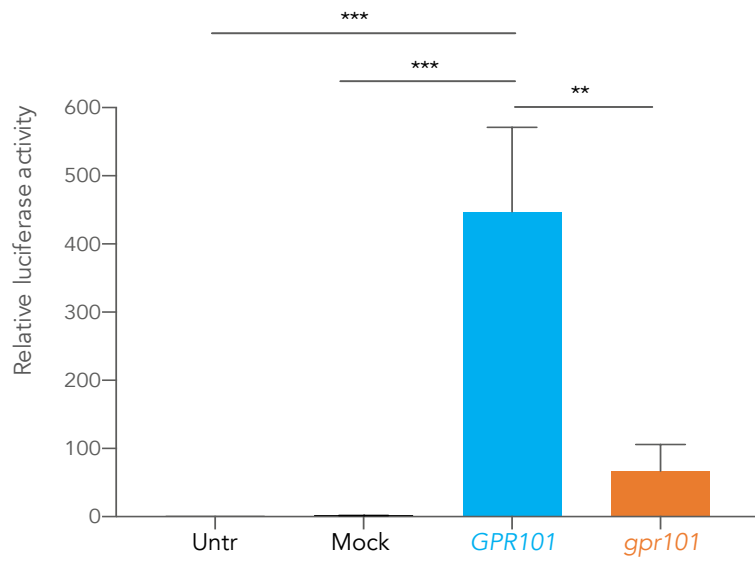


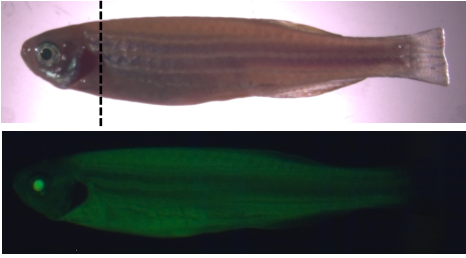
Supplementary Figure 1

cAMP pathway activation



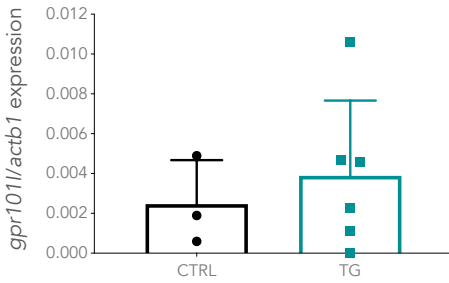
Supplementary Figure 2

a

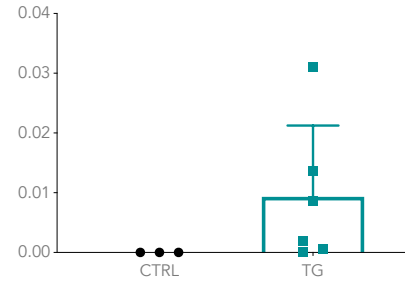


b

heads

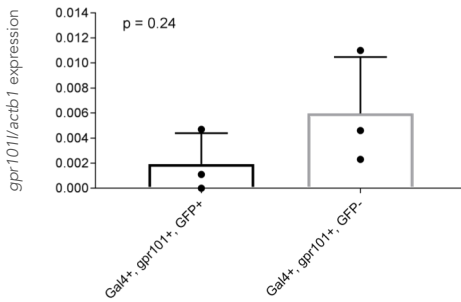


body

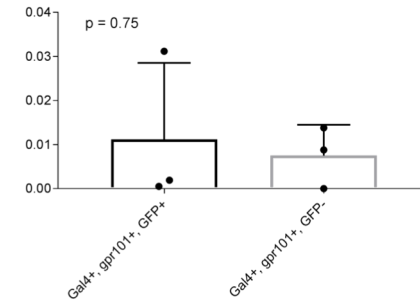


c

heads

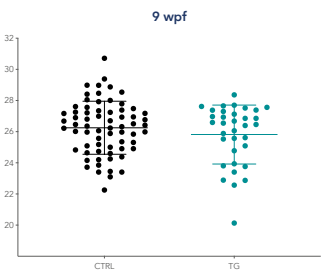
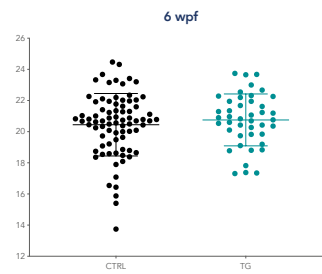
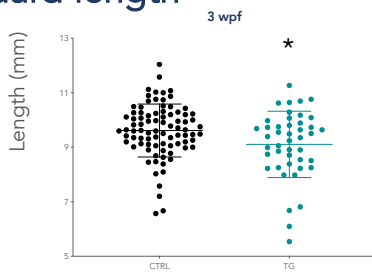


body

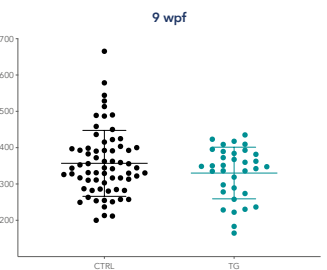
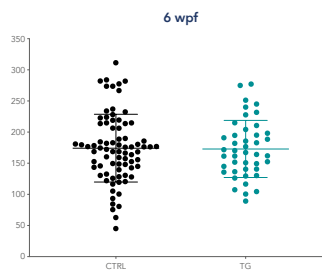
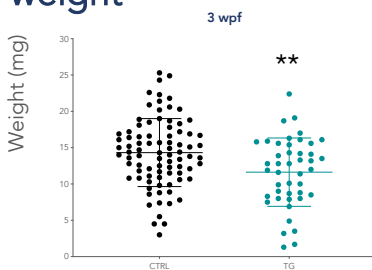


