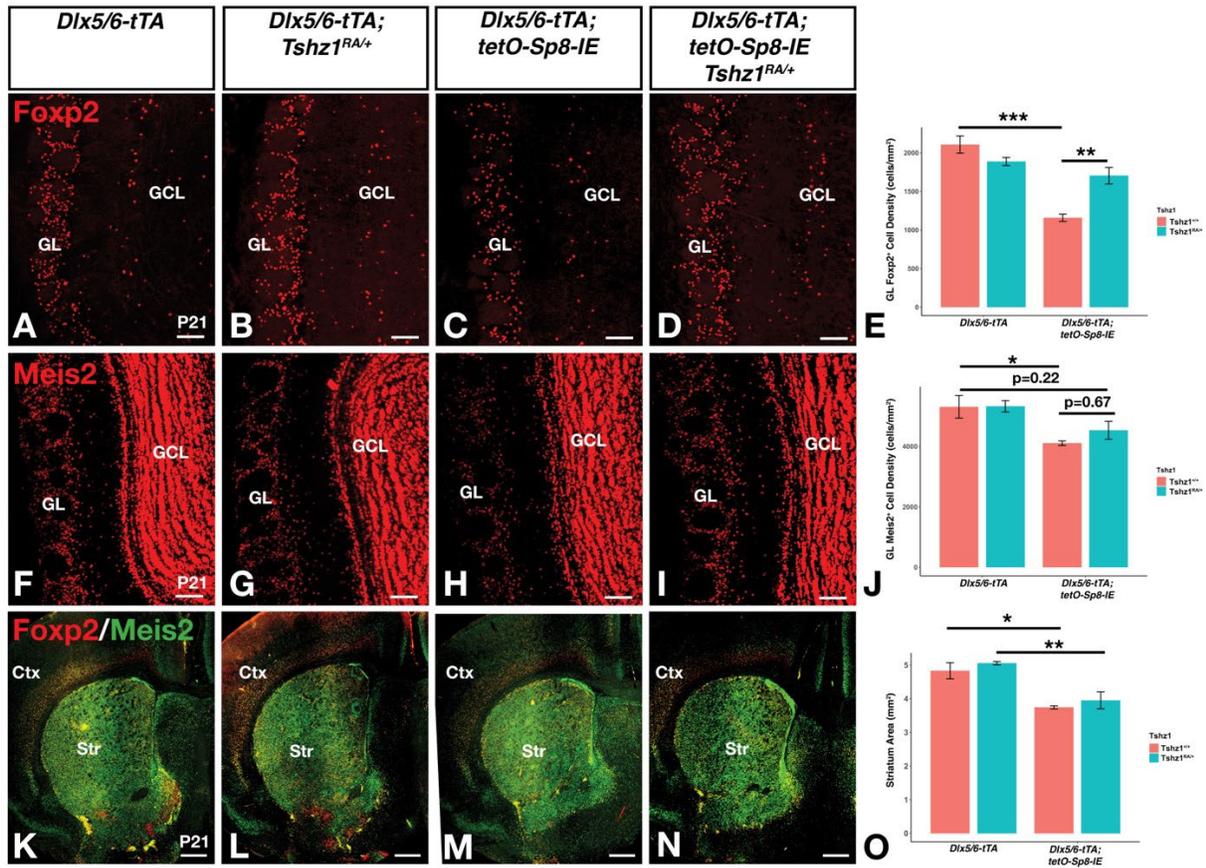
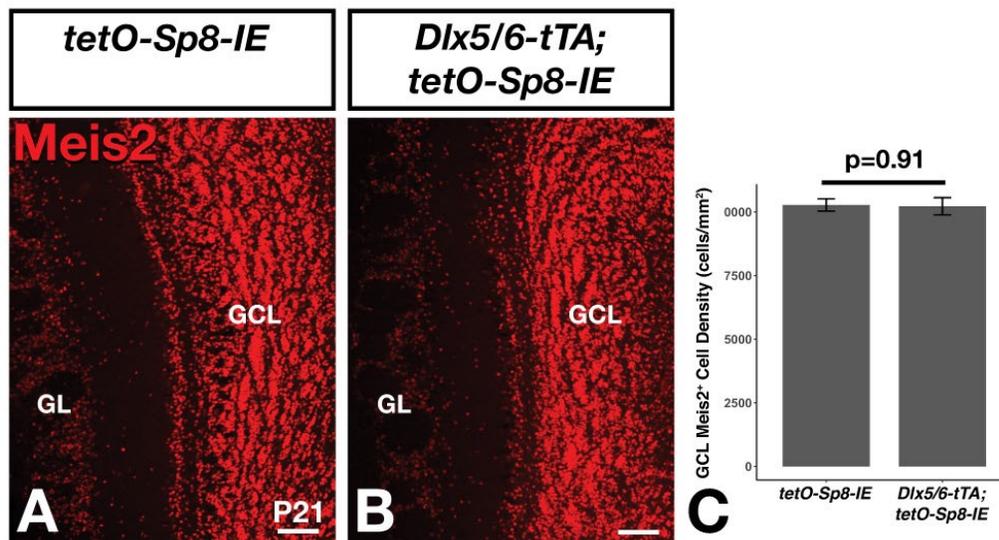


