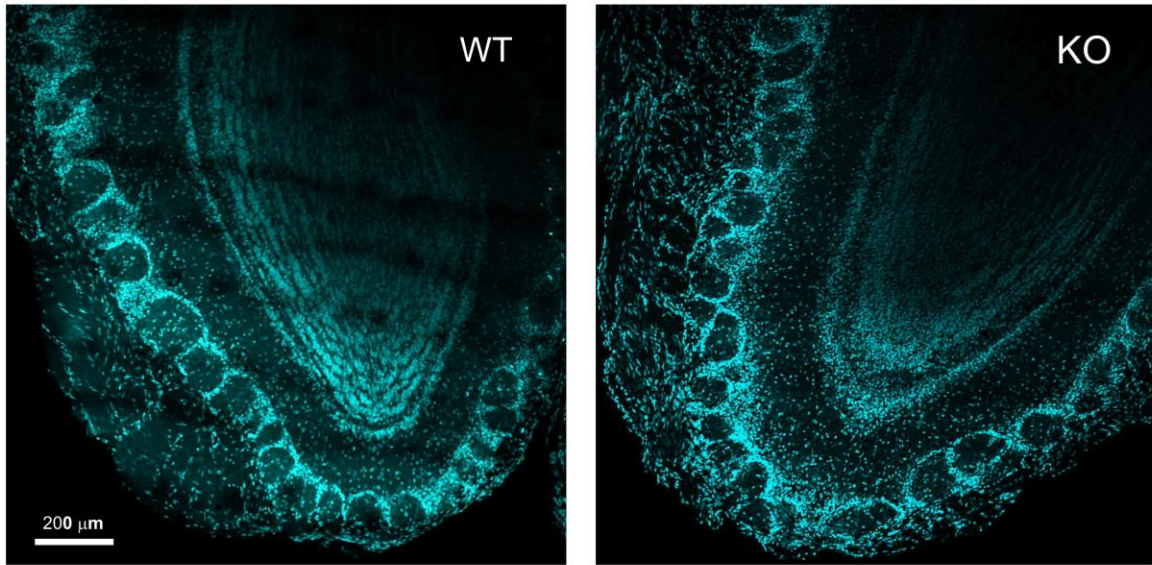


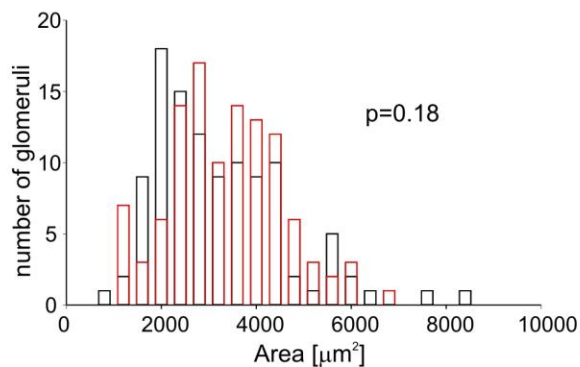
Supplementary material

A

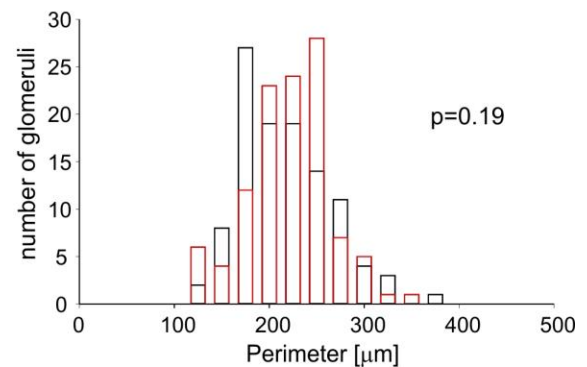


Blue: DAPI

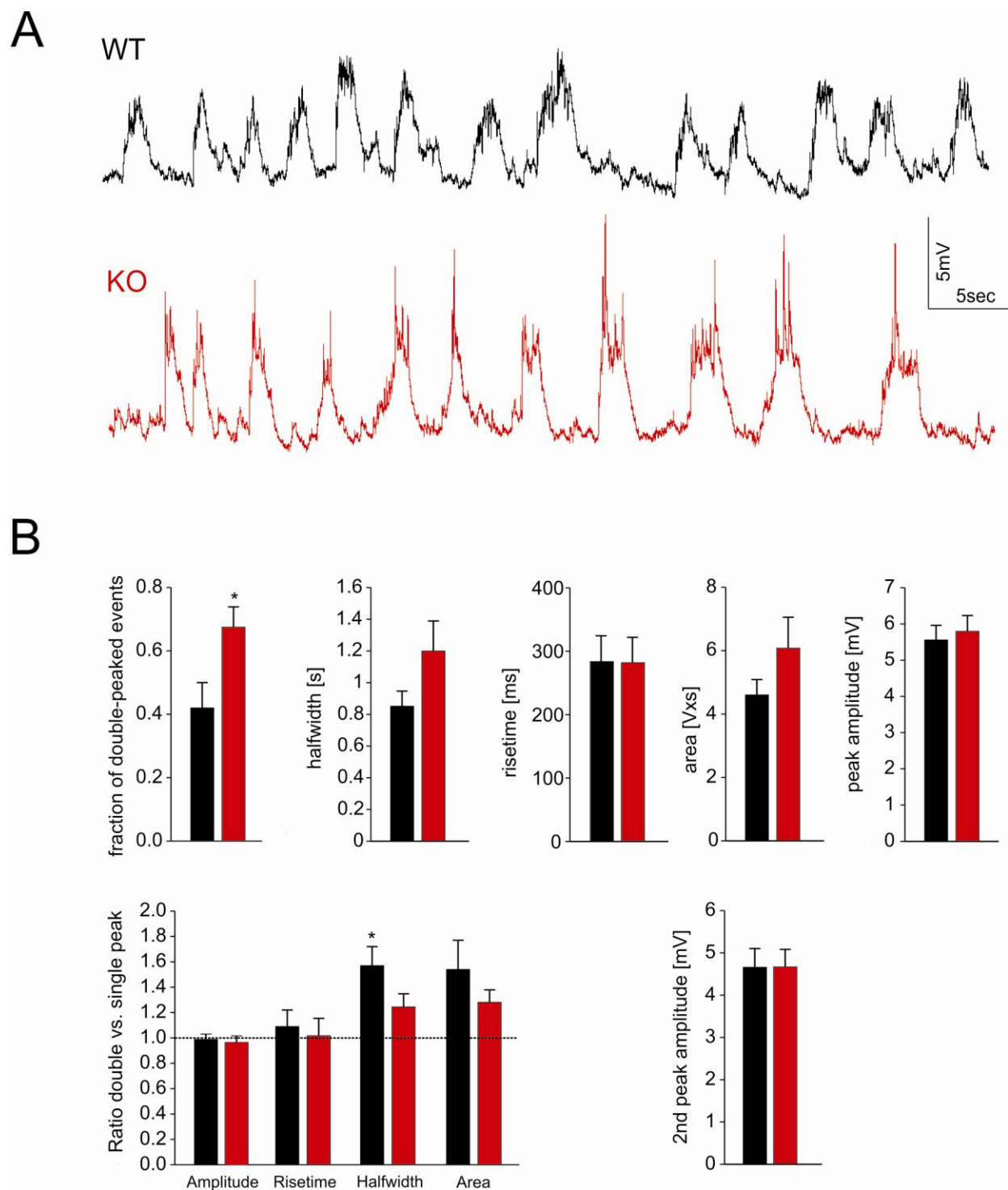
B



C

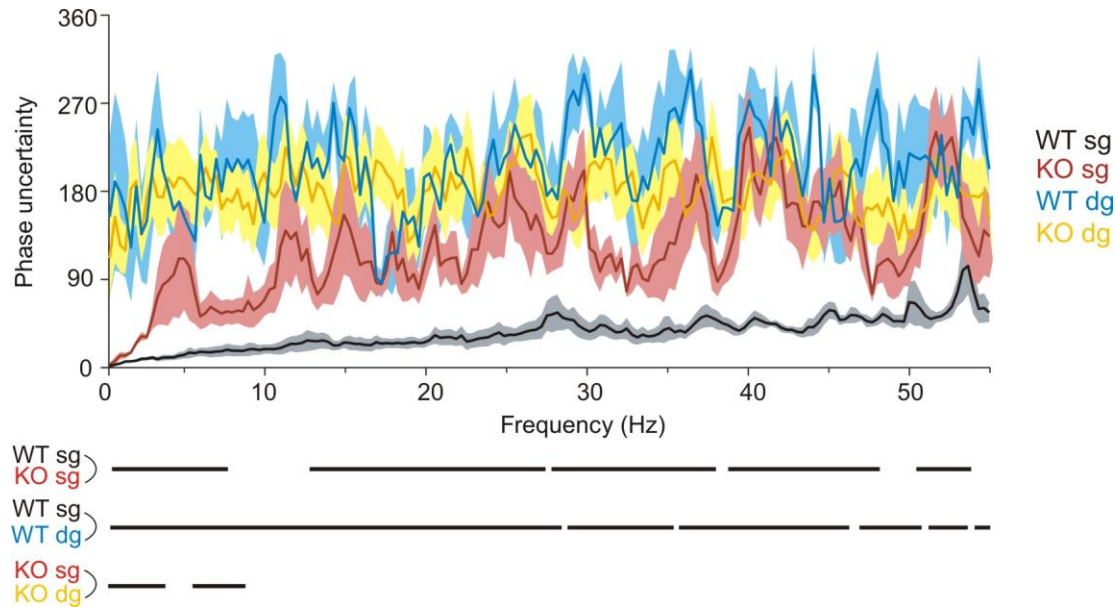


Supplementary Figure 1. Glomerular size distribution is unchanged in the OCAM knockouts. A. Exemplary confocal images of wildtype (left) and OCAM knockout (right) horizontal slices stained with nuclear marker DAPI. DAPI was used to identify glomeruli. Images were acquired from 4 wildtype and 5 knockout animals. Around 20 glomeruli were circled per image to determine their area and perimeter with the help of ImageJ software. B. Area distribution of glomeruli in wildtype (black) and OCAM knockout (red) seems unchanged. Kolmogorov-Smirnov distribution comparison test gave a p value of 0.18. C. Glomerular perimeter distributions are very similar. Color code corresponds to (B).  $p=0.19$ , Kolmogorov-Smirnov test.



