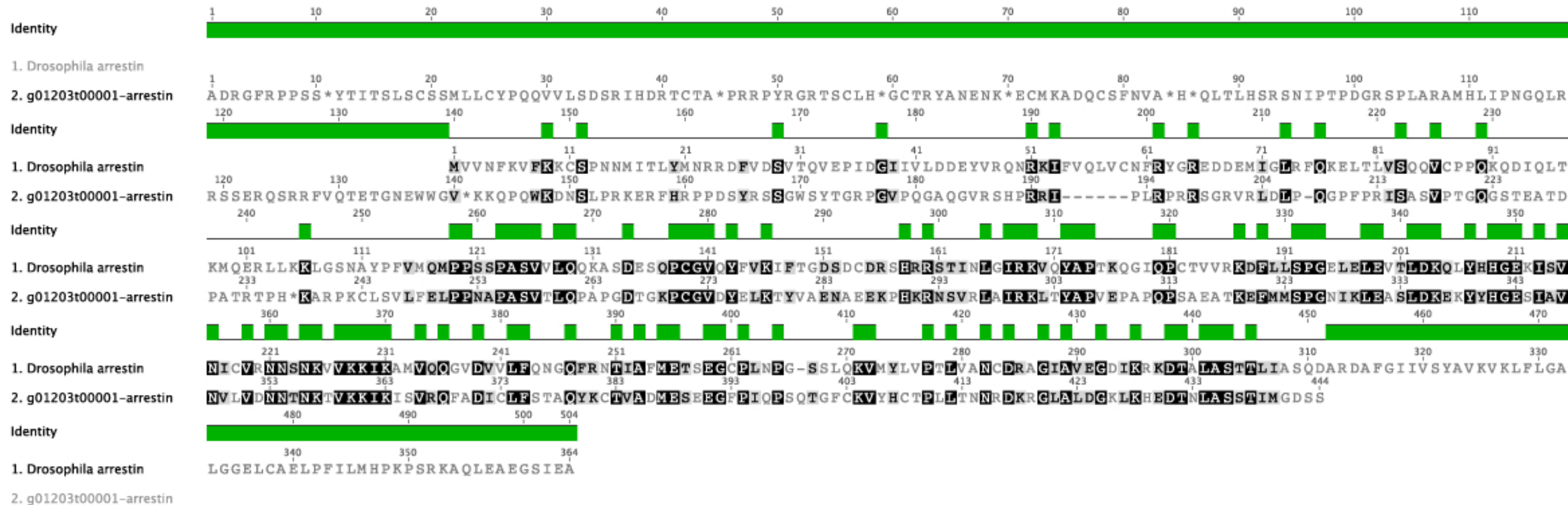
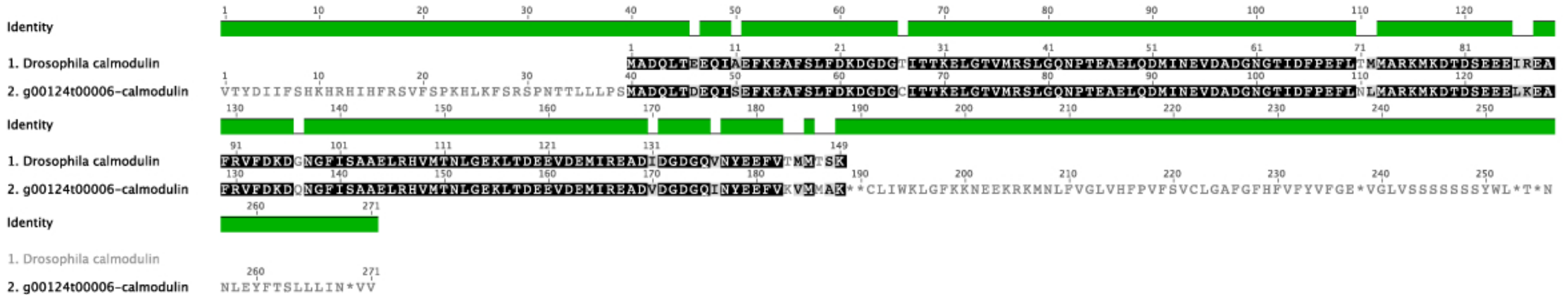


Supplemental Figure 1. Amino acid alignments of scallop Gq-protein coupled phototransduction genes to known homologs. Phototransduction gene sequences from the *Placopecten magellanicus* adult eye transcriptome were translated and aligned to known homologs from *Drosophila*. Alignments were completed and exported from Geneious v. 5.6 (www.geneious.com). The graph above the alignment represents mean pairwise identity of each residue pair in each column, with green bars representing identical residues and missing bars highlighting areas where the sequence is different. End gaps in the alignments have solid green bars. Amino acids are shaded based on similarity, with black representing identical residues between the two sequences, grey representing similar residues, and white representing dissimilar residues. *A*=*arrestin*, *B*=*calmodulin*, *C*=*DAG kinase*, *D*=*Gq-protein alpha subunit*, *E*=*G-protein beta subunit*, *F*=*G-protein gamma subunit*, *G*=*opsin*, *H*=*phospholipase C*, *I*=*PI kinase*, *J*=*PI synthase*, *K*=*PI transferase*, *L*=*PIP kinase*, *M*=*protein kinase C*, *N*=*rhodopsin kinase*, *O*=*TRP*, *P*=*TRPL*.













