

## SI Appendix

### Strains used in this study

#### Strains used in Fig. 2 and Fig. S1 and S2:

*GFP effector (syls300): pG4US7(15xUAS::Δpes-10::gfp::unc-54 3'UTR), 25 ng/μL; Pttx3::rfp, 40 ng/μL; pBlueScript, 35 ng/μL.*

PS6843 *syls300 V* *outcrossed x7*  
PS6932 *unc-119(ed3) III; syls300 V*

*Pmyo-2 intact cGAL driver (syEx1435 and syEx1436): pG4U19, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 40 ng/μL.*

PS6904 *syEx1435; unc-119(ed3); syls300*  
PS6905 *syEx1436; unc-119(ed3); syls300*

*Pmyo-2 split cGAL driver with DnaE intein (syEx1463 and syEx1464): pHW438, 10 ng/μL; pHW439, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 30 ng/μL.*

PS7034 *syEx1463; unc-119(ed3); syls300*  
PS7035 *syEx1464; unc-119(ed3); syls300*

*Pmyo-2 split cGAL driver with SpyTag/SpyCatcher (syEx1511, syEx1512 and syEx1571): pHW375, 10 ng/μL; pHW378, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 30 ng/μL.*

PS7250 *syEx1511; unc-119(ed3); syls300*  
PS7251 *syEx1512; unc-119(ed3); syls300*  
PS7252 *syEx1571; unc-119(ed3); syls300*

*Pmyo-2 split cGAL driver with leucine zipper (syEx1572, syEx1573 and syEx1574): pHW508, 10 ng/μL; pHW509, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 30 ng/μL.*

PS7348 *syEx1572; unc-119(ed3); syls300*  
PS7349 *syEx1573; unc-119(ed3); syls300*  
PS7350 *syEx1574; unc-119(ed3); syls300*

*Pmyo-2 split cGAL driver with gp41-1 intein (syEx1575, syEx1576 and syEx1577): pHW510, 10 ng/μL; pHW511, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 30 ng/μL.*

PS7351 *syEx1575; unc-119(ed3); syls300*  
PS7352 *syEx1576; unc-119(ed3); syls300*  
PS7353 *syEx1577; unc-119(ed3); syls300*

*Pmyo-2 split cGAL driver with gp41-1 N-intein wild-type. (syEx1589): pAH35, 5 ng/μL; KP1368, 10 ng/μL; pBlueScript, 85 ng/μL.*

PS7686 *syEx1589; syIs433 IV; syIs300 V*

*Pmyo-2 split cGAL driver with gp41-1 N-intein C1A mutant. (syEx1590): pHW564, 5 ng/μL; KP1368, 10 ng/μL; pBlueScript, 85 ng/μL.*

PS7738 *syEx1590; syIs433 IV; syIs300 V*

Strains used in Fig. 3 and Fig. S3-S4:

*Phsp-16.41 split cGAL(DBD)-gp41-1-N-intein driver (syEx1579, syIs435): pAH34, 10 ng/μL; Pmyo-2::NLS::mCherry, 10 ng/μL; pBlueScript, 80 ng/μL.*

PS7422 *syEx1579*

PS7406 *syIs435 IV*                      *outcrossed x3*

PS7409 *syIs435 IV; syIs300 V*                      *outcrossed x5*

*Pmyo-2 split cGAL(DBD)-gp41-1-N-intein driver (syIs430, syIs431, and syIs432): pAH35, 10 ng/μL; Pmyo-2::NLS::mCherry, 10 ng/μL; pBlueScript, 80 ng/μL.*

PS7400 *syIs431 III*                      *outcrossed x5*

PS7402 *syIs431 III; syIs300 V*                      *outcrossed x3*

PS7403 *syIs430 IV*                      *outcrossed x3*

PS7408 *syIs432 II; syIs300 V*                      *outcrossed x3*

*Pmyo-2 split gp41-1-C-intein-cGAL(AD): (syEx1580, syIs433, and syIs434): pAH36, 10 ng/μL; Punc-122::rfp, 10 ng/μL; pBlueScript, 80 ng/μL.*

PS7423 *syEx1580*

PS7401 *syIs433 IV; syIs300 V*                      *outcrossed x3*

PS7404 *syIs433 IV*                      *outcrossed x5*

PS7405 *syIs434 II*                      *outcrossed x0*

*Prab-3 split cGAL(DBD)-gp41-1-N-intein driver (syEx1578): pHW530, 10 ng/μL; Pmyo-2::NLS::mCherry, 10 ng/μL; pBlueScript, 80 ng/μL.*

PS7410 *syEx1578; syIs300 V*

*Peft-3 split cGAL(DBD)-gp41-1N-intein driver (syEx1581 and syEx1582): pHW533, 10 ng/μL; Pmyo-2::NLS::mCherry, 10 ng/μL; pBlueScript, 80 ng/μL.*

PS7424 *syEx1581; syIs300 V*

PS7425 *syEx1582; syIs300 V*

*Peft-3 split gp41-1-C-intein-cGAL(AD) driver (syEx1586, syEx1587 and syEx1588): pHW531, 10 ng/μL; unc-119(+) rescue plasmid, 50 ng/μL; pBlueScript, 40 ng/μL.*

PS7683 *syEx1586; unc-119(ed3); syIs300 V*

PS7684 *syEx1587; unc-119(ed3); syIs300 V*

PS7685 *syEx1588; unc-119(ed3); syIs300 V*

Strains used in Fig. 4 and Fig. S5 and S6:

*Split cGAL drivers for MC neurons (syIs483, syIs484 and syIs485): pJL080, 25 ng/μL; pJL081, 25 ng/μL; Punc-122::rfp, 30 ng/μL; 1 kb ladder (NEB), 20 ng/μL.*

PS7521 syIs483 X                    *outcrossed x3*  
PS7522 syIs484                    *outcrossed x0*  
PS7523 syIs485                    *outcrossed x0*

*Split MC driver (syIs483) > HisCl1 effector (syIs371, 15xUAS::HisCl1::SL2::gfp::let-858 3'UTR)*  
PS7524 syIs371 III; syIs483 X  
PS7199 syIs371 III

*Split cGAL-N driver alone for MC neurons (syEx1601 and syEx1602): pJL080, 25 ng/μL; Pttx3::rfp, 40 ng/μL; 1kb ladder (NEB), 35 ng/μL.*

PS7739 syEx1601; syIs371 III  
PS7740 syEx1602; syIs371 III

*Split cGAL-C driver alone for MC neurons (syEx1603 and syEx1604): pJL081, 25 ng/μL; Pttx3::rfp, 40 ng/μL; 1kb ladder (NEB), 35 ng/μL.*

PS7741 syEx1603; syIs371 III  
PS7742 syEx1604; syIs371 III

Strains used in Fig. 5:

*Dominant PKA effector (syEx1596 and syEx1597): pHW539, 25 ng/μL; Pttx-3::rfp, 40 ng/μL; 1 kb ladder (NEB) 35 ng/μL.*

PS7525 syEx1596  
PS7526 syEx1597  
PS7527 syEx1596; syIs483 X  
PS7528 syEx1597; syIs483 X