**Supplementary Table 2: Fly strains and antibodies**

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| REAGENT or RESOURCE | SOURCE | IDENTIFIER |
| Fly strains | |  |
| Drosophila, Canton-S | Bloomington Drosophila Stock Center (BDSC) | 64349 |
| Drosophila, yw;; | Desplan lab | N/A |
| Drosophila, Opa:V5 | (Abdusselamoglu et al., 2019) | N/A |
| Drosophila, fkh:GFP | BDSC | 43951 |
| Drosophila, Ets65A:GFP | BDSC | 38640 |
| Drosophila, MzVum-Gal4 | BDSC | 29031 |
| Drosophila, Oaz-Gal4 | BDSC | 80596 |
| Drosophila, hth-RNAi | Vienna Drosophila Resource Center (VDRC) | v100630 |
| Drosophila, scro-RNAi | BDSC | 33890 |
| Drosophila, Oaz-RNAi | BDSC | 35715 |
| Drosophila, BarH1-RNAi | VDRC | v330335 |
| Drosophila, MARCM FRT82B | BDSC | 86311 |
| Drosophila, FRT2A | (Li et al., 2013)  Desplan lab | N/A |
| Drosophila, MARCM FRT42B | Uwe Walldorf | N/A |
| Drosophila, MARCM FRT40A | (Li et al., 2013)  Desplan lab | N/A |
| Drosophila, erm-FRT40A | (Weng et al., 2010)  Gift from Cheng-yu Lee | N/A |
| Drosophila, opa-FRT82B | (Lee et al., 207)  Gift from Deborah Hursh | N/A |
| Drosophila, ey-FRT80B | (Li et al., 2013)  Desplan lab | N/A |
| Drosophila, ey rescue-FRT80B | (Li et al., 2013)  Desplan lab | N/A |
| Drosophila, D-FRT2A | (Nambu et al., 1996)  Gift from John Nambu | N/A |
| Drosophila, hbn-FRT42B | (Kolb et al., 2021)  Walldorf lab | N/A |
| Drosophila, slp-FRT40A | (Sato et al., 2007)  Gift from Andrew Tomlinson | N/A |
| Drosophila, tll-FRT82B | (Pignoni et al., 1990)  Gift from Mitsuhiko Kurusu | N/A |
| Drosophila, UAS-HthORFCC | FlyORF | F004509 |
| Drosophila, UAS-eyORF3xHA | FlyORF | F000616 |
| Drosophila, UAS-hbnORF2xHA | FlyORF | F000105 |
| Drosophila, UAS- scroORF3xHA | FlyORF | F000666 |
| Drosophila, UAS-DORFCC | FlyORF | F004573 |
| Drosophila, UAS-TllORF3xHA | FlyORF | F000061 |
| Antibodies |  |  |
| Sheep anti-GFP (1:200) | BioRad | 4745-1051 |
| Chicken anti-GFP (1:1000) | Millipore Sigma | 06-896 |
| Chicken anti-V5 (1:500) | Abcam | ab9113 |
| Rat anti-elav (1:20) | Developmental Studies Hybridoma Bank (DSHB) | 7E8A10 |
| Rat anti-shg (1:100) | DSHB | DCAD2 |
| Rat anti-Dpn (1:200) | Abcam | ab195173 |
| Guinea pig anti-Dpn (1:250) | Desplan lab, aminoacid sequence reported in this study | N/A |
| Mouse anti-Arm (1:10) | DSHB | N27A1 |
| Guinea pig anti-Hth (1:500) | (Ozel, Simon et al., 2020)  Desplan lab | N/A |
| Guinea pig anti-Hth (1:500) | (Ryooo and Mann, 1999)  Gift from Richard Mann | N/A |
| Rabbit anti-Opa (1:500) | (Mendoza-Garcia et al., 2017)  Gift from Peter Gergen | N/A |
| Rat anti-Erm (1:100) | This paper | N/A |
| Rat anti-Oaz (1:50) | This paper | N/A |
| Rabbit anti-Ey (1:250) | This paper | N/A |
| Mouse anti-Ey (1:10) | DSHB | Anti-eyeless |
| Rat anti-Esg (1:200) | This paper | N/A |
| Rabbit anti-Hbn (1:1000) | This paper | N/A |
| Guinea pig anti-Scro (1:100) | This paper | N/A |
| Guinea pig anti-Slp2 (1:200) | This paper | N/A |