d

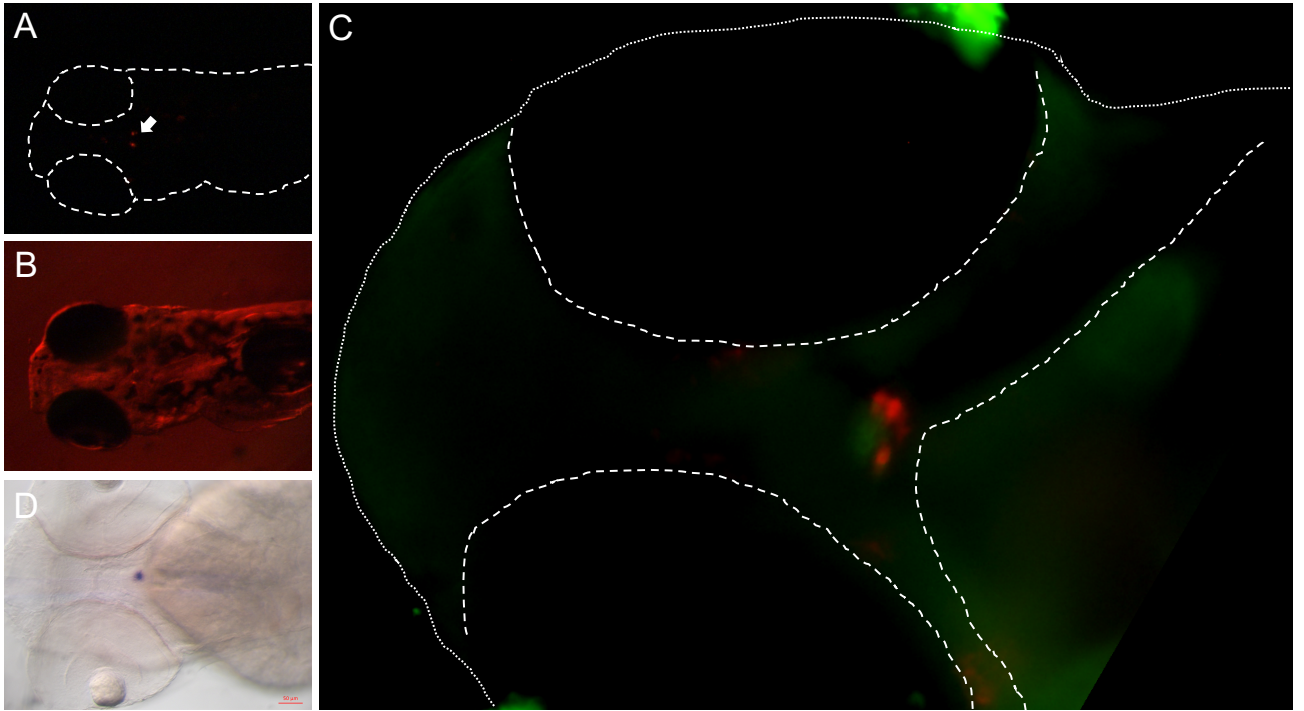
Standard length



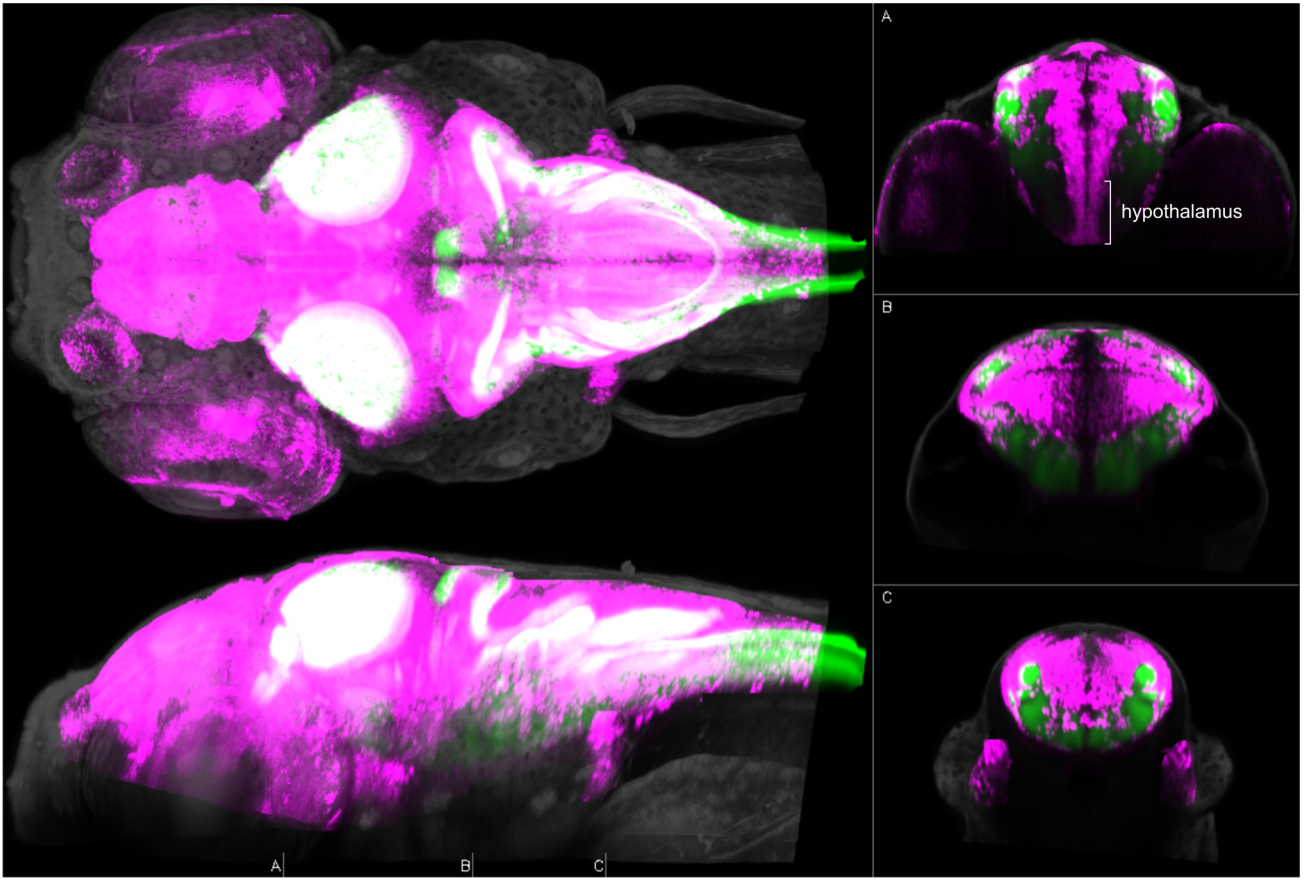
Body weight



Supplementary Figure 3

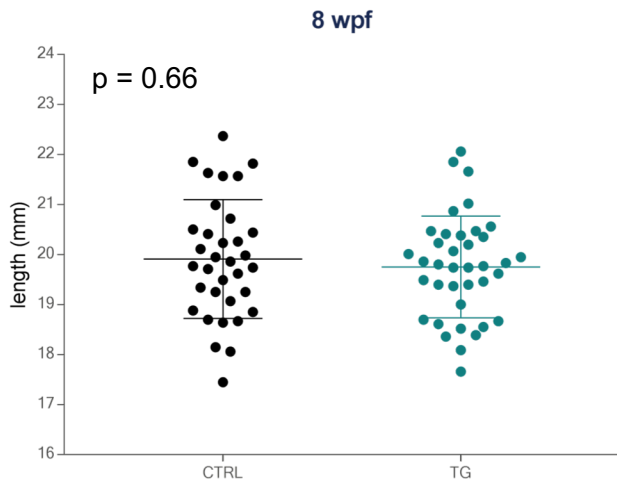