Supplementary Figure 2. Spontaneous subthreshold rhythmic activity of mitral cells closely resembles TBOA stimulated activity pattern. A. Exemplary current clamp recordings of wildtype (black) and knockout (red) mitral cells. B. On average  $54 \pm 8$  and  $59 \pm 7$  events per cell were analyzed for wildtype and knockout respectively. Membrane potential was on average  $-62.51 \pm 1.34$  mV and  $-59.92 \pm 1.36$  mV for wildtype and knockout respectively. Averaged values for each parameter (same as in Fig. 3) in each cell were determined. Mean values  $\pm$  SEM across wildtype ( $n=6$ , black) and knockout ( $n=11$ , red) cells are

shown. Averaged ratios of parameters for multi-peaked events divided by parameters for single-peaked events (lower right panel). Dashed line represents values obtained from single-peaked events only. Note that halfwidth, area and decay time are longer for double-peaked events. See material and methods and Fig. 3 legend for details.



Supplementary Figure 3. The phase uncertainty (phase component in degrees) of the coherence was plotted for the same cells as in Figure 7C. For each condition, the phase uncertainty is shown with the width of the 95% confidence interval. The dashes below the X-axis indicate frequencies at which the phase uncertainty was significantly different across conditions ( $p < 0.05$ ). Phase uncertainty were statistically significantly different for the following conditions: wildtype versus knockout cells projecting to for the same glomerulus (WT sg vs. KO sg), wildtype cells projecting to the same versus different glomeruli (WT sg black vs. WT dg blue), knockout cells projecting to for the same versus different glomeruli (KO sg red vs. KO dg yellow).