| Rabbit anti-D (1:500) | modEncode | N/A |
| Guinea pig anti-D (1:50) | (Ozel, Simon et al., 2020)  Desplan lab | N/A |
| Rabbit anti-BarH1 (1:500) | Gift from Kwangwook Choi | N/A |
| Rat anti-BarH1 (1:200) | (Perkins et al., 2011)  Gift from Tiffany Cook | N/A |
| Guinea pig anti-Tll (1:500) | This paper | N/A |
| Guinea pig anti-Tj (1:250) | (Gunawan et al., 2013)  Gift from Dorothea Godt | N/A |
| Guinea pig anti-Otd (1:1000) | This paper | N/A |
| Rat anti-Toy (1:50) | This paper | N/A |
| Rabbit anti-Toy (1:500) | (Ozel, Simon et al., 2020)  Desplan lab | N/A |
| Guinea pig anti-TfAP-2 (1:100) | This paper | N/A |
| Rat anti-Ap (1:100) | This paper | N/A |
| Rabbit anti-Bsh (1:1800) | (Ozel, Simon et al., 2020)  Desplan lab | N/A |
| Rabbit anti-Dll (1:100) | This paper | N/A |
| Guinea pig anti-Fd59A (1:400) | (Lacin et al., 2014)  Gift from James Skeath | N/A |
| Guinea pig anti-Kn (1:100) | This paper | N/A |
| Guinea pig anti-Run (1:500) | This paper | N/A |
| Rabbit anti-Sox102F (1:400) | This paper | N/A |
| Mouse anti-Svp (1:20) | DSHB | 5B11 |
| Mouse anti-Tup (1:100) | DSHB | 40.3A4 |
| Guinea pig anti-Vvl (1:300) | (Ozel, Simon et al., 2020)  Desplan lab | N/A |
| Rat anti-Vvl (1:100) | This paper | N/A |
| Guinea pig anti-Cha (1:400) | (Konstantinides et al., 2018)  Desplan lab | N/A |
| Guinea pig anti-VGlut (1:1000) | (Mahr and Aberle, 2006)  Gift from Hermann Aberle | N/A |
| Donkey anti-chicken DyLight 405 (1:100) | Jackson ImmunoResearch | 703-475-155 |
| Donkey anti-rat DyLight 405 (1:100) | Jackson ImmunoResearch | 712-475-153 |
| Donkey anti-mouse DyLight 405 (1:100) | Jackson ImmunoResearch | 715-475-151 |
| Donkey anti-rabbit DyLight 405 (1:100) | Jackson ImmunoResearch | 711-475-152 |
| Donkey anti-guinea pig DyLight 405 (1:100) | Jackson ImmunoResearch | 706-475-148 |
| Donkey anti-sheep Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 713-545-147 |
| Donkey anti-chicken Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 703-545-155 |
| Donkey anti-rat Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 712-545-153 |
| Donkey anti-mouse Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 715-545-151 |
| Donkey anti-rabbit Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 711-545-152 |
| Donkey anti-guinea pig Alexa Fluor 488 (1:500) | Jackson ImmunoResearch | 706-545-148 |
| Donkey anti-rat Cy3 (1:500) | Jackson ImmunoResearch | 712-165-153 |
| Donkey anti-mouse Alexa Fluor 555 (1:500) | Invitrogen | A31570 |
| Donkey anti-rabbit Alexa Fluor 555 (1:500) | Invitrogen | A31572 |
| Donkey anti-guinea pig Cy3 (1:400) | Jackson ImmunoResearch | 706-165-148 |
| Donkey anti-rat Alexa Fluor 647 (1:200) | Jackson ImmunoResearch | 712-605-153 |
| Donkey anti-mouse Alexa Fluor 647 (1:200) | Jackson ImmunoResearch | 715-605-151 |
| Donkey anti-rabbit Alexa Fluor 647 (1:200) | Jackson ImmunoResearch | 711-605-152 |
| Donkey anti-guinea pig Alexa Fluor 647 (1:200) | Jackson ImmunoResearch | 706-605-148 |