A



B



Identity

Identity	
1. Drosophila DAG kinase	1 10 20 30 40 50 60 70 80 90 100 110 120 MQQQQQPSIDQLPEPTASTSNSATTKPTIA TATTTSTTTSGNNFHQQLQATTAATMQR LR TTFTSRSTPTGAEMKM QNSLEV PKQVRSASFDEM QLESQRASSSLKQQSSSSA SADERSSSE
2. g00624t00001-DAG kinase	130 140 150 160 170 180 190 200 210 220 230 240
Identity	
1. Drosophila DAG kinase	130 140 150 160 170 180 190 200 210 220 230 240 AGFLQVPLAAHQQRSHSFDSATASAGSDDSGTFLEVPRRLKARRSSSTKTPPPCIHCHYLEEYERRMTAEQR YFIDHREL TALSYSNTSSEA SEDEDEVEGHNA EEEEEGSAAIEDAE EETT
2. g00624t00001-DAG kinase	250 260 270 280 290 300 310 320 330 340 350 360
Identity	
1. Drosophila DAG kinase	250 260 270 280 290 300 310 320 330 340 350 360 EAATEEADDPRTVEVESEHDHDPDDDAALEMDIRIGNMSQGS SIEESRARLPRQMRRTIGSSSVTSA SEDEGLEGSDNGSPHFGNTLLPPQPTTPCGITFTLSPTNGDY PSPPHLPLDPGS
2. g00624t00001-DAG kinase	370 380 390 400 410 420 430 440 450 460 470 480
Identity	
1. Drosophila DAG kinase	370 380 390 400 410 420 430 440 450 460 470 479 PPISPSSNSGR LPALAPIISTPCSSADADDAGAAMGLPVRARRRSISRQEAIFVEPTGNSLENV SHEEV DNSNTKSSVD TADSLDEASTMA TCGSPGAAGGSGASSSHH-NAFVVRDIYLM
2. g00624t00001-DAG kinase	460 470 479 GFP TCLANNMASIPGLR*QHGIHTQH*QTL* *M
Identity	
1. Drosophila DAG kinase	489 499 509 519 529 539 549 559 568 578 588 598 607 VPDLKRDRAA SVDS CFSKLSNAKTEELQPSADGCF LTVPNINATR SR SVDIVLPTDEQAR YKALSMTGSTV TYADGRRT-ASA SNSRRRIRIV PDWTENAVQGEHYWKPT SASGDLCLN
2. g00624t00001-DAG kinase	490 500 510 520 530 540 550 560 570 580 590 600 610 IYEEDDTLVE S MAEC-SSIPSDSDEDEATKLPQFS FHKQTSYRTGDIVIVTDLLSGDGHSK-KAISKNALNHAANYLHPTAEAEHG YRRRLRDNVDWLDQATNSEHLWVETNASGDVCYAME
Identity	
1. Drosophila DAG kinase	617 627 637 647 657 667 677 686 696 706 716 726 EECIKSGRRKCAQIVAHHN CIPFVNEK LCKPTYRDVGIRYREOTTTHHHWVHRKLEK GKCKOCGKAVQSKL-FGSKEIVALACAWCHEIYHNKEACFNQAKIGEECR LGNYAPII
2. g00624t00001-DAG kinase	620 630 640 650 660 670 680 690 700 710 720 730 PDCMRSGPRRKCAKIVAHTA CIGIL-EKKNLCKPTREAGLRNYREOTS MRHHWVHRRRQEGKCKOCGKSFQRFAFOSKEIIAISCSWCKAAYHNK VSCFMIQDGGTMRWWGP REHC
Identity	
1. Drosophila DAG kinase	736 746 756 766 776 786 796 806 816 826 836 846 VPPSWIVKLPTKGNFKSSIRVSNKNNAASGSGGGGAGGGA GGGGKSKQTQRRQKGKEEKKEPRAFIVKPIPSPEV IPVIVFINPKSGGNQGHKLLGKFQHLLNPRQVFDLTQGGPKMGLD
2. g00624t00001-DAG kinase	740 750 760 770 780 790 800 810 820 830 840 850 SSICCTIK
Identity	
1. Drosophila DAG kinase	856 866 876 886 896 906 916 926 936 946 956 966 MFRKAPNLRVLA CGDGTGVWVLSVLDQIQPPLQPA PAVGVLPLGTGNDLARALGWGGGYTDEPIGKILREIGM SQCVLM DRWRVKVTPNDDVTDDHVDR SKPNVPLNVINNYSFGVDAHI
2. g00624t00001-DAG kinase	980 990 1,000 1,010 1,020 1,030 1,040 1,050 1,060 1,070 1,080 1,090
Identity	
1. Drosophila DAG kinase	976 986 996 1,006 1,016 1,026 1,036 1,046 1,056 1,066 1,076 1,086 ALEFHEAREAHPERFNSRLRNKMYYGQMGKDLILRQYRNLSQWVTLECDGQDFTGKL RDAGCHAVLFLNIPSYGGGTHPWNDSFGASKPSIDDGLMEVVGLTTYQLPMLQAGMHGTCICQC
2. g00624t00001-DAG kinase	1,100 1,110 1,120 1,130 1,140 1,150 1,160 1,170 1,180 1,190 1,200 1,210 1,220
Identity	
1. Drosophila DAG kinase	1,096 1,106 1,116 1,126 1,136 1,146 1,156 1,166 1,176 1,186 1,196 1,206 1,216 RKARIIITKRTIPMQVDGEACRVKPSVIEIELLNKALMLSKRKHGRGDVQVNP LEKMLHLIRVTMQQYEQYHYDKEMLRKLANKLGQIEIESQCDLEHVRNMLNTKFEEISYPKVSQDWCF
2. g00624t00001-DAG kinase	1,230 1,240 1,250 1,260 1,270 1,280 1,290 1,300 1,310 1,320 1,330 1,340
Identity	
1. Drosophila DAG kinase	1,226 1,236 1,246 1,256 1,266 1,276 1,286 1,296 1,306 1,316 1,326 1,336 IDSCTAEHYFRIDRAQEHLHYICDIAIDELYILDHEAATMPQTPDQERSFAAFSQRQAQNERRQMDQAQGRGPGSTDEDLQIGSKPIKVMKWKSPILEQTSDAILLAAQSGDLNMLRALHEQ
2. g00624t00001-DAG kinase	1,350 1,360 1,370 1,380 1,390 1,400 1,410 1,420 1,430 1,440 1,450 1,456
Identity	
1. Drosophila DAG kinase	1,346 1,356 1,366 1,376 1,386 1,396 1,406 1,416 1,426 1,436 1,452 GYSLQSVNKNQGTALHFA CKYNHRDIVKYIIASA TRRLINMA DKELGQTALHIAAEQNRRDICVMLVAAGAHLD TLDSGGNTPMMVAFNKNA NEIATYLESKQGTQPV DGWLDD
2. g00624t00001-DAG kinase	