Supplementary Figure 4

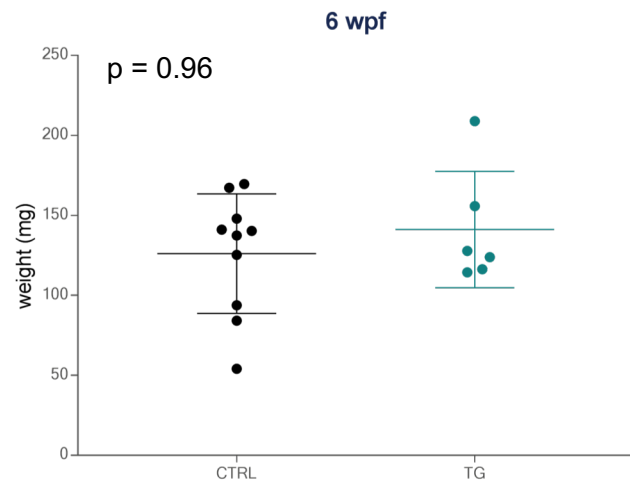
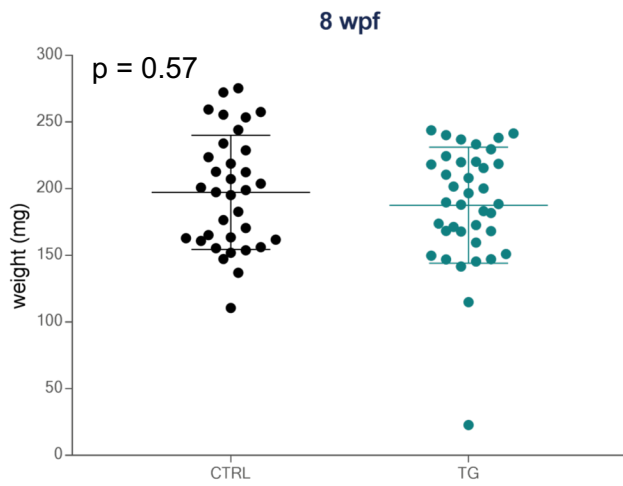
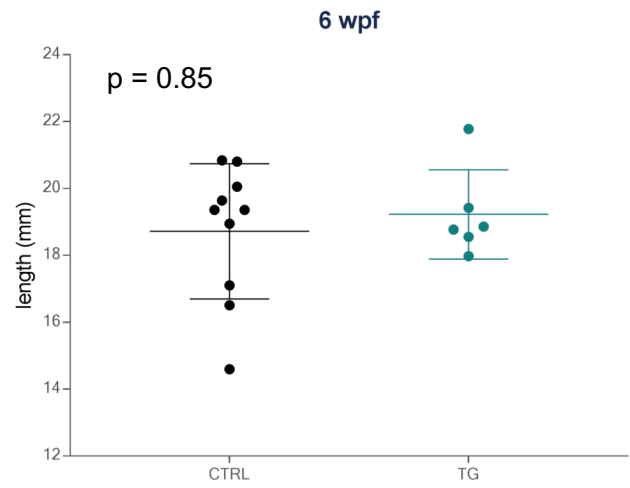


