

```

EYG -----
TOE  MATSTSPGPTRTTAAIRVSLPGAAPAI PATATAGSQSPGAIMPMAAVPLPSHLQLLQSSA 60

EYG -----
TOE  GGVGQPAAITPV3PTAATTVLAQPHSLSPSTPFI LTQGA PPAALGGIFCGGSAAAGPGAA 120

EYG -----MSQHRLLLEFSRFGLRGYDIAQHMLTQQGAVSKLLGSLRPPGLIGGSKEK 50
TOE  AAAATNLNALASQHRLLLELSRFGLRGYDLAQHMLSQGAVSKLLGLTLPAPGLIGGSKEK 179
      *****
      *****

EYG  VATPTVVSKIEQYKRENPTIFAKEIKERLISEGVCTNATAPSVSSINRILAKRRAERVAT 110
TOE  VATPTVVSKIEQYKRENPTIFAKEIKERLITEGVCTNATAPSVSSINRILAKRRAERAAA 239
      *****

EYG  EFARTAAYG--LYPPFPHPYGSFTWHPAGNVPGGQGVPPPPP---PSALWSVVAF----- 160
TOE  EFARAASYGYA IHPTHPHPTYSFPTWPAHHPLMGAVPLATPPGGGPAGAGGALQPGGSGS 299
      *****

EYG  -----TLANLPPSAASAVPVSTCGSLSSAHLMAGGAGGTP--TNRAISPGSGSHDTLES 212
TOE  SYGSDGNMSSNPNSSNSNNTTHSNQHNTNSGSGGGDSSAGSGRLSLPALSFDGSGSRDSRSP 359
      .....

EYG  -ADENRHIDSDYLD---DDEPKFRNRRTTFSPEQLERLEKEFDKSHYPCVSTRERLSS 267
TOE  DADANRMI DIEGEDSESDQPKFRNRRTTFSPEQLDELEKEFDKSHYPCVNTREKLA 419
      *****

EYG  RTSLSEARVQVWF SNKRAKWRRHQRVNLKRRSSPANPLRSGQSNDA PASSPTPSNHSS 327
TOE  RTALSEARVQVWF SNKRAKWRRHQRVNLKRRSDSPS-----TSSSPTPLVNPV 467
      *****

EYG  ASTSAPVAVPFPFQQLPLOGDHSPOGFPPSVLLHPLHGPPGGHHHHHPLHLPTHPAALQ 387
TOE  VS---PVSPIP---VFPVAVPESGQOKQF-----YFYSTSNMCNTSSSSS 507
      *****

EYG  LLSHYHQGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG 447
TOE  NSQPCNTINFGSKMSSKNTSSVSSNQHMKEPAAAVATASPTASAPLSMGGENSAPRALPMT 567
      .....

EYG  PSAAAFLGLARQYAVAASLTVAEEQSRRLHYSAGGLGSGGEGTGPHNTTTQSGGSTMTVD 507
TOE  LPMP--MTLPTASAAAFALS FARQY IAKYMGTPLNIGHGSSPIQAQSGRDMQSEERLEYD 625
      *****

EYG  NSSSDSDREINVDSDRW 525
TOE  E--QEEBEVINVERDAE- 640
      *****

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NT

B

CT

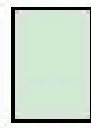
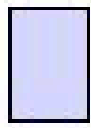
 = PD  = HD

Figure 1 Supplemental Data. Alignment of EYG and TOE

Table 1. Expression of full-length Eyg and Toe have differing phenotypic effects during development

GAL4 Driver	Tissue(s)	Reference	UAS-eyg FL	UAS-toe FL
P{GawB}55B	adult follicle cells, embryonic salivary gland	Brand and Perrimon, 1994	no effect	pupal lethal
P{GawB}C1003	embryonic CNS, PNS and epidermins	Jarvik et al., 1996	lethal	no effect
P{GawB}c315a	optic and laminar anlagen	Manseau et al., 1997	no effect	pupal lethal
P{GawB}c768	embryonic CNS and brain	Manseau et al., 1997	lethal	no effect
P{w[+mC]=GAL4-nos.NGT}40	broad pattern in early embryogenesis	Barrett et al., 1997	no effect	loss of thorax and scutellar bristles
P{w[+mC]=GAL4-Kr.C}DC1	bolwig organ, ectoderm, amnioserosa & fat body	Castelli-Gair et al., 1994	lethal	no effect
P{GawB}lzgal4	photoreceptors cone and pigment cells	Crew et al., 1997	smooth eye	lethal
P{Lsp2-GAL4.H}3	larval fat body	Reiling and Hafen 2004	no effect	pupal lethal
P{GawB}SG18.1	pupal and adult olfactory neurons	Jhaveri and Rodrigues, 2002	no effect	lethal
P{w[+mC]=ato-GAL4.3.6}14a	embryonic and larval brain, ESOP cells	Hassan et al., 2000	no effect	pupal lethal
P{GawB}cb11	eye antennal disc, brain, CNS	Ward et al., 2002	no effect	lethal
P{w[+mW.hs]=GawB}cb34	wing disc	Ward et al., 2002	no effect	wings fail to inflate
P{w[+mW.hs]=GawB}cb39	brain, CNS	Ward et al., 2002	rough eye	lethal
P{w[+mC]=eve.st3-GAL4.S}8	embryonic even-skipped stripe 3	Sharma et al., 2002	no effect	lethal
P{J21.17-GAL4}JO15	Johnston's organ	Sharma et al., 2002	no effect	larval lethal
P{GAL4-vg.M}2	wing disc	Bourouis, 2002	no effect	cell death in wing
P{GawB}c309	thoracic ganglion, mushroom body	Connolley et al., 1996	wing & thorax defects	larval lethal