D

Identity

1. Drosophila Gq-protein alpha subunit

2. g06702t00001-Gq-protein alpha subunit

Identity

1. Drosophila Gq-protein alpha subunit

2. g06702t00001-Gq-protein alpha subunit

Identity

1. Drosophila Gq-protein alpha subunit

2. g06702t00001-Gq-protein alpha subunit

Identity

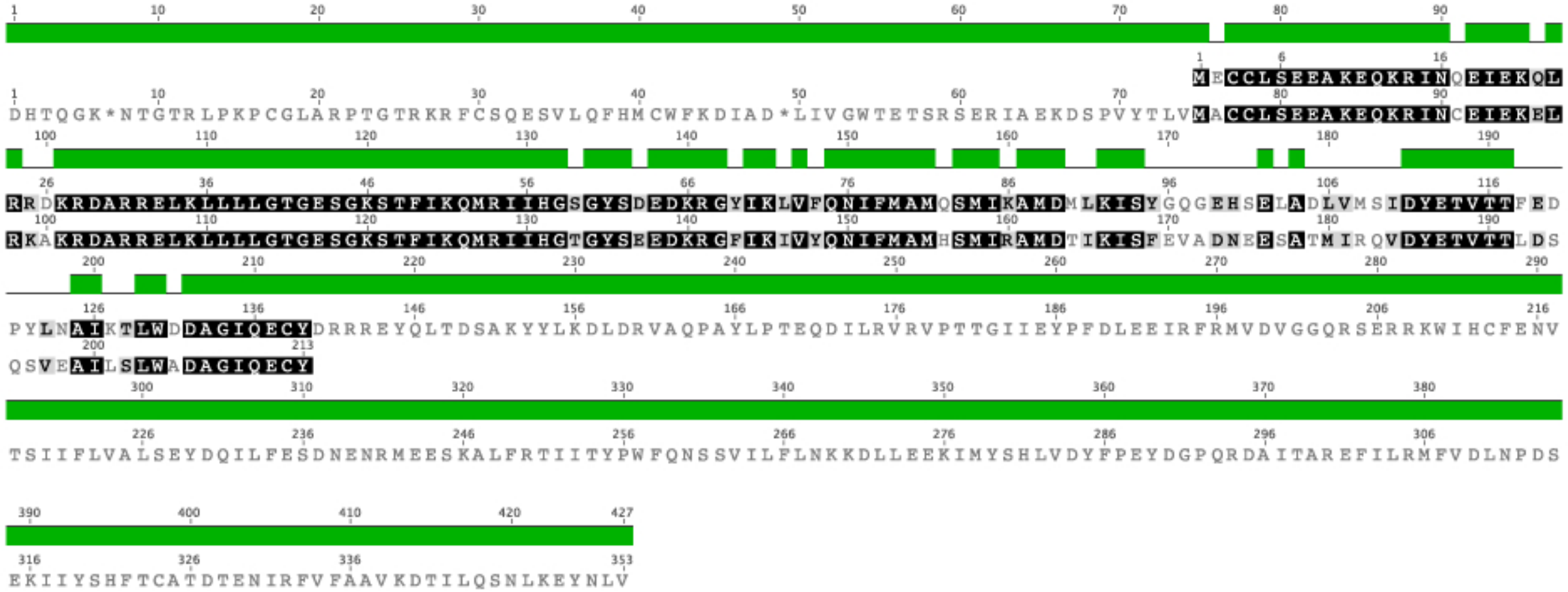
1. Drosophila Gq-protein alpha subunit

2. g06702t00001-Gq-protein alpha subunit

Identity

1. Drosophila Gq-protein alpha subunit

2. g06702t00001-Gq-protein alpha subunit



E

Identity

1. Drosophila G-protein beta subunit

2. g16634t00001-G-protein beta subunit

Identity

1. Drosophila G-protein beta subunit

2. g16634t00001-G-protein beta subunit

Identity

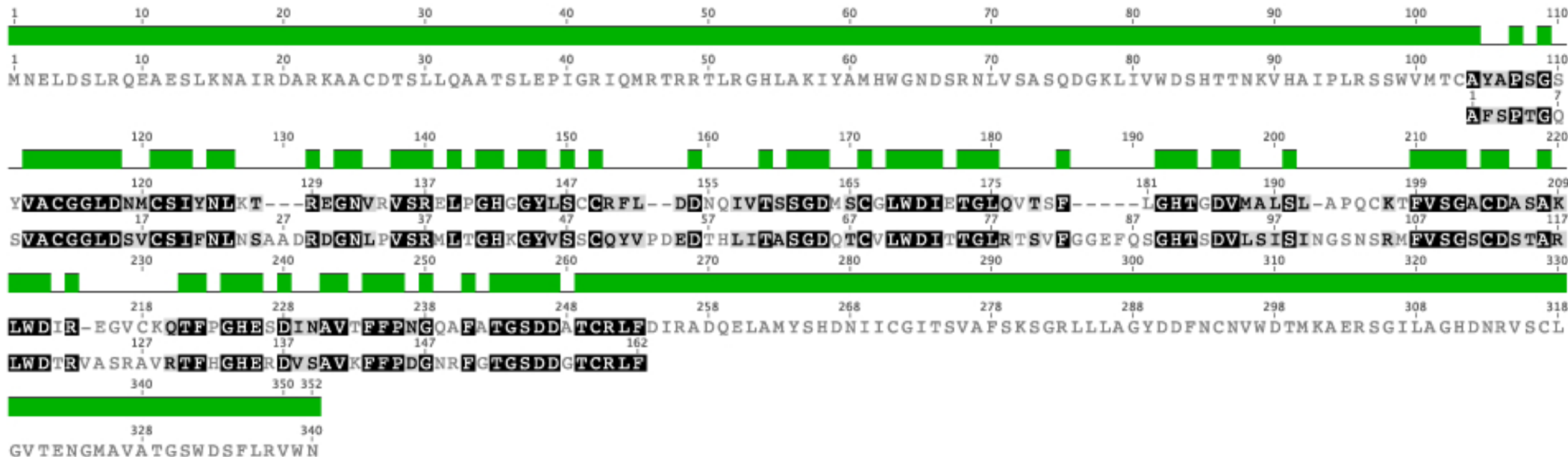
1. Drosophila G-protein beta subunit

2. g16634t00001-G-protein beta subunit

Identity

1. Drosophila G-protein beta subunit

2. g16634t00001-G-protein beta subunit

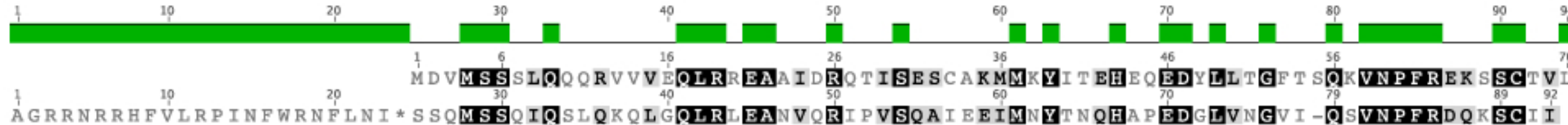


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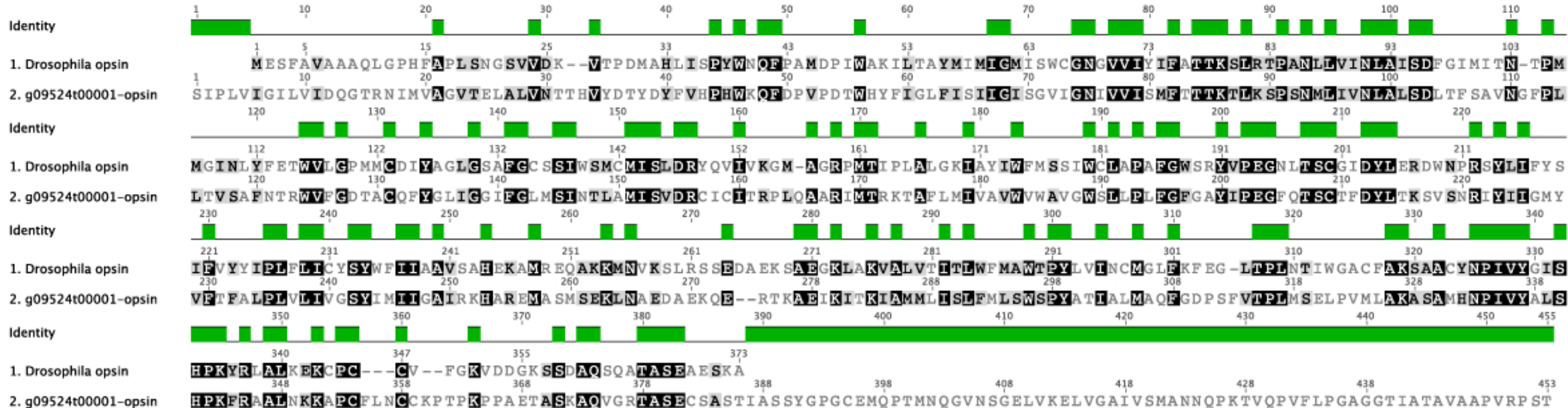
Identity