Supplementary Figure 5

Xa207:Gal4; UAS:gpr101

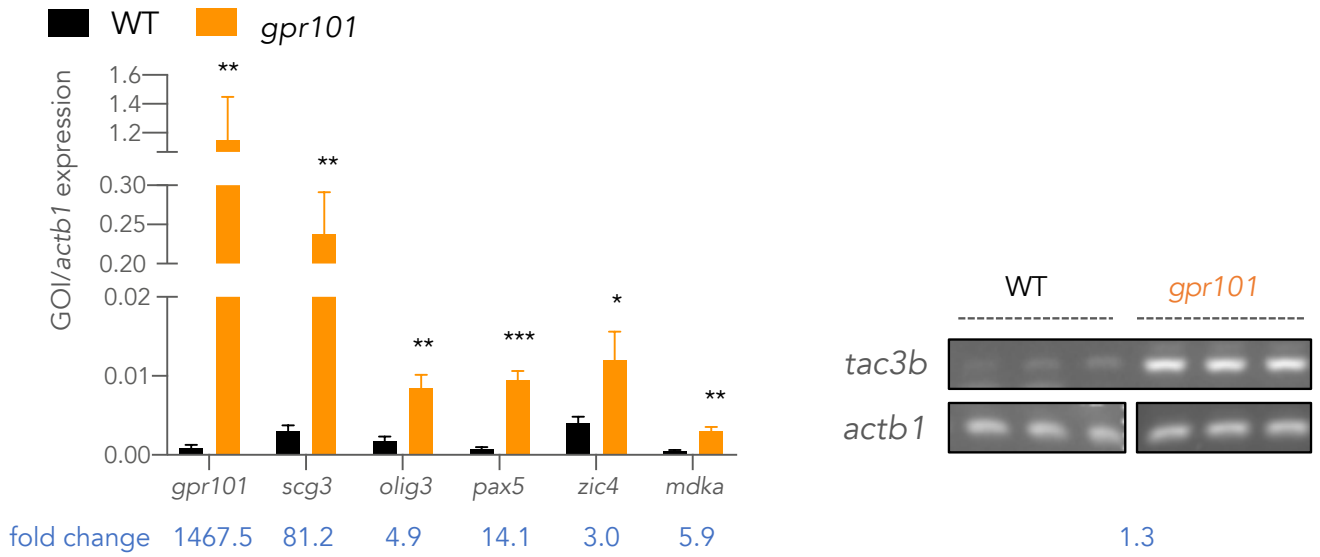


HuC:Gal4; UAS:gpr101



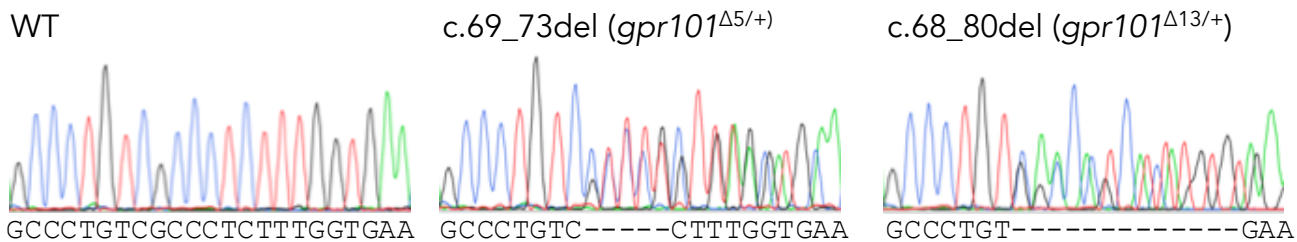
Supplementary Figure 6

Gene expression after *gpr101* upregulation – 90% epiboly

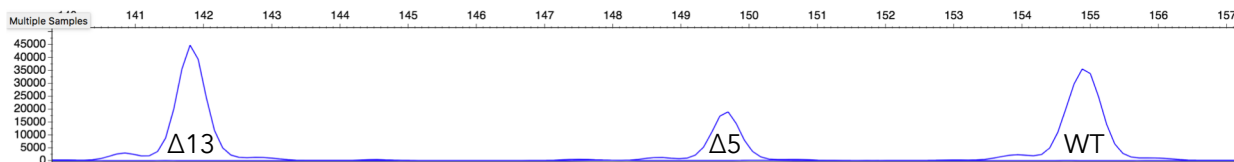


Supplementary Figure 7

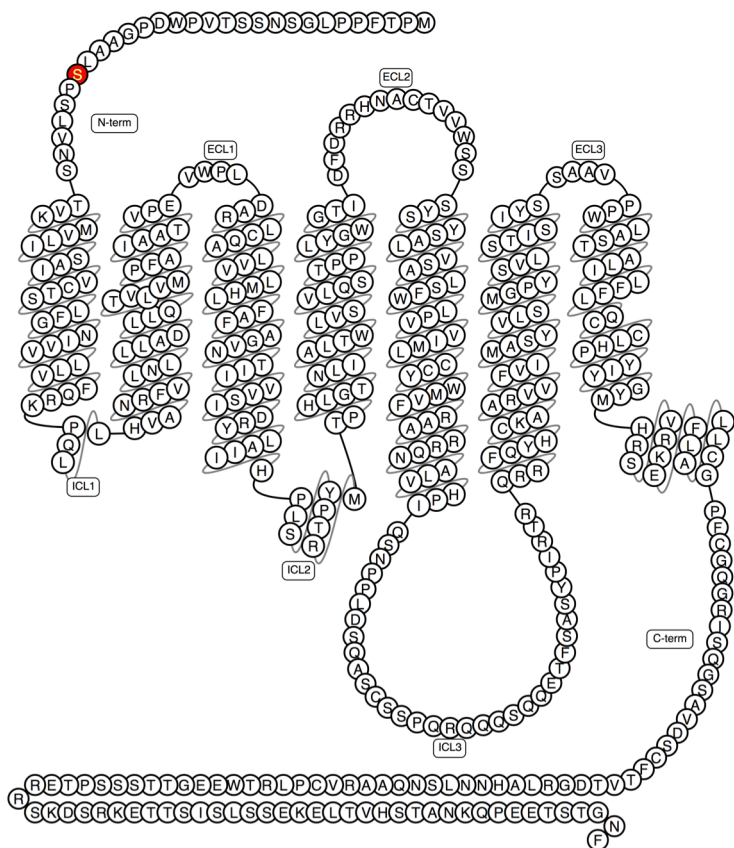
a



b



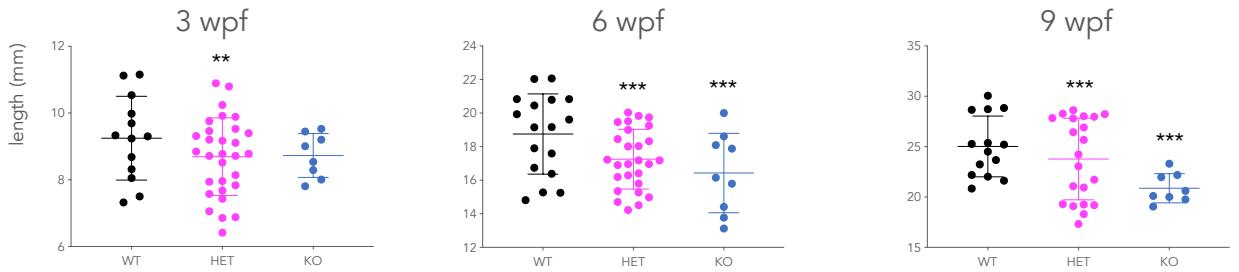
c