P{GawB}(2)c855[c855]	malpighian tubule type 1 cell	Sozen et al 1997	no effect	wings fail to inflate
P{GawB}109-28	follicle cells of the dorsal appendage	Younger, 2001	wings fail to inflate	larval lethal
P{w[+mC]=Rh6-GAL4.D}2	subset of R8 photoreceptor neurons	Ratnakumar and Desplan 2003	no effect	lethal
P{GawB}DJ628	adult nervous system, cardia and testis	Seroude, 2002	no effect	larval lethal
P{GawB}DJ651	unknown cell types in adult	Seroude, 2002	no effect	wings fail to inflate
P{GawB}5015	lymph gland	Lopez, 1998	no effect	lethal
P{GawB}LL54	Visual Pigment Cells	Gu et al., 2004	no effect	lethal
P{GawB}cb28	imaginal discs, brain, CNS	Ward et al., 2002	wings fail to inflate	lethal
P{GawB}c825	amnioserosa	Sozen et al 1997	no effect	lethal
P{GawB}GII5	embryonic peritracheal cells, pericardial cells	Younger, 2001	no effect	lethal
P{GAL4-tim.E}62	circadian rhythm pattern of timeless gene	Kaneko et al., 2000	no effect	lethal
w[*]; P{GawB}43	embryonic glial cells and peripheral neurons	Bossing et al., 2002	no effect	lethal
P{GawB}rn[GAL4-5]	central region and notum of wing disc	St. Pierre et al., 2002	loss of wings	lethal
P{GawB}pnr[MD237]	amnioserosa, epidermis, proctodeum	Calleja et al., 1996	no effect	lethal
P{GawB}c329b	oocyte and follicle cells	Manseau et al., 1997	no effect	lethal
P{GawB}c204	oocyte and follicle cells	Manseau et al., 1997	no effect	lethal
P{GawB}(3)31-1[31-1]	embryonic CNS and PNS	Brand and Perrimon, 1994	no effect	lethal
P{GawB}cb04	In larva brain, CNS	Ward et al., 2002	no effect	lethal
P{GawB}cb19	embryonic foregut and hindgut	Ward et al., 2002	no effect	lethal
P{GawB}cb29	embryonic CNS and larval brain	Ward et al., 2002	no effect	lethal
P{GawB}cb40	embryonic PNS	Ward et al., 2002	no effect	lethal
P{Pdf-GAL4.P2.4}2	embryonic brain and CNS	Park, 2003	no effect	lethal
P{GawB}C833	CNS and PNS, larval brain, eye, wing	Hrdlicka et al., 2002	no effect	lethal
P{GawB}DII[md23]	embryonic head segments, leg & antennal disc	Calleja et al., 1996	lethal	no effect
P{GawB}c81	larval brain and CNS	Manseau et al., 1997	lethal	no effect
P{GAL4E69}puc[GAL4E69]	embryonic epidermis	Adachi-Yamada, 2002	lethal	no effect

Table 2. Differing phenotypes resulting from the expression of Eyg and Toe variants

	<u>ey-GAL4</u>	<u>GMR-GAL4</u>	<u>109.69-GAL4</u>	<u>Eh2.4-GAL4</u>	<u>109.28-GAL4</u>	<u>ap-GAL4</u>
<u>Deletion Proteins</u>						
EYG FL	rough eye	smooth eye	rough eye	wing defect	wing defect	emb. lethal
EYG ΔNT	NE	NE	NE	NE	NE	NE
EYG ΔNT+PD	NE	NE	NE	NE	NE	NE
EYG ΔB	eye loss	smooth eye	eye loss	wing defect	wing defect	emb. lethal
EYG ΔHD	NE	NE	NE	NE	NE	NE
EYG ΔCT	NE	NE	NE	NE	NE	NE
EYG ΔNT+CT	NE	NE	NE	NE	NE	NE
EYG ΔNT+B+CT	NE	NE	NE	NE	NE	NE
TOE FL	small eye	smooth eye	rough eye	NE	NE	emb. lethal
TOE ΔNT	NE	NE	NE	NE	NE	NE
TOE ΔNT+PD	NE	NE	NE	NE	NE	NE
TOE ΔB	small eye	rough eye	rough eye	wing defect	wing defect	emb. lethal
TOE ΔHD	rough eye	smooth eye	rough eye	NE	NE	emb. lethal
TOE ΔCT	NE	NE	NE	NE	NE	NE
TOE ΔNT+CT	NE	NE	NE	NE	NE	NE
TOE ΔNT+B+CT	NE	NE	NE	NE	NE	NE
<u>Chimeric Proteins</u>						
EYG/TOE NT	eye loss	smooth eye	rough eye	wing defect	wing defect	emb. lethal
EYG/TOE PD	rough eye	smooth eye	rough eye	wing defect	NE	emb. lethal
EYG/TOE B	rough eye	smooth eye	rough eye	wing defect	NE	emb. lethal
EYG/TOE HD	rough eye	smooth eye	rough eye	wing defect	wing defect	emb. lethal
EYG/TOE CT	NE	smooth eye	rough eye	wing defect	NE	emb. lethal
EYG/TOE NT+CT	eye loss	pupal lethal	eye loss	wing defect	NE	emb. lethal
EYG/TOE PD+HD	rough eye	smooth eye	rough eye	wing defect	NE	emb. lethal