Supplementary Material for Kuerbitz et al. (cercor-bhaa323)

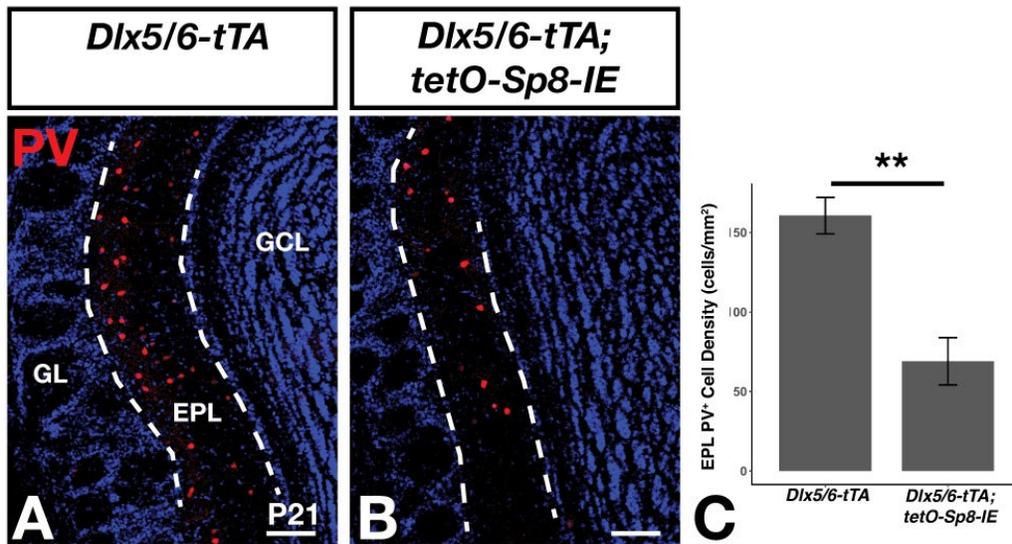


Supplementary Figure 1. *Tshz1* gene dosage alters OB interneuron numbers but not striatal size in *Sp8* misexpressing mice. **A-D**, *Sp8* misexpressing mice show a decrease in Foxp2⁺ GL cells (**C**) as compared to controls (**A**). *Tshz1* heterozygosity in *Sp8* misexpressing mice significantly increases Foxp2⁺ GL cell numbers (**D**) but not to control levels (**A**). **E**, Quantification of Foxp2⁺ GL cell densities in wild type and *Tshz1* hets with or without *Sp8* misexpression. **F-I**, *Sp8* misexpressing mice show a decrease in Meis2⁺ GL cells (**H**) as compared to controls (**F**). *Tshz1* heterozygosity in *Sp8* misexpressing mice did not significantly increase Meis2⁺ GL cell numbers (**I**). **J**, Quantification of Meis2⁺ GL cell densities in wild type and *Tshz1* hets with or without *Sp8* misexpression. **K-N**, *Sp8* misexpressing mice show a decrease in striatal area as marked by Foxp2 and Meis2 (**M**) as compared to controls (**K**). *Tshz1*