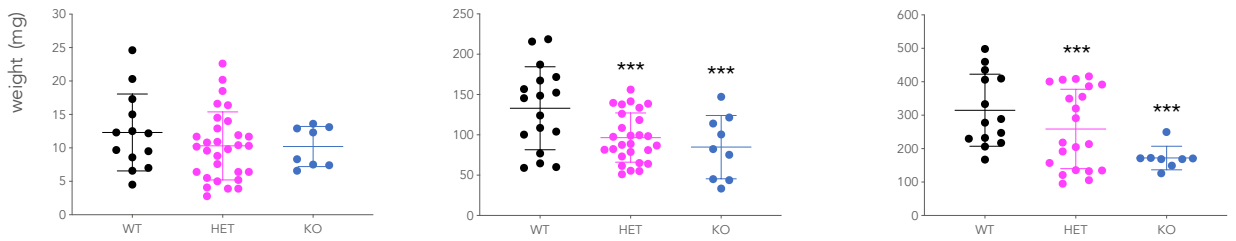
Supplementary Figure 8

a

Standard length



Body weight

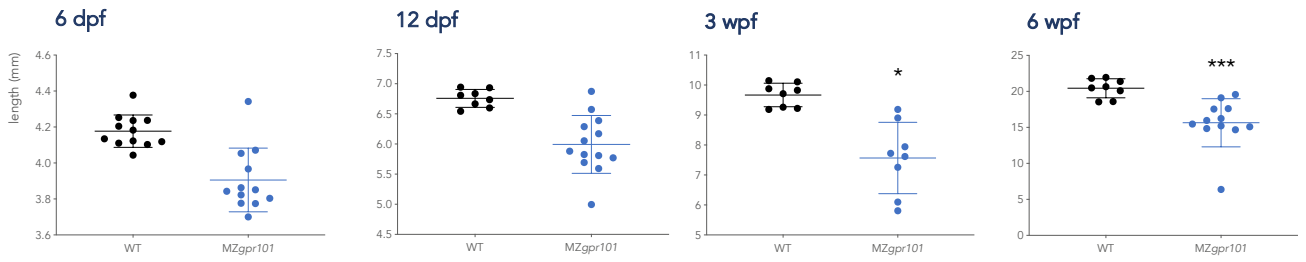


b

9 wpf fish	Female	Male	Ambiguous
WT	42.9	21.4	35.7
HET	33.3	42.9	23.8
KO	25.0	37.5	37.5

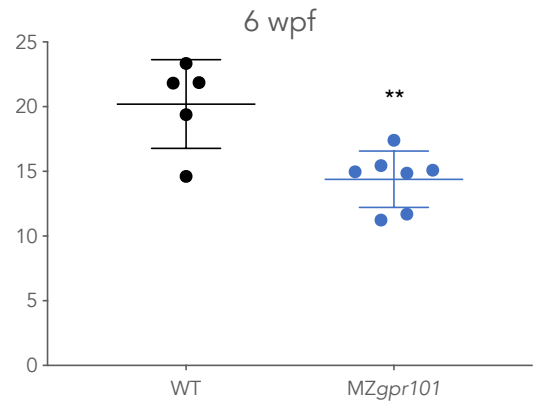
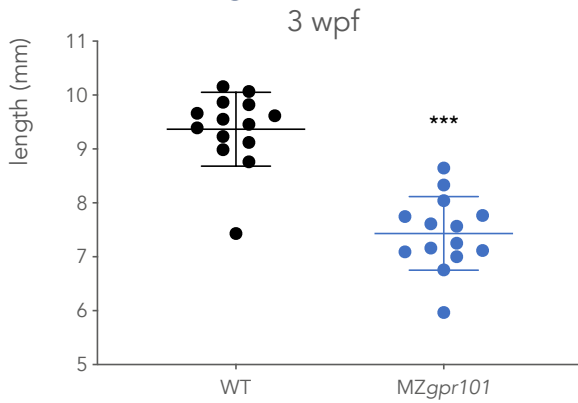
Supplementary Figure 9

a

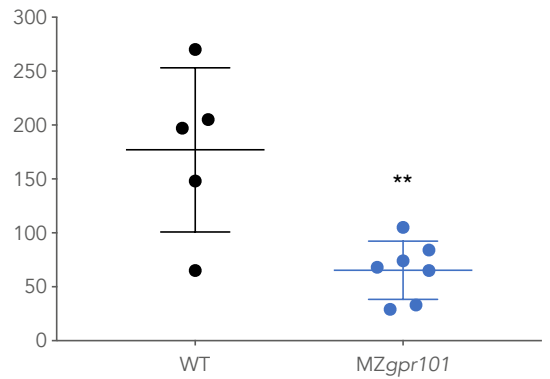
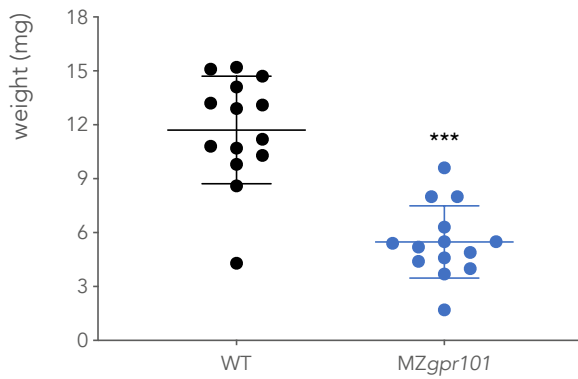