1. Drosophila G-protein gamma subunit

2. g18996t00001-G-protein gamma subunit



G



Identity	<div><div></div><div>110120</div></div>
1. Drosophila phospholipase C (norpA)	MTKKYEFDWIIPVPPELTTGCVFDRWFENEKETKENDFERDALFKVDEYGFFLYWKSEGRDGDVIELCQVSDIRAGGTPKDKPKILDKVTKKNGTNIPELDRSLTICSNTDYINITYHHVICP
2. g04826t00001-phospholipase C	
Identity	<div><div></div><div>130140150160170180190200210220230240</div></div>
1. Drosophila phospholipase C (norpA)	DAATAKSWQKNLRLITHNNRATNVCPRVNLMKHWMLSYCVEKSGKIPVKTLAKTFASGKTEKLVYTCIKDAGLPDDKNATMTKEQFTFDKFYALYHKVCPRNDIEELFTSITKGKQDFISLE
2. g04826t00001-phospholipase C	
Identity	<div><div></div><div>250260270280290300310320330340350360</div></div>
1. Drosophila phospholipase C (norpA)	QFIQFMNDKQRDPRMNEILYPLYEEKRCTEIIINDYELDEEKKKNVQMSLDGFKRYLMSDENAPVFLDRDLDFYMEMDQPLAHYYINSSHNTYLSGRQIGGKSSVEMYRQTLLAGCRCVELDCWN
2. g04826t00001-phospholipase C	
Identity	<div><div></div><div>380390400410420430440450460470480490</div></div>
1. Drosophila phospholipase C (norpA)	GKGEDEEPIVTHGHAYCTEILFKDCIQAIADCAFVSSEYPVILSPFNHCNRAQQYKLAKYCDDFFGDLLKEPLPDHPLDPGLPLPPPCKLKRKILIKNKRMPVEVEKVELELWLKGELKTDD
2. g04826t00001-phospholipase C	
Identity	<div><div></div><div>500510520530540550560570580590600610</div></div>
1. Drosophila phospholipase C (norpA)	DPEEDASAGKPPEAAAAPAPAPEAAAAAEGAAEGGGGAEEAA--AANYSGSTTNVHPWLSSMVNYAOPIKFQGFDKAIEKNIAHNMSSFAESAGMNYLKQSSIDFVNYNKROMSRIYPKGT
2. g04826t00001-phospholipase C	MTADEEAA ¹³ LM ¹³ SA ²³ HYSGATTNIEP ³³ YLSAMVNYAOPIKE ⁴³ NGFDVA ⁵³ BERNIHYHMSSFN ⁶³ ESTGLGLY ⁷³ LKSH ⁸³ AVELVNYNKROMSRIYPRGS
Identity	<div><div></div><div>620630640650660670680690700710720730</div></div>
1. Drosophila phospholipase C (norpA)	RADSS ⁹³ NYMPQVFWNAGCOMVSLN ¹⁰³ FQSS ¹¹³ DI ¹²³ PMOLNQGKFEYNG ¹³³ CGYLLKPDFMRR ¹⁴³ ADK ¹⁵³ DFPFADAPVDGVIAA ¹⁶³ CSVKVIAGQFLSDKKV ¹⁷³ GTYVEVDMF ¹⁸³ GLPS ¹⁹³ DTVKKEFRTRLV ²⁰³ ANNGLNP
2. g04826t00001-phospholipase C	RVDS ⁹³ NYMPQLFWNAGCOMVALN ¹⁰³ FQTP ¹¹³ DIAMOLNQGKFEYNG ¹²³ CGYLLKPDFMRR ¹³³ PDRT ¹⁴³ FEPPFSES ¹⁵³ PVDGVIAA ¹⁶³ CSVOVISGQFLSDKKI ¹⁷³ GTYVEVDMY ¹⁸³ GLPT ¹⁹³ DTIRKEFRTKMV ²⁰³ PSNGLNP
Identity	<div><div></div><div>740750760770780790800810820830840850860</div></div>
1. Drosophila phospholipase C (norpA)	VYNED ²¹³ PFVFRKVVLPDLAVLR ²²³ FV ²³³ VEESGKILG ²⁴³ QRIPLDGLQAGYR ²⁵³ IVSLRTE ²⁶³ ANFPM ²⁷³ SLPML ²⁸³ EFVN ²⁹³ IELKIYV ³⁰³ PDGFED ³¹³ FAM ³²³ LSDP ³³³ RGFAGAAKQONEQ ³⁴³ MKALGI ³⁵³ EEQSGGAARD ³⁶⁷ AGKAKE
2. g04826t00001-phospholipase C	VYNDEEFVFRKVVLPDLAVLR ²¹³ IAV ²²³ FEDT ²³³ GKLI ²⁴³ GQRIPLDGLQAGRY ²⁵³ IVSLRTE ²⁶³ GNFPL ²⁷³ SLPT ²⁸³ VFCR ²⁹³ IELKTYIP ³⁰³ DKHL ³¹³ DFVKLL ³²³ SNPE ³³³ KQLKEMGIDTSD ³⁴³ IIDSPVPCPGPAS ³⁵³ RQLSGSSLT
Identity	<div><div></div><div>870880890900910920930940950960970980</div></div>
1. Drosophila phospholipase C (norpA)	EEKKEPPLVFEPVTLE ³⁴³ SLRQEKGF ³⁵³ OKV ³⁶⁷ GKKQIKELDTLRKKHAKERTSVQKTQNA ³⁷⁷ AIDKLIK ³⁸⁷ GKSKDDIRNDANIKNSINDQTKQWTD ³⁹⁷ MIARHRKEEWDMLRQHVQDSQDAMKALMLTVQAAQ
2. g04826t00001-phospholipase C	TGSNGQVTSNSSYAD ³⁴³ KPAGTPNAS ³⁵³ OKRRR ³⁶⁷ KKMI
Identity	<div><div></div><div>9901,0001,0101,0201,0301,0401,0501,0601,0701,0801,0901,098</div></div>
1. Drosophila phospholipase C (norpA)	IKQLEDRHARDIKDLNAKQAKMSADTAKEVQNDKTLTKTNEKDRRLREKRQNNVKRFMEKKQIGVKQGRAMEKCLKLAHSKQIEEFSTDVQKLMDMYKIEEEAYKTQGKTEFYA
2. g04826t00001-phospholipase C	

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

1 10 20 30 40 50 60 70 80 90 100 110 120

1 10 20 30 40 49 59 69 79 89 99 108 118

MNMMDNRALAYVAHQPKYETPPEEAEPFCMRFSVN**LW**K**N**E**M**L**N**W**V**D**L**I**-****CL**L**P**N**G**F**L**L**E**L**R**V**N**P**A**N**T**I**Q**V**I**K**V**E**M**V**N**Q**A**K**O**M**P**L**G**Y**V**I**K**E**A**C**E**Y**Q**V**Y**G**I**S**T**-**F**N**I**E**P**Y**T**D**E**T**K**R**L**S**E**V**Q**P**Y**F**G**I**L**S**I**G**E**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

