**Supplementary File 1: Fly Genotypes Used Listed by Figure**

**Figure 1A:** w; CCAP-GAL4DBDK2A2; ETHRAMI00949-p65AD/ 20XUAS-6XEGFP

**Figure 1B:**

Control (Top): w; UAS-Kir2.1/ CCAP-GAL4DBDK2A2; UAS-Kir2.1

Experimental (Bottom): w; UAS-Kir2.1/ CCAP-GAL4DBDK2A2; ETHRAMI00949-p65AD/ UAS-Kir2.1

**Figure 1C:**

Control (Top): w; UAS-dTrpA1/ CCAP-GAL4DBDK2A2; +

Experimental (Bottom): w; UAS-dTrpA1/CCAP-GAL4DBDK2A2 ; ETHRAMI00949-p65AD/+

**Figure 2A:**

Left: w;; Rkpan-GAL4/20XUAS-6XEGFP

Middle: w;; CCAP-RMI05804-GAL4/20XUAS-6XEGFP

Right: w; RkTGEM-GAL4DBD; CCAP-RMI05804-p65AD/20XUAS-6XEGFP

**Figure 2B & C:**

Rk-Gal4: w; UAS-Kir2.1/tubP-Gal80ts-20; Rkpan-GAL4/ UAS-Kir2.1

w1118: w1118; UAS-Kir2.1/tubP-Gal80ts-20; UAS-Kir2.1

CCAP-R-Gal4: w;UAS-Kir2.1/tubP-Gal80ts-20; CCAP-RMI05804-GAL4/ UAS-Kir2.1

**Figure 3A:** w; VGlutMI04979 -Gal4DBD/RkTGEM-p65AD; 20XUAS-6XEGFP

**Figure 3A’:** w; RkTGEM-Gal4DBD; ETHRAMI00949-p65AD/20XUAS-6XmCherry

**Figure 3A”:** w; RkTGEM-Gal4DBD; ETHRB-p65AD/20XUAS-6XmCherry

**Figure 3B & C:** Experimental : w; Burs-LexA::VP16AD /LexAop-P2X2; Rkpan-Gal4/ UAS-GCaMP6s

Control: w;+/LexAop-P2X2; Rkpan-Gal4/ UAS-GCaMP6s

**Figure 4A & C (top):** w; UAS-GCaMP6s/+; Rkpan-Gal4/ UAS-GCaMP6s

**Figure 4B & C (bottom):** w; UAS-GCaMP6s/+; 24B-Gal4/ UAS-GCaMP6s

**Figure 5A-C:** w; UAS-GCaMP6s/+; Rkpan-Gal4/ UAS-GCaMP6s

**Figure 5D-F:** w; UAS-GCaMP6s/+; 24B-Gal4/ UAS-GCaMP6s

**Figure 5G:** Experimental w; VGlut MI04979-LexA::QFAD/LexAop-GCaMP3.0; Rkpan-Gal4/ UAS-P2X2

Control: w; VGlut MI04979-LexA::QFAD/LexAop-GCaMP3.0; +/ Rkpan-Gal4

**Figure 6A:** w; +/VGlut MI04979-Gal4DBD; CCAP-RMI05804-p65AD/20XUAS-6XEGFP

**Figure 6B-C, D (bottom) &E:** w; VGlut MI04979-Gal4DBD/UAS-GCaMP6s; CCAP-RMI05804-p65AD/UAS-GCaMP6s

**Figure 6D (top) & E:** w; UAS-GCaMP6s; Rkpan-Gal4/ UAS-GCaMP6s

**Figure 6F:** Experimental : w; RkTGEM-LexA::QFAD/ LexAop-P2X2; CCAP-RMI05804-Gal4/ UAS-GCaMP6s

Control: w; +/LexAop-P2X2; CCAP-RMI05804-Gal4/ UAS-GCaMP6s

**Figure 7A:** w;; ETHRB-Gal4/20XUAS-6XEGFP

**Figure 7B:** w;CCAP-Gal80; ETHRA-Gal4/20XUAS-6XEGFP

**Figure 7C:**

Control (top): w; UAS-Kir2.1/tubP-Gal80ts-20; UAS-Kir2.1/+

Experimental (bottom): w; UAS-Kir2.1/tubP-Gal80ts-20; ETHRB-GAL4/ UAS-Kir2.1

**Figure 7 D:**

Control (top): w1118; UAS-Kir2.1; UAS-Kir2.1

Experimental (bottom): w; UAS-Kir2.1/CCAP-Gal80; tubP-Gal80ts-20/ ETHRA-GAL4/ UAS-Kir2.1

**Figure 6—Figure Supplement1A:** w;20XUAS-6XEGFP; ETHRA-P65AD/CCAP-RMI05804-Gal4DBD

**Figure 6—Figure Supplement1B:** w;20XUAS-6XEGFP; ETHRB-P65AD/CCAP-RMI05804-Gal4DBD