b

Standard length

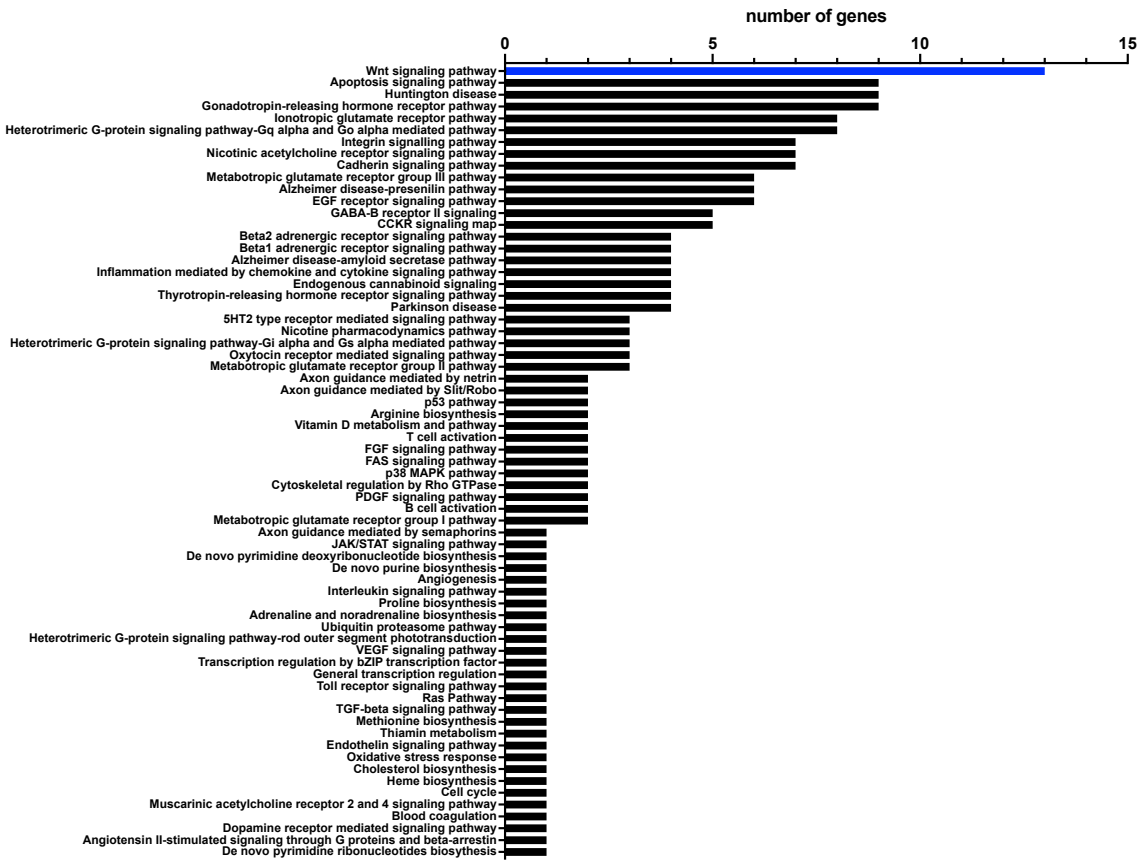


Body weight



Supplementary Figure 10

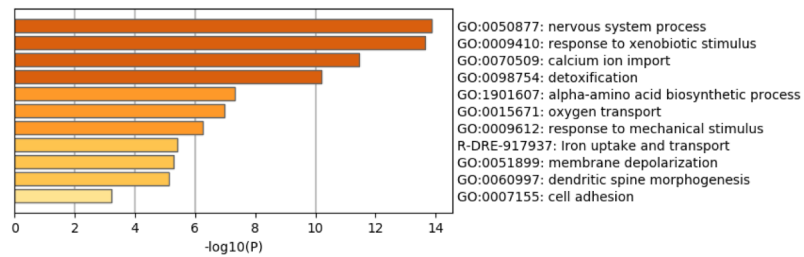
a



b

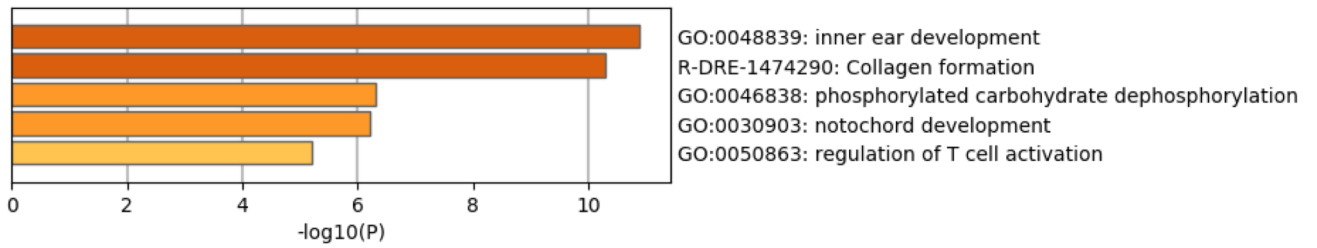
gene name	log2 fold change	q value
<i>mmp30</i>	1.92	0.014
<i>dvl3b</i>	1.80	0.008
<i>fat3a</i>	1.67	0.00002
<i>pcdh15b</i>	1.49	0.013
<i>tle2b</i>	1.31	0.04
<i>celsr3</i>	1.29	0.0003
<i>gna15.1</i>	1.26	0.003
<i>celsr2</i>	1.12	0.00005
<i>ep400</i>	1.08	0.0003
<i>tgfbr1b</i>	1.06	0.013
<i>acta1b</i>	1.02	0.04
<i>fstl1a</i>	-1.02	0.00002
<i>pcdh20</i>	-1.16	0.007

c



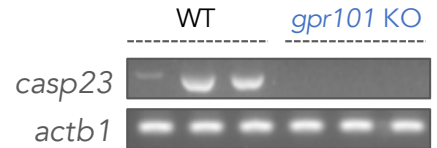
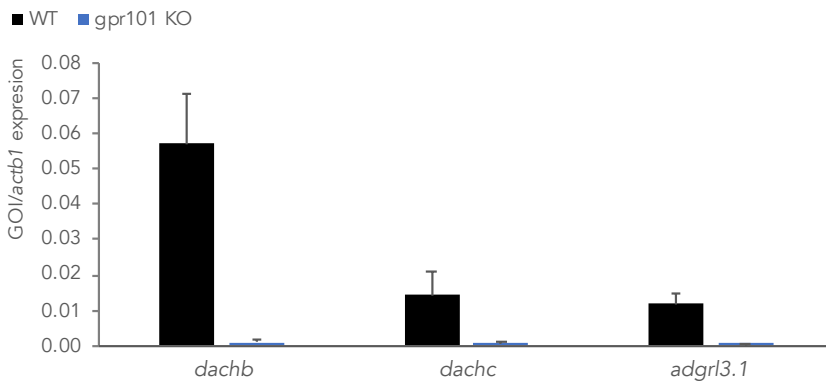
Supplementary Figure 11