30 140 150 160 170 180 190 200 210 220 230 240 250

128 137 147 157 167 176 186 196 206 216 221 231 241

-**R**T**D**T**S**F**S**S**D**Y**E**L**T**K**M**V**N**G**M**I**G**T**F**D**H**N**R**T**H**G**S**P**E**I**D**D**F**R**L**Y**M**T**Q**T**C**-**D**N**I**E**L**E**R**S**A**Y**T**W**Q**R**L**L**Y**E**H**P**L**R**L**A**N**S**T**K**M**P**E**L**I**R**E**R**H**P**T**R**-**T**E**L**I**V**-**-**-****V**K**N**E**N**D**Q**S**T**E**L**S**V**N**E**Q**D**T**P**F**S**I**T**E**S**T**L**Q

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

260 270 280 290 300 310 320 330 340 350 360 370 380

220 230 240 250 260 270 280 290 300 310 319 329 339

KM**N**R**-**-**-**-**S**O**M**K**M**N**D**R**T**S**D**Y**I**L**K**V**S**G**R**D**E**Y**L**L**G**D**Y**P**L**I**O**F**L**Y**I**O**E**M**L**S**D**S**A**V**P**N**V**L**S**V**R**L**S**Y**I**N**H**N**-**E**Q**A**M**V**T**K**R**P**L**P**K**K**R**T**V**H**L**H**K**S**I**S**S**L**W**D**M**G**N**Y**F**O**L**T**H**S**I**S**N**V**N**F**D**K**T**R**A**L**K**V**G**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

390 400 410 420 430 440 450 460 470 480 490 500 510

220 230 240 250 260 270 280 290 300 310 319 329 339

RR**S**R**M**M**G**I**T**K**E**H**A**E**R**C**I**D**V**S**T**A**Y**A**L**K**V**C**S**D**Q**F**L**L**E**F**P**I**S**O**Y**K**Y**V**R**E**C**I**G**I**E**K**I**P**Q**F**M**L**T**R**E**G**I**A**A**L**P**E**N**N**F**T**M**P**S**Y**A**O**R**G**L**Q**A**L**L**D**I**N**-**N**K**Q**T**I**S**L**W**E**I**Q**A**N**L**R**I**R**I**L**C**A**T**Y**V**N**V**K**E**-**-****S**C**K**I**F**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

372 382 392 402 412 422 432 442 452 462 472 481 488

347 357 367 375 383 393 403 412 422 432 442 452 462

VH**V**C**L**Y**H**G**D**K**K**L**C**A**Q**R**S**T**D**S**P**N**G**N**F**D**T**F**L**F**N**D**L**V**M**D**F**D**I**O**M**R**N**L**P**R**M**T**R**L**C**I**V**L**I**F**E**V**T**K**M**S**R**S**K**K**S**S**N**K**D**I**A**L**K**D**V**P**Y**N**K**N**P**L**A**W**V**N**T**T**I**F**D**H**K**D**I**L**R**T**G**R**-**H**T**L**Y**T**W**T**Y**A**D**D**I**-**-****-****Q**S**V**E**V**F**H**P**L**G**T**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

520 530 540 550 560 570 580 590 600 610 620 630 640

498 508 517 527 537 547 557 567 577 587 597 607 617

VR**A**G**V**F**H**G**T**E**A**L**C**E**P**D**T**K**L**V**E**S**N**N**P**R**-**-**W**N**E**W**-**L**E**F**-**L**Y**I**P**D**I**P**R**S**A**R**L**C**L**S**I**C**C**V**S**K**R**K**I**G**R*****S**A**T**H***P**-**G**V**T**C**R**C**L**T**L**T**T**V**C*****M**R**R**S**V*****T**C**G**P**C**H**R**E**W**T**I**H**S**T**P**S**G**S**O**A**P**T**L**T**R**R**R**P**V*****R*****S**L**T**S**S**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

498 508 517 527 537 547 557 567 577 587 597 607 617

472 482 492 502 512 522 531 540 550 560 570 577 577

IE**P**N**P**R**K**E**E**C**A**L**V**D**L**-**T**E**L**S**S**G**T**G**T**V**R**Y**P**S**E**E**V**V**L**Q**Y**A**A**D**R**E**Q**V**N**R**L**Q**R**Q**L**A**G**P**E**K**P**I**K**E**L**K**E**L**M**A**N**Y**T**G**L**D**K**I**Y**E**M**V**D**Q**D**R**N**A**I**W**E**R**R**N**D**I**L**R**E**L**P**E**E**L**S**I**L**L**H**C**V**W**K**E**R**D**D**V**A**D**M**W**Y**L**L**K**Q**W**P**L**I**S

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

627 637 647 657 667 677 687 697 707 717 727 737 747

650 660 670 680 690 700 710 720 730 740 750 760 770

IE**R**S**L**E**L**L**D**Y**A**Y**P**D**P**A**V**R**R**F**A**I**R**C**L**H**F**L**K**D**E**D**L**L**Y**L**L**Q**L**V**Q**A**I**K**H**E**S**Y**L**E**S**D**L**V**V**F**L**L**E**R**A**L**R**N**Q**R**I**G**H**Y**F**F**W**H**L**R**S**E**M**Q**T**P**S**M**Q**T**R**F**G**L**L**E**V**Y**L**K**G**C**K**H**H**V**A**P**L**R**K**Q**L**H**V**L**E**K**L**K**Q**G**S**L**I**A**K**K**G**S**K**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

780 790 800 810 820 830 840 850 860 870 880 890 900

757 767 777 787 797 807 817 827 837 847 857 867 877

EK**V**K**T**M**L**Q**D**F**L**R**D**Q**R**N**S**A**V**F**Q**N**I**Q**N**P**L**N**P**S**F**R**C**S**G**V**T**P**D**R**C**K**V**M**D**S**K**M**R**P**L**W**V**V**F**E**N**A**D**V**N**A**S**D**V**H**I**I**F**K**N**G**D**D**L**R**Q**D**M**L**T**L**Q**M**L**R**V**M**D**Q**L**W**K**R**D**G**M**D**F**R**M**N**I**Y**N**C**I**S**M**E**K**S**L**G**M**I**E**V**V**R**H**A**E**T**I**A**N**I**Q**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

910 920 930 940 950 960 970 980 990 1,000 1,010 1,020 1,030

887 897 907 917 927 937 947 957 967 977 987 997 1,007

KE**K**G**M**F**S**A**T**S**P**F**K**K**G**S**L**L**S**W**L**K**E**H**N**K**P**A**D**K**L**N**K**A**I**N**E**F**T**L**S**C**A**G**Y**C**V**A**T**Y**V**L**G**V**A**D**R**H**S**D**N**I**M**V**K**R**N**G**Q**L**F**H**I**D**F**G**H**I**L**G**H**F**K**E**K**L**G**V**R**R**E**R**V**P**F**V**L**T**H**D**F**V**Y**V**I**N**K**G**F**N**D**R**E**S**K**E**F**C**H**F**Q**E**L**C**E**R**A**F**L**

