrafish brain structure. The dotted lines with different number represent different positions in zebrafish telencephalon along the anterior to posterior axis. Gray color: olfactory bulb; Green color: telencephalon; Purple color: midbrain; Red color: hindbrain. Rest of panels: Diagrams representing cross sections of different regions in telencephalon corresponding to the positions as indicated by the dotted line in the top left panel. TV: telencephalic ventricle; D: dorsal telencephalic area; V: ventral telencephalic area; Vd: dorsal nucleus of V; Vv: ventral nucleus of V; RMS: rostral migratory stream; PPa: the anterior part of the parvocellular preoptic nucleus; Vp: the postcommissural nucleus of the ventral telencephalic area. **(B-E)** Cryosections of *Tg(Δ113p53:GFP)* telencephalons with different numbers corresponding to different regions as shown in **Figure S1A** were immunostained by anti-GFP (in green) and anti-GFAP (in red) antibodies. The nuclei were stained with DAPI (in blue). Scale bar, 50 μm.

Fig S2. Some of *Δ113p53* expresses in RMS-cells along the telencephalon ventricular zone. Cryosections of *Tg(Δ113p53:GFP)* telencephalon were immunostained by anti-GFP (in green) and anti-PSA-NCAM (in red). The nuclei were stained with DAPI (in blue). Framed area in **A** was magnified in **A'** (merged), **A''** (GFP) and **A'''** (PSA-NCAM). White arrows: GFP⁺/PSA-NCAM⁺ cells. Scale bar in **A**, 50 μm; Scale bar in **A', A'', A'''**, 10 μm.

Fig S3. Statistical analysis on the proportion of EDU⁺/GFP⁺/GFAP⁺ cells among GFP

positive radial glia cells and the EDU⁺/ GFAP⁺ cells among total radial glia cells along the VZ in Figure 2A. EDU-labelled adult *Tg(Δ113p53:GFP)* telencephalons were immunostained by anti-GFP (in green) and anti-GFAP (in red) antibodies (Figure 2A). The proportion of EDU⁺/GFP⁺/GFAP⁺ cells among GFP⁺/GFAP⁺ cells and the EDU⁺/ GFAP⁺ cells among total GFAP⁺ cells along the VZ of *Tg(Δ113p53:GFP)* telencephalon were calculated from 6-7 sections/telencephalon in 4 telencephalons. Each dot represents the percentage of EDU⁺/GFP⁺/GFAP⁺ cells among GFP⁺/GFAP⁺ cells or EDU⁺/ GFAP⁺ cells among GFAP⁺ cells of ventricular zone in one section. The *P* values were represented by N.S. and asterisks. N.S., *P* > 0.05.

Fig S4. Relative mRNA expression of Δ113p53 in Δ113p53^{+/+} and Δ113p53^{M/M} mutant telencephalons. The total RNA was extracted from a pool of at least 6 telencephalons of Δ113p53^{+/+} or Δ113p53^{M/M} mutant. The average gene expression was normalized against β-actin and expressed as fold change.

Statistical analysis was performed on relevant data using Student's two-tailed t-test. The *P* values were represented by N.S. and asterisks. ***, *P* < 0.001.

Fig S5. The expression of some antioxidant genes in Δ113p53^{+/+} and Δ113p53^{M/M} zebrafish telencephalons at different ages. (A-C) Relative mRNA expression of *sesn1*, *sesn2*, *sod1*, *sod2* at 3 (A), 6 (B) and 10 months-old (C) in the Δ113p53^{+/+} or Δ113p53^{M/M} telencephalons. The total RNA was extracted from a pool of at least 6 telencephalons in each group. The average gene expression was normalized against β-actin

and expressed as fold change.

Statistical analysis was performed on relevant data using Student's two-tailed t-test. N.S., $P > 0.05$.

Fig S6. $\Delta 113p53^{M/M}$ zebrafish telencephalon has increased levels of cell senescence marker SA- β -gal with age. (A-F) Senescence-associated β -galactosidase (SA- β -gal) staining in the telencephalons of $\Delta 113p53^{+/+}$ (A, D) and $\Delta 113p53^{M/M}$ zebrafish (B, E) at 3 and 22 months-old as indicated. Scale bar, 100 μ m. (C, F) The average SA- β -gal signal was quantified with Photoshop and presented as the percentage of pixels per unit area of the section measured in VZ. Each dot represents the average SA- β -gal signal in each section. About 3-5 sections were taken from the middle region of each telencephalon and at least 4 telencephalons were sampled in each group.

Statistical analysis was performed on relevant data using Student's two-tailed t-test. N.S., $P > 0.05$; ***, $P < 0.001$

Supplementary tables

Table. S1. The primer sequences and accession numbers of the analyzed genes in qRT-PCR.

Genes (Accession)	Primer sequences	
<i>β-actin</i> (NM_131031)	forward	CATTGGCAATGAGCGTTTC
	reverse	TACTCCTGCTTGCTGATCCAC
<i>Δ113p53</i> (NM_001328588)	forward	ATATCCTGGCGAACATTTGGAGGG
	reverse	CCTCCTGGTCTTGTAATGTCAC
<i>aldh4a1</i> (NM_201158)	forward	GAGCCCACAATAATCGAGAC
	reverse	CAGATTTGTCTTGGGGGAAG
<i>gpx1a</i> (NM_001007281)	forward	GCACCAGGAGAACTGCAAG
	reverse	TTCAGGAACGCAAACAGAGG
<i>sesn1</i> (NM_001002660)	forward	GGGTGTGGACACTTCCATGC
	reverse	CCGGAAGTGTCTCCAGAAGC
<i>sesn2</i> (NM_001079975)	forward	ATGTTTCAGCGCTCCGTCCTT
	reverse	CATCCAGAAGCTGCGCCATC
<i>sod1</i> (NM_131294)	forward	TGGGTAATGTGACCGCTGAT
	reverse	ACTTTCCTCATTGCCACCCT
<i>sod2</i> (NM_199976)	forward	ACTATGGTGCACCTTGAGCCT
	reverse	CGCCATTGGGTGACAGATT
<i>p21</i> (NM_001128420)	forward	TCCCGCATGAAGTGGAGAAA
	reverse	GACGCTTCTTGGCTTGGTAG
<i>sirt1</i> (XM_001334404)	forward	AAGGTGGACTGTGAAGCCAT
	reverse	ATCCTGCTTCATGGCTCTGT
<i>e2f1</i> (XM_005174533)	forward	GATCTCCTGGCTCAGTCTCC
	reverse	CTTCTGCAGCTCCTGAAACC
<i>cmyc</i> (NM_131412)	forward	CACTCCACCTAACAGCTCCA
	reverse	GGTACCTCGACTCTGAAGCA
<i>U6</i> (NM_001302466.1)	forward	TGCTCGCTACGGTGGCACA
	reverse	AAAACAGCAATATGGAGCGC
<i>miR-34a</i> (MI0001365)	forward	GCTGGCAGTGTCTTAGCTGGTTGT
<i>miR-34b</i> (MI0003690)	forward	GCTAGGCAGTGTTGTTAGCTGATTG
<i>miR-34c</i> (MI0004774)	forward	GCAGGCAGTGCAGTTAGTTGATTAC