a



b

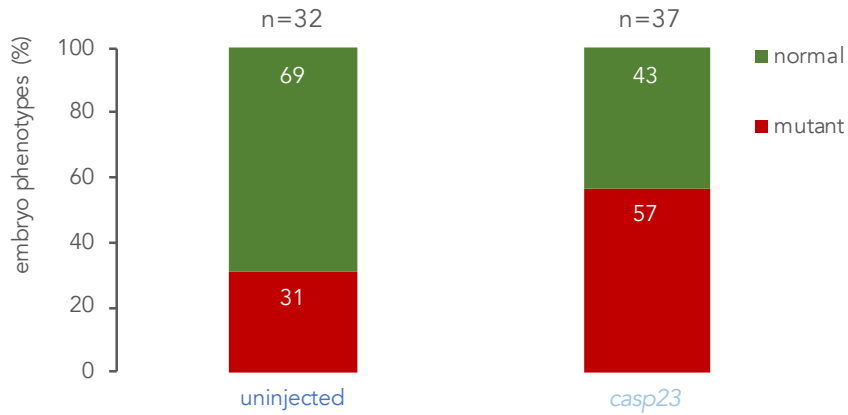
Gene expression in unfertilized *gpr101* KO eggs



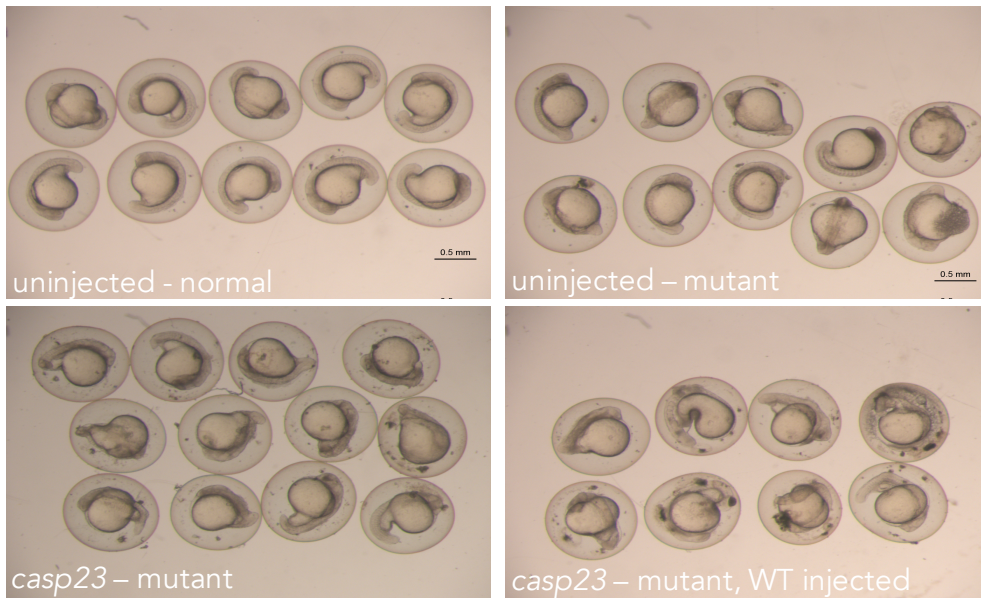
Supplementary Figure 12

a

casp23 phenotype rescue in *MZgpr101* embryos

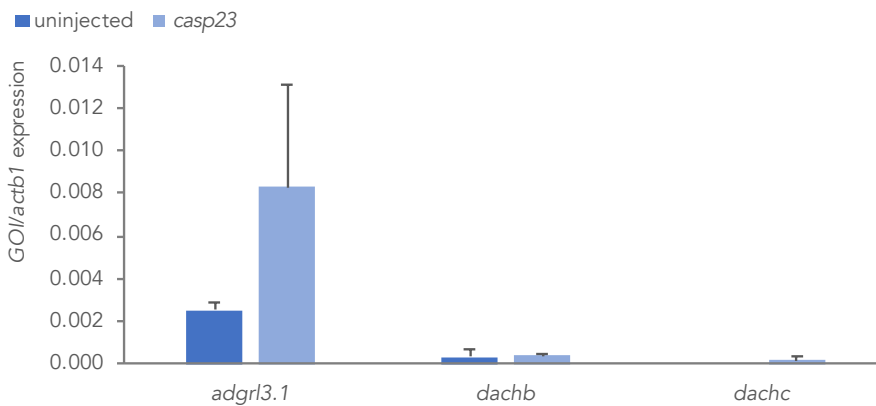


b

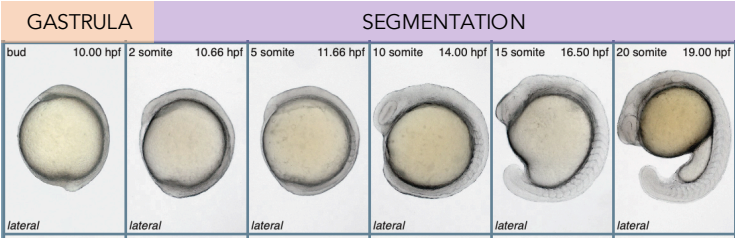
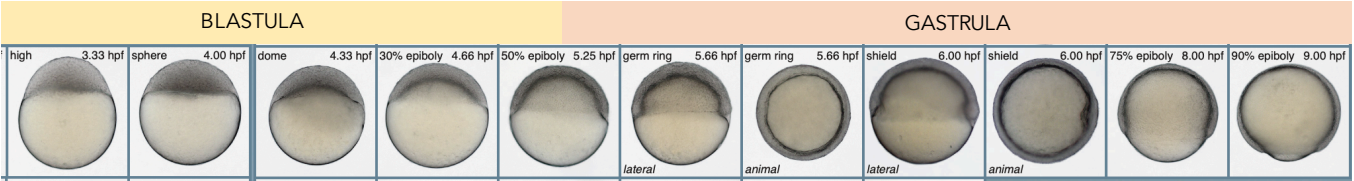
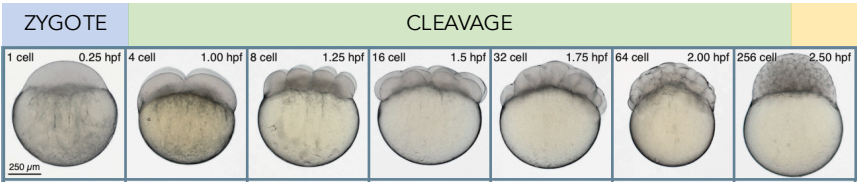