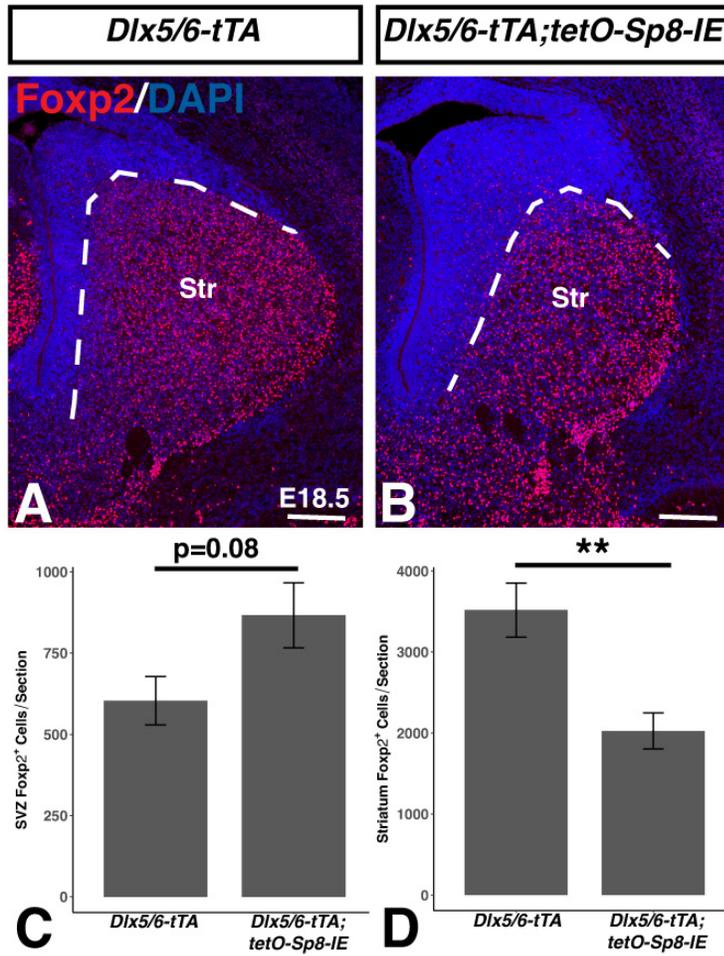
heterozygosity in *Sp8* misexpressing mice did not significantly alter striatal area (N). O, Quantification of striatal area in wild type and *Tshz1* hets with or without *Sp8* misexpression. Data are represented as mean \pm SEM and stats were performed using a two-way ANOVA with a post hoc Tukey HSD, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Ctx, cortex; GCL, granule cell layer; GL glomerular layer; Str, striatum. Scale bars: A-D, F-I, 100 μm ; K-N, 500 μm .



Supplementary Figure 2. *Sp8* misexpressing mice exhibit normal numbers of *Meis2*⁺ GCL interneurons. A-C, Immunofluorescence (A,B) and quantification (C) of *Meis2*⁺ neurons in the GCL of the postnatal olfactory bulb of *Sp8* misexpressing mice which showed no significant effect, $n=4$ for each group ($t_{(6)}=0.12$, $p=0.91$). Data are represented as mean \pm SEM and stats performed using a Student's t-test. GCL, granule cell layer; GL glomerular layer. Scale bars: A,B, 100 μm .



Supplementary Figure 3. *Reduced PV⁺ interneurons in the EPL of Sp8 misexpressing mice.* A-C, Immunofluorescence (A,B) and quantification (C) of PV⁺ neurons in the EPL of the postnatal olfactory bulb of *Sp8* misexpressing mice which showed a 57% reduction of PV⁺ EPL cells. DAPI was used as a counterstain. Data are represented as mean \pm SEM and stats performed using a Student's t-test, ** $p < 0.01$. GCL, granule cell layer; GL glomerular layer. Scale bars: A,B, 100 μ m.



Supplementary Figure 4. *Foxp2*⁺ cells in the SVZ and striatum of *Sp8* misexpressing mice.

Immunofluorescence (A,B) and quantification of *Foxp2*⁺ neurons in the SVZ (C) and striatum (D) of *Sp8* misexpressing embryos which showed a 48.4% reduction of *Foxp2*⁺ SPNs and a trend towards an increase in the SVZ in the overexpressing animals. DAPI was used as a counterstain. Data are represented as mean ± SEM and stats performed using a Student's t-test, **p<0.01. Str, striatum. Scale bars: A,B, 200 μm.