Identity

1. Drosophila PI kinase

2. g00993t00001-PI kinase

1,040 1,050 1,060 1,070 1,080 1,090 1,100 1,111

1,017 1,027 1,037 1,047 1,057 1,067 1,077 1,088

VL**R**K**H**G**C**L**I**L**S**L**F**S**M**I**S**T**G**L**P**E**L**S**S**E**K**D**L**D**Y**L**R**E**T**L**V**D**Y**T**E**E**K**A**R**E**H**F**R**A**K**F**S**E**A**L**A**N**S**W**K**T**S**L**N**W**A**S**H**N**F**S**K**N**N**K**Q**

J

Identity

1. g10207t00001-PI synthase

2. Drosophila PI synthase

Identity

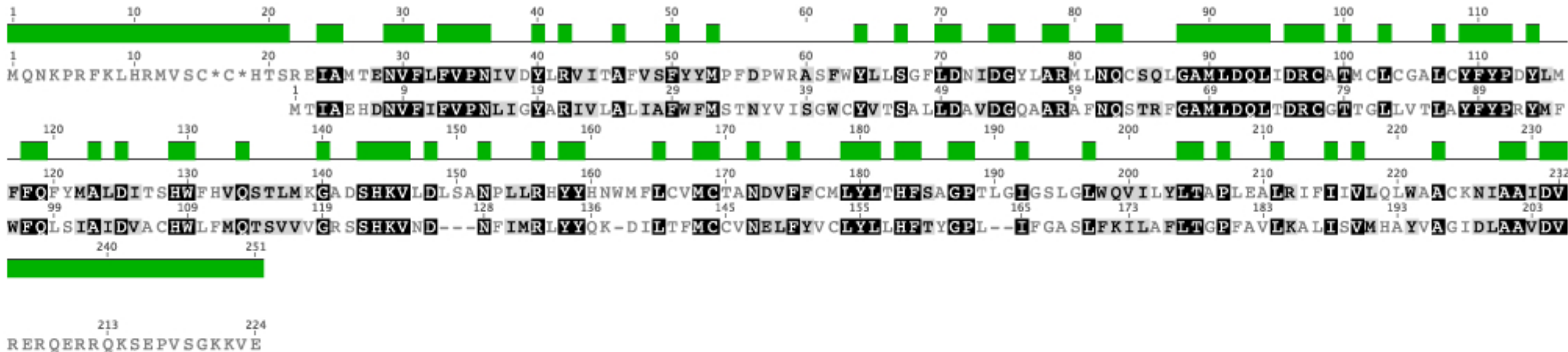
1. g10207t00001-PI synthase

2. Drosophila PI synthase

Identity

1. g10207t00001-PI synthase

2. Drosophila PI synthase



K

Identity																																																																																																																								
1. g14156t00001-PI transferase	1	10	20	30	40	50	60	70	80	90	100	110	120																																																																																																											
2. Drosophila PI transferase (rdgB)	SI I S S S F D Y A A A A Y S S M * Q Q F Q P G L Y S E C Y T M R N V R G N E R L N L L I R L L D K E V R * T N * K A A V R L A V D S Q I Q K I * T C W Y R Q A W F V K R I K A S L R L I P D S S W M T L S I G H V L T G N V Q F * P K N L K																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	130	140	150	160	170	180	190	200	210	220	230	240																																																																																																												
2. Drosophila PI transferase (rdgB)	Q N E V Q E Y A C S L Q L * R N W P G G V I K V K S G V G H V S P T I A S * D L D N R H H V D K G I S H R S A D E C G R V S Y R P A - L H - D T E K S R E E S H G E G S G V E I L T N E P Y T D G P G G D G O Y T Y K I Y H I G S H L P G W F R																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	250	260	270	280	290	300	310	320	330	340	350	360																																																																																																												
2. Drosophila PI transferase (rdgB)	M L I K E Y R I P L P L T V E E Y R I A Q L Y M I A K K S R E E S H G E G S G V E I I T N E P Y K D G P G G N G O Y T K K I Y H V G N H L P G W I K																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	248	258	268	283																																																																																																																				
2. Drosophila PI transferase (rdgB)	A I L P K S A L M V E E E A W N A Y P Y T K T R Y R C P F V E K F L E I E T Y Y M N D G																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	370	380	390	400	410	420	430	440	450	460	470	480																																																																																																												
2. Drosophila PI transferase (rdgB)	S L L P K S A L M V E E E A W N A Y P Y T K T R Y T C P F V E K F S L D I E T Y Y Y P D N G Y Q D N V F Q L S G S D L R N R I V D V I D I V K D Q L W G G D Y V K E E D P K H F V S D K T G R G P L A E D W L E E Y W R E V K G K K Q P T P R N																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	204	214	224	234	244	254	264	274	284	294	304	314																																																																																																												
2. Drosophila PI transferase (rdgB)	M S L M T A Y K I C R V E F R Y W G M Q T K L E K F I H D V A L R K M L R A H R Q A W A W Q D E W F G L T I E D I R E L E R Q T Q L A L A K K M G G G E E C S D D S V S E P Y V S T A A T A A S T T G S E R K K S A P A V P P I V T Q Q P P S																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	324	334	344	354	364	374	384	394	404	414	424	434																																																																																																												
2. Drosophila PI transferase (rdgB)	A E A S S D E E G E E E D D D E D E N D A I G T G V D L S A N Q G G S A Q R S R S Q S I Q M A Q K G K F G S K G A L H S P V G S A H S F D L Q S K K P H A K T A P R R H V A N W R M E R L E V D S K S N S D E E F D C L D T N E T N S L A K																																																																																																																							
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1. g14156t00001-PI transferase	444	454	464	474	484	494	504	514	524	534	544	554																																																																																																												
2. Drosophila PI transferase (rdgB)	W S S L E L L G E G D D S P P P H G G P S S A A S V G G R G N S R Q E D S I F N Q D F L M R V A S E R G N K R Q L R S S A S V D R S H D S S P P G S P S T P S C P T T I L I L V V H A G S V L D A A S E L T A K K S D V T T F R G S F E A V M R																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	564	574	584	594	604	614	624	634	644	654	664	674																																																																																																												
2. Drosophila PI transferase (rdgB)	Q H Y P S L L T H V T I K M V P C P S I C T D A L G I L S S L S P Y S F D A S P S A A D I P N I A D V P I G A I P L L S V A S P E F H E T V N K T V A A A N I V Y H E F L K S E E G H G F S G Q I V M L G D S M G S L L A Y E A L C R S N G S Q																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	684	694	704	714	724	734	744	754	764	774	784	794																																																																																																												
2. Drosophila PI transferase (rdgB)	P G T A S G A S N S G G D A A T N I N T H N P L S P R N S R L D D D E R F I E A D L D A K R L L V A P S P R R R R S S S S D S R A T K L D F E V C D F F M F G S P L S V V L A A R K L H D A K A A L P R P N C H Q V Y N L F H P T D P I A S R																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	804	814	824	834	844	854	864	874	884	894	904	914																																																																																																												
2. Drosophila PI transferase (rdgB)	L E P L L S A R F S I L A P V N V P R Y A K Y P L G N G Q P L H L L E V I Q S H P Q H F N D G N N L L A G R R L S D A S M Q S T I S G L I E N V S L S T I H A L Q N K W W G T K R L D Y A L Y C P E G L S N F P A H A L P H L F H A S Y W E S P																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	924	934	944	954	964	974	984	994	1,004	1,014	1,024	1,034																																																																																																												
2. Drosophila PI transferase (rdgB)	D V I A F I L R Q I G K F E G I P F V G S N D D K D N A S F H P G Q P R E K W I K K R T S V K L K N V A A N H R A N D V I V Q E G R E Q R L N A R F M Y G P L D M I T L H G E K V D V H I M K D P P A G E W T F L S T E V T D K N G R I S Y S I																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	1,044	1,054	1,064	1,074	1,084	1,094	1,104	1,114	1,124	1,134	1,144	1,154																																																																																																												
2. Drosophila PI transferase (rdgB)	P D Q V S L G Y G I Y P V K M V V R G D H T S V D C Y M A V V P P L T E C V V F S I D G S F T A S M S V T G R D P K V R A G A V D V C R H W Q E L G Y L L I Y I T G R P D M Q Q R V V S W L S Q H N F P H G L I S F A D G L S T D P L G H K T																																																																																																																							
Identity																																																																																																																								
1. g14156t00001-PI transferase	1,164	1,174	1,184	1,194	1,204	1,214	1,224	1,234	1,244	1,254	1,263																																																																																																													
2. Drosophila PI transferase (rdgB)	A Y L N N L V Q N H G I S I T A A Y G S S K D I S V Y T N V G M R T D Q I F I V G K V G K K L Q S N A T V L S D G Y A A H L A G L Q A V G G S R P A K G N A R M V I P R G C F N L P G Q T A N P R R R R L H E Q A T N E N																																																																																																																							

