

Supplemental Figure Legends

Figure S1. Signal peptide prediction for JS

A SignalP-4.1 output predicting the position of the signal peptide in JS protein. The X axis lists the N-terminal residues of JS. The predicted excision position of the signal peptide is marked with the longest vertical red line.

Figure S2. Amino acid sequence alignment of JS from insects

Clustal Omega alignment output of JS proteins from selected insect species. “mel”: NP_650538.1 of *Drosophila melanogaster*; “LuciliaCuprina”: XP_023308467.1 of *Lucilia cuprina*; “StomoxysCalcitrans”: XP_013099154.1 of *Stomoxys calcitrans*; “CeratitisCapitata”: XP_012157262.1 of *Ceratitis capitata*; “AedesAegypti”: EAT42245.1 of *Aedes aegypti*; “BombyxMori”: XP_004927149.1 of *Bombyx mori*; “PlutellaXylostella”: KAG7299243.1 of *Plutella xylostella*.

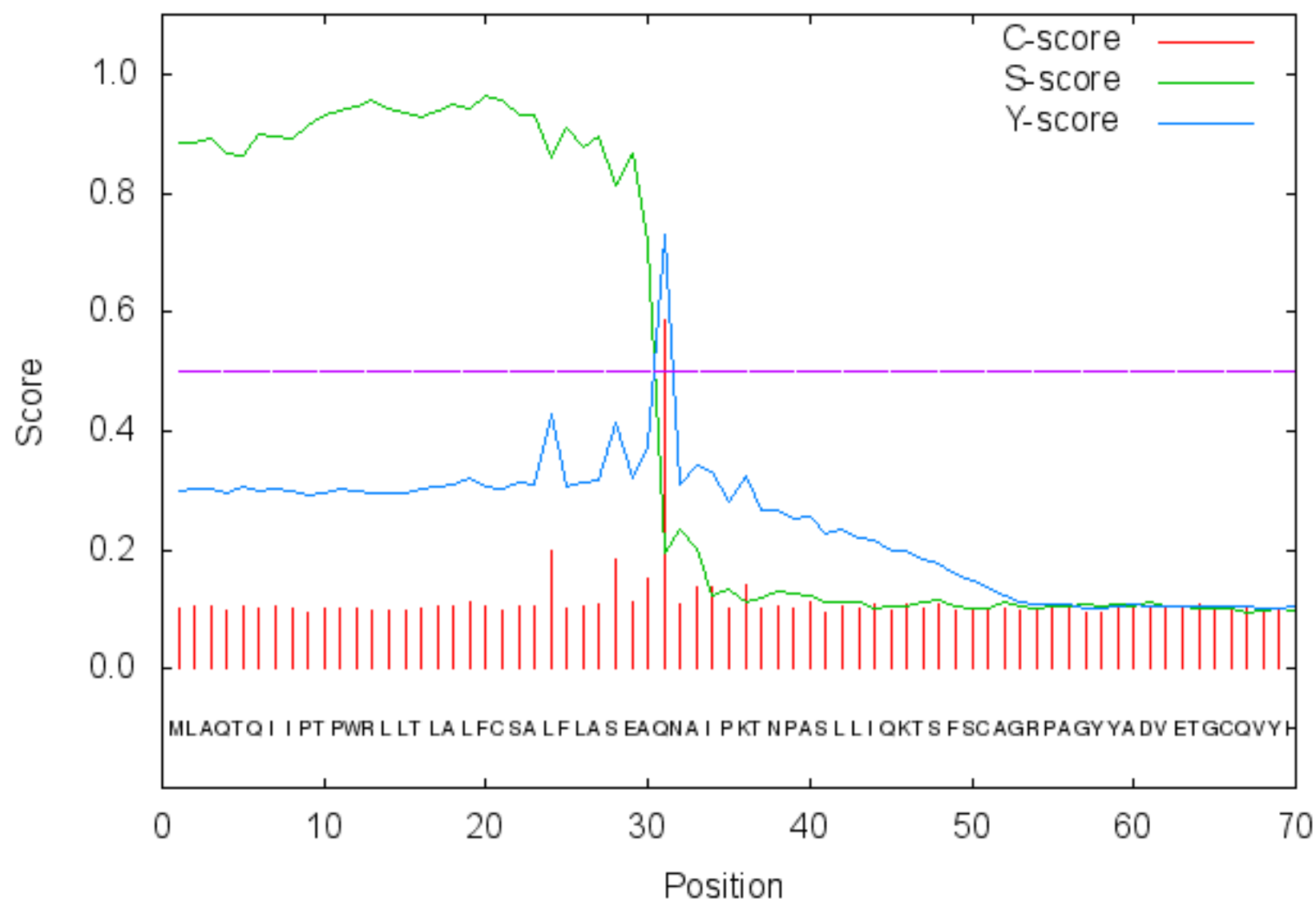
Figure S3. JS-mCherry fluorescent signals are distinct from auto fluorescence

Images of the left panel were taken from *js^{mCherry}* animals, and shown in triplets. “Green fluorescence” was used to indicate auto-fluorescence. Images on the right were taken from *w¹¹¹⁸* animals, and shown in triplets. Red signals are the result of auto-fluorescence. Scale bars indicate 100μm.