c

casp23 molecular rescue in *MZgpr101* embryos

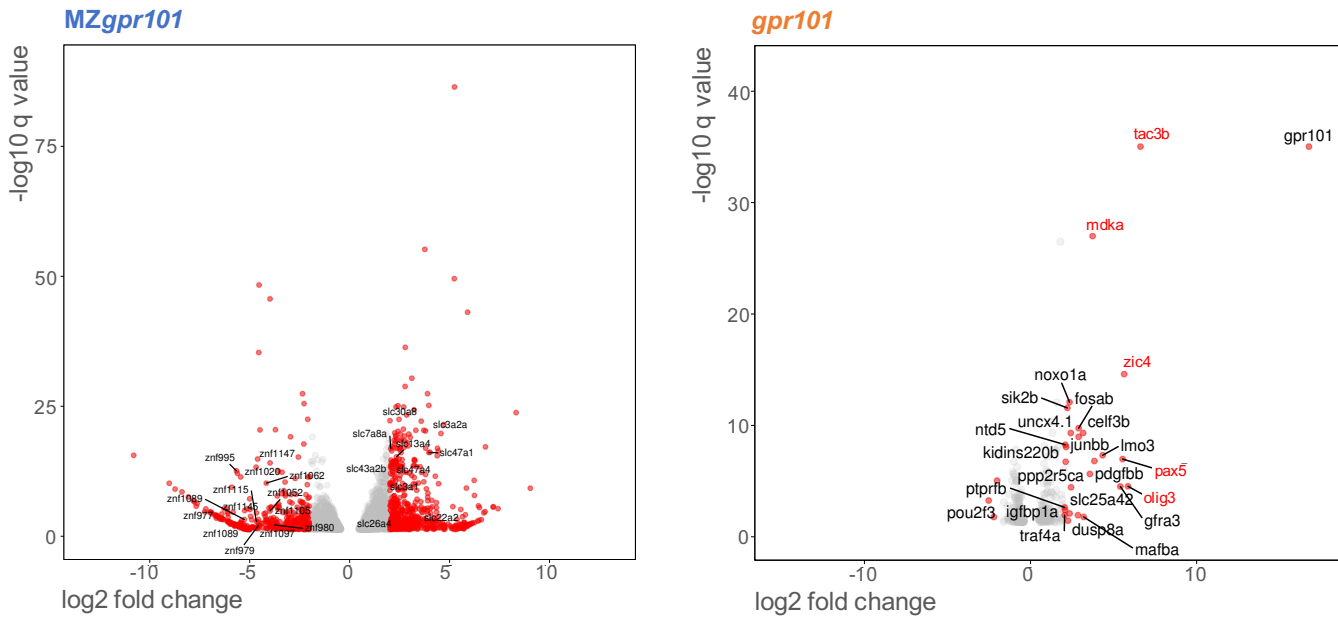


Supplementary Figure 13



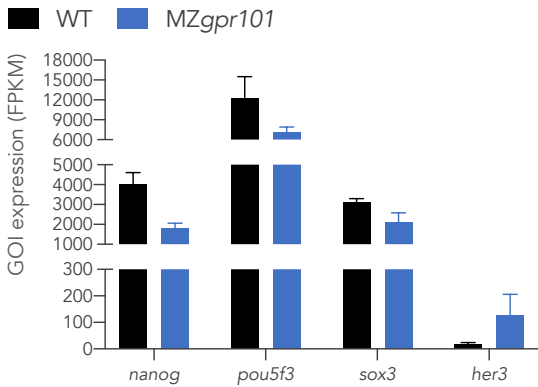
Supplementary Figure 14

a



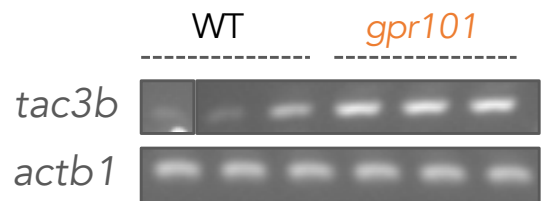
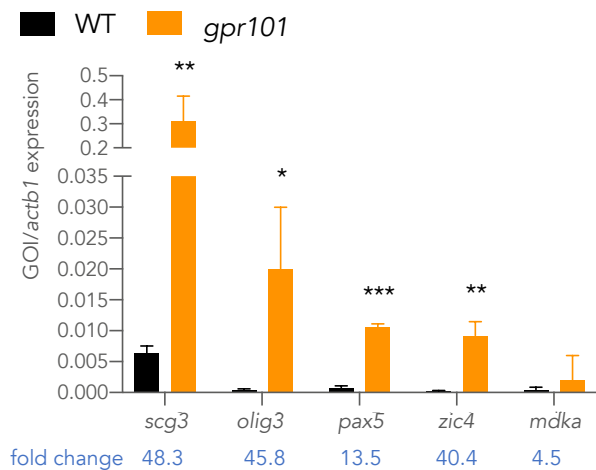
b

Gene expression in MZgpr101 – 50% epiboly



c

Gene expression after gpr101 upregulation – 50% epiboly



Supplementary Figure 15