Identity	<div><div></div><div>1102030405060708090100</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	MTSNNQNNSSSSHQHLHSPSKLTEFARNFEDKPESLFGRVVNKKIQNVYNQSYNTVNDISSGSSSSSSSTQPVQVVGKSQFFSDSQTSTAETIADVETSSQSSVRPQPPTTL
Identity	<div><div></div><div>110120130140150160170180190200210</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	SIRTNSETRGTTSTSSNTAAEDSETSDRVETLPLPTSEANQGRTVSNVLKHSNIVATKNNNDLRNYKDTELQRFWMPDSKAKECYDCSQKFSTFRRKHHCRLCGQIFC
Identity	<div><div></div><div>220230240250260270280290300310320</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	SKCCNQVVPGMIIRCDGDLKVCNYCSKIVLTLFLKSSSSSEMGMQELQQHLSNKLEVDQSGSSSLAKHPQMQRAPLPRKTSVGYQEERFSSSHPTYTTLSIDDRKNILQQ
Identity	<div><div></div><div>220230240250260270280290300310320330340350360370380390400410420430</div></div>
1. g22028t00001 PIP kinase	QNQIILINQNTKRE-----SGKKVQOGNIAAGKAIADIIRTCLGPKSMMLKMLMDPMGGGIVMTNDGNAILREINVQHPAAKS-MIEVARTQDEEVGDGTTSVIILAGEM
2. Drosophila PIP kinase	SNSLITLHEEMQRDLPAQNCGORLIIEFLNSNNKSANEEVQAVAILNAMLAAGFLEP-----IVPDPEQMDFDSSLHYKFSKSSSSSDTSRTMSPQF-EANPHAEPQPPKS
Identity	<div><div></div><div>440450460470480490500510520530540</div></div>
1. g22028t00001 PIP kinase	LNQALPFLSQOMHPTIIVISAFRQALDDLVDILRNQISVPVDLTNKDDMMKIVKSCVGTKFISKWSELACQIALDATATVAIEENGRREIDIKRYAKVEKVPGGTMEES
2. Drosophila PIP kinase	MDQSABEEKEKELENEL-----ENDRCYTTATSKLLASYCEHEEQLLAQMLRA---HNLDQEWKVLQMLCSTAANHFKEHCNDLMDIRNYVNFKKVPGGRRKDS
Identity	<div><div></div><div>550560570580590600610620630640</div></div>
1. g22028t00001 PIP kinase	KVLKGVMLNKDVVHPKMKRRIENPRIILLDCTLEYKKGESQTNIETKEDFAKILMLEEYVVKRVCDEVLAFAKFDLVITEKGVSDLAQQLLRQGRRQCNPSTSQEVRO
2. Drosophila PIP kinase	KIVHGVAFSKNVAHKDMATHVVPFPRILLLCPIVYERIEGKF--VTIE---TVLLQEKYLRNVCARIMSEKPNVVLVHKNVAGIAQDLLRSYEVTLVLDVKLSVM
Identity	<div><div></div><div>650660670680690700710720730740750</div></div>
1. g22028t00001 PIP kinase	QQDRQSMWCDDHC*PYRRAQGGRRGNGVWSIQDREIR*RVFHIPGRL*GPOGLYNPPPRGQ*GHPDG
2. Drosophila PIP kinase	ERLSRTLQCDIVSSIESNITMPPKLGycndFYIRNYNGKTLMFfEKLTNPRG-YTCLLRGGSNAELTRVKRVASALLFARYNWRLEMSFLLNEFAQPLSPKPSIFDSKE
Identity	<div><div></div><div>760770780790800810820830840850860</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	TSPKTETEAELRSKRPIILERKSEDKITTIVSENVSDFTDPLRASQAEALSTSPCAPPVVEALAVEPRYDNRFR TAL SSTLLSVSPFLTFLPYLETEQGRKCKLRKL
Identity	<div><div></div><div>870880890900910920930940950960970</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	FPAELYFSKQWSRTGLERPDSMGDGEAGKSEPGNKENQMQLLPAHDFVLMKITAPASSRDIQSKLAEFRSFGGRLPKGKAPMLRPKKKNAEVIQRPQKVSEEQLYKDA
Identity	<div><div></div><div>9809901,0001,0101,0201,0301,0401,0501,0601,0701,080</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	LDPQNHQRLPVLFCSPHYNPKGVSSFCKLPMLLDMKFYGQYDIMLEQFLQRYCCLFNSMCPSCNLPMLGHVRRYVHSLGCVHVYLTEDLTRSDPTRIYFTSWCSICNA
Identity	<div><div></div><div>1,0901,1001,1101,1201,1301,1401,1501,1601,1701,180</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	TTPTIPLSDAAKCLSLAKYLEMRFHGHAYKRRPPSTDAEQGGTVCEHSLHRDYVHHFSFRGVGAKFQYTPVEVWETDLP SLTVQLDLPQPFQSAQVQEEIKNFSIKGH
Identity	<div><div></div><div>1,1901,2001,2101,2201,2301,2401,2501,2601,2701,2801,290</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	EVYNRIHERIADLATEEENSPLVQHLKTM LTHDQFIFKQKIEIVHTLLTDNRATAYDTS DALAMARRALAESI ELWGPRLQEI EKLTAKQAHHIDSGTICTEELRPEQ
Identity	<div><div></div><div>1,3001,3101,3201,3301,3401,3501,3601,3701,3801,3901,400</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	VQTADSSKVTTSSLPKENDPLECPSED TETGASNSQTVLDKNFSIDQMLASTVNVYSDKKSIRKILTQLLP SGNQVNPLQSPFPAQDHLTLPLGSIPIHVRETDLSSV
Identity	<div><div></div><div>1,4101,4201,4301,4401,4501,4601,4701,4801,4901,5001,510</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	IAYSLTSM DYQKAIDEAEANSNAAHSSPQLKRKIPLAESVSDAEDSPSLSRTSSNTSAAPNASVPSPATAASESEEKSKERIKQPPSPHITLAFQDHSCQFQCKIYFA
Identity	<div><div></div><div>1,5201,5301,5401,5501,5601,5701,5801,5901,6001,6101,620</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	REFDAMRSKSLKPPKLDKSLYRRLEKSKMREELRISQSR TGSEMELVRKPSDVGAPRTTEDDSNQEEDARIALARSLCKSVQWEARGGKSGSRFCKTLDDR FVLKEMN
Identity	<div><div></div><div>1,6301,6401,6501,6601,6701,6801,6901,7001,7101,720</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	SRDMTIFEPFAPKYFEYIDRCQQQQQPTLLAKIFGVFRVSVKKKDSFVER SVMVMENLFYGCNIENKFDLKGSE RNLVDP SNQQGEIVLLDENLVQMSWSKPLYVLS
Identity	<div><div></div><div>1,7301,7401,7501,7601,7701,7801,7901,8001,8101,8201,8301,833</div></div>
1. g22028t00001 PIP kinase	
2. Drosophila PIP kinase	HSKTVLRDAIQRDSSFLEKNLVMDYSLLVGLDKKNGVLVLGIIDYIRTFTLDRVESI IKSGSILGGKGKDPTVVNPERYKQRFIDAMDRYFLTVPDRWEGLSKV