Figure S4. JS-EGFP localization in adult eyes

Images are shown in triplets: GFP fluorescence, brightfield (BF), and the merged image of the two. One of the ocelli is marked with an arrowhead. Scale bars indicate 100 μ m.

SignalP-4.1 prediction (euk networks): Sequence



Species	Sequence	Position
mel	-----mlaq-----	4
LuciliaCuprina	-----	0
StomoxysCalcitrans	-----	0
CeratitisCapitata	-----	0
AedesAegypti	-----malpfqshllpti---n	14
BombyxMori	-----	0
PlutellaXylostella	meeltkmmkeiqeelveqkvefqgmernittnnnnnnnkfermeikyaelektvtkqee	60
mel	-tqiip-----tpwr-llt---lalfcs--alflaseaqnaipktnpa	40
LuciliaCuprina	---mvn-----hnwf-latvllwlllc-yhnlcinaagsqnaig---a	34
StomoxysCalcitrans	---mfn-----hnwf-vptvvlsllls-yrnffitaagsqnaig---a	34
CeratitisCapitata	---mcn-----hnwl-twplliwlltccyflvgidggsenaig---a	35
AedesAegypti	hnaylaadfrde-----rrylfvss---vfls-----pqrsgvln----dgs	49
BombyxMori	-----macerlcvel--illc---lyciagyags-----dtp	27
PlutellaXylostella	rldmiekqlrkknlvffgveeteknyedlesnlvkiind---kmkvscslse----dvr	112
mel	slligktsfscagrpagyyadvetgcqvvhmedglgrqfsytcptnttlfqgqrmlicdhwy	100
LuciliaCuprina	hrtfqktsfscagrpsagyyadietgcqvvhmedglgrqfsysecpnttlfqgqrmlicdhwy	94
StomoxysCalcitrans	hrsfgktsfscagrpagyyadvetgcqvvhmedglgrqfsysecpnttlfqgqrmlicdhwy	94
CeratitisCapitata	hrvfektsfscagrpagyyadietgcqvvhmedglgrqfsysecpnttlfqgqrmlicdhwy	95
AedesAegypti	fkfaaktfsfscsgraagyyadvetgcqiyhmedglgrqfsyacpnttlfqgqrmlicdhwy	109
BombyxMori	gvkipptsftrcgraagyyadmetgcqvvhmedglgrrrfsysecpkttlfqgqrmlicdhwy	87
PlutellaXylostella	dsripatrfsrgrgsgagyyadvetgcqvvhmedglgrqfsytcptnttlfqgqrmlicdhwy	172
mel	mvncskaesnyaanlliggrdkpfvndeenslrtprpdllrpyapdysgesfrsqykq-	159
LuciliaCuprina	mvncskaesdytanlliggrdkpfvndeenslrtprpdllrpyapdysgesfrnqyqks	154
StomoxysCalcitrans	mvncskaesdytanlliggrdkpfvneeennlrtprpdllrpyapdysgesfrsqyqks	154
CeratitisCapitata	mvncsraesdyaanlliggrdkpfvndeenslrtprpdllrpyapdysgesfrnqyqkq-	154
AedesAegypti	mvncskaesnyaanlliggrdkpfvtddeelnrtprpdlldtpyaagynmds----fkyn	165
BombyxMori	mvncsmaerdydanlliggrdkpfvseemsqrtpdpdilsvpltskyydglkeaeskl	147
PlutellaXylostella	mvncsrserdydanlliggrdkpfvsehemqftrtpdpdilsvppnsnyydgkeaesky	232
mel	ft-----snqnqirdesvkgaga-----gksdpqisq-----trwrppppsttilp	200
LuciliaCuprina	ls-----svlnqiydhtaqlmke---ktlgaqqnqlgtgq-----qrwkippssriilp	200
StomoxysCalcitrans	ls-----svlnqiydtnsykke---slssnqptqptgq-----qrwkippssriilp	200
CeratitisCapitata	lp-----aiqnqiqdtdaqlkfd---klnt--ipqaapqg-----qhwkipsssttilp	198
AedesAegypti	yfknttgapqnaipangkssvktgtvvpkgttseifeesasnhglpihwstryaked---	222
BombyxMori	l-----hpdndivgvad-----tisgdednildsakqnyrpptswwtrkr--	188
PlutellaXylostella	v-----hpgnsivgvad-----slssnnngldhgkqqgyrpptswwtgtgtr--	275
mel	payepqielpsaqsakpr---ipiitsttttttra-----ttttrpttttrattttttt	250
LuciliaCuprina	payepqilees---sakpstrtsyytptitt-----tt-----rkpst-lrptat-t	242
StomoxysCalcitrans	payepqipdntvitttaksttrisyynpsttt-----ttttttskpspsl-lrptssns	253
CeratitisCapitata	payeaqttddrasqtnsdnv---rfvpktaqptasskqtkttfnrptpsl-vsa--stq	251
AedesAegypti	ddkerkd--d-----kqeldtplstaipste-eaqlqgsktn-er-----rdvkene	266
BombyxMori	p-----	189
PlutellaXylostella	ptsqptr--p-----tpq-----	286

mel	rrppvtarpkealhnrrpnfge-----h-----dmddlgtsh	282
LuciliaCuprina	knqstkfnvnvaalhnrhdehlq-----l-----ehddlgtsh	274
StomoxysCalcitrans	rslgtrfngvaalhnrgdehlq-----y-----elddlgtsh	285
CeratitisCapitata	vqpinrfnn-aalhqr---gqs-----n-----epedlgtsh	279
AedesAegypti	nrttvrvnakekqsnrveeaasnnnqvnkvpsiryeppftpeeqvkrsgasketlgagf	326
BombyxMori	---nvqinnid---slagaasq---epgptirpqpes-----	217
PlutellaXylostella	--apsgidaqd---nlagaasq---kptptygtlpdf-----	315
mel	stryntsadfnsaesplretkqsst-----	307
LuciliaCuprina	stryntsadfnsaedrfaaktqkatt-prkstynsnfnnaft-----	315
StomoxysCalcitrans	stryntsadfnnsnedrngknrgknaytttkssfg--lttlrt-----	325
CeratitisCapitata	stryntsadfnsaegpnsktasvsnknkissfivppatastt-----ttttrpvtpt	333
AedesAegypti	-kpfesilnfknkgnrkd--ydfsnlfgnesirntppaqtptpasttprtigssttrf	383
BombyxMori	-----rdtslk-----n-----kgnqperelmppllp--stteae----	245
PlutellaXylostella	-----sdfnqn-----tgvpnsrpvsppqtqdlrppeap--ttteqp----	349
mel	-----kltkfikppskiyepffvypiylnleesqtq-	337
LuciliaCuprina	---takptt-----ttkkttlnpkikvpskiyeppllypiynmddnta--	355
StomoxysCalcitrans	---ttstst-----sttkatanpnikipskiyepvlfpiynledsstt	367
CeratitisCapitata	assklttst-----ssaaittnlpikipskvyepvyypiyneetvst-	378
AedesAegypti	fssssttprsrsttrfsstsrqtgfvststgttqkpisiivsdllqppqlnpaqsprtgp--	441
BombyxMori	-----d-----datttgssvyqfikir-----fdpnspd--	268
PlutellaXylostella	-----sseeydld-----irmknssedpvfqqfikir-----fdpnspd--	381
mel	-naavattlrtstaapfspvpsrke-vstttrprlsrptttagvpfssathpttvttv--	393
LuciliaCuprina	-tttmrptfrastaspfvtrvsat-ts-ttttkapttrpttvigkpfrssfstst---k	408
StomoxysCalcitrans	ttttvrplfrastaapfmtrqttt-ttrptttrpps rattmlgkpfrsssitapt---t	423
CeratitisCapitata	----qlplrassatpftvsptltrlsttppvppsrptttagkpfaapssgittkapnf	433
AedesAegypti	--afrpavt--taaprstftata-ttttttpr---pltlsdpr---g-snrapttilf	487
BombyxMori	--siktait-----gseiidl---nkhlp---ggvssegqvsse-dertpkk---	307
PlutellaXylostella	--slkttmt-----aseilni---nqqlpq---gqd-----vste-eertpr--	415
mel	----g-----vpprsdnrtppaqsfrlatptstaa-----	420
LuciliaCuprina	v---gtnsnnidrfdvsklskeirtppaaggfkpptptppvknsrtsqnstynkp-----	460
StomoxysCalcitrans	t---tqsgnlnrfdadklskelrtppaaggfkptprptvsafnts-----	467
CeratitisCapitata	g---grsqnnliqnsfthnskdvrtpaaggfkpptprplstttsatkstesspfdysi	490
AedesAegypti	nppaataglfenrfalqrpvtskvpvpsrdilppf--gnvanfdkiknrfv-----	537
BombyxMori	-----nksfgnklnfdk-----tdndkkf--regtrfsvntk-----	338
PlutellaXylostella	-----gknrgnnfntlg-----tekrkgn--teqnrftintk-----	446
mel	-----ppsrpaqlpfndllppfv	439
LuciliaCuprina	-----drsgvkheqpskqllpllad	480
StomoxysCalcitrans	-----ksiaesvpskhllpllv	485
CeratitisCapitata	pttnrlhlptpiintasstn-----tgtaaatsdatppsaskellpppyqe	534
AedesAegypti	--seaiftrqpitnepssgpiksgidklqgdvqiqrndnvprpfsvptpandllppkke	595
BombyxMori	-----pnptennt-----egdsqvkskvpkpeqvllppkkd	369
PlutellaXylostella	-----ptaptplpdtnnfsgn-----dnsgqrstglsepdkhllppksd	486