Identity

2. Drosophila protein kinase C (inaC)

Identity

1. g18637t00001-protein kinase C

2. Drosophila protein kinase C (inaC)

Identity

1. g18637t00001-protein kinase C

2. Drosophila protein kinase C (inaC)

Identity

1. q18637t00001-protein kinase C

2. Drosophila protein kinase C (inaC)

Identity

1. g18637t00001-protein kinase C

2. Drosophila protein kinase C (inaC)

Identity

1. q18637t00001-protein kinase C

2. Drosophila protein kinase C (inaC)

N

Identity

1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase

Identity

1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase

Identity

1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase

Identity

1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase

Identity

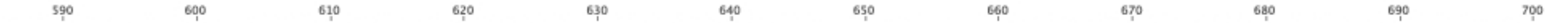
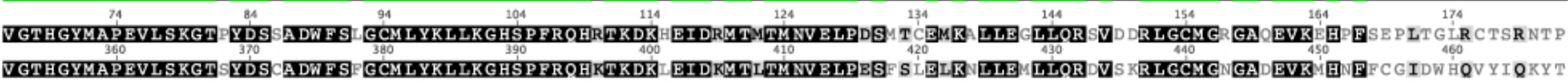
1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase

Identity

1. g04856t00001-rhodopsin kinase

2. *Drosophila* rhodopsin kinase



1

10

20

30

40

50

60

70

80

90

100

110

Identity

1. g18628t00001-TRP

2. Drosophila TRP

1

10

20

30

40

50

60

70

80

90

100

110

1. g18628t00001-TRP

2. Drosophila TRP

120

130

140

150

160

170

180

190

200

210

220

Identity

1. g18628t00001-TRP

2. Drosophila TRP

120

130

140

150

160

170

180

190

200

210

220

1. g18628t00001-TRP

2. Drosophila TRP

230

240

250

260

270

280

290

300

310

320

330

Identity

1. g18628t00001-TRP

2. Drosophila TRP

1

7

17

27

37

47

57

62

72

82

92

102

1. g18628t00001-TRP

2. Drosophila TRP

230

240

250

260

270

280

290

300

310

320

330

Identity

1. g18628t00001-TRP

2. Drosophila TRP

112

122

132

142

152

162

172

182

192

202

212

1. g18628t00001-TRP

2. Drosophila TRP

340

350

360

370

380

390

400

410

420

430

440

Identity

1. g18628t00001-TRP

2. Drosophila TRP

222

232

242

252

262

272

282

292

302

312

322

1. g18628t00001-TRP

2. Drosophila TRP

435

445

455

465

475

485

495

505

515

525

535

Identity

1. g18628t00001-TRP

2. Drosophila TRP

560

570

580

590

600

610

620

630

640

650

660

Identity

1. g18628t00001-TRP

2. Drosophila TRP

337

526

536

546

556

566

576

586

596

606

616

626

1. g18628t00001-TRP

2. Drosophila TRP

670

680

690

700

710

720

730

740

750

760

770

Identity

1. g18628t00001-TRP

2. Drosophila TRP

636

646

656

666

676

686

696

706

716

726

736

1. g18628t00001-TRP

2. Drosophila TRP

780

790

800

810

820

830

840

850

860

870

880

Identity

1. g18628t00001-TRP

2. Drosophila TRP

746

756

766

776

786

796

806

816

826

836

846

1. g18628t00001-TRP

2. Drosophila TRP

890

900

910

920

930

940

950

960

970

980

990

Identity

1. g18628t00001-TRP

2. Drosophila TRP

856

866

876

886

896

906

916

926

936

946

956

1. g18628t00001-TRP

2. Drosophila TRP

1,000

1,010

1,020

1,030

1,040

1,050

1,060

1,070

1,080

1,090

1,100

Identity

1. g18628t00001-TRP

2. Drosophila TRP

966

976

986

996

1,006

1,016

1,026

1,036

1,046

1,056

1,066

1. g18628t00001-TRP

2. Drosophila TRP

1,110

1,120

1,130

1,140

1,150

1,160

1,170

1,180

1,190

1,200

1,210

Identity

1. g18628t00001-TRP

2. Drosophila TRP

1,076

1,086

1,096

1,106

1,116

1,126

1,136

1,146

1,156

1,166

1,176

1. g18628t00001-TRP

2. Drosophila TRP

1,220

1,230

1,240

1,250

1,260

1,270

1,280

1,290

1,300

1,309

Identity

1. g18628t00001-TRP

2. Drosophila TRP

1,186

1,196

1,206

1,216

1,226

1,236

1,246

1,256

1,266

1,275

1. g18628t00001-TRP

2. Drosophila TRP

P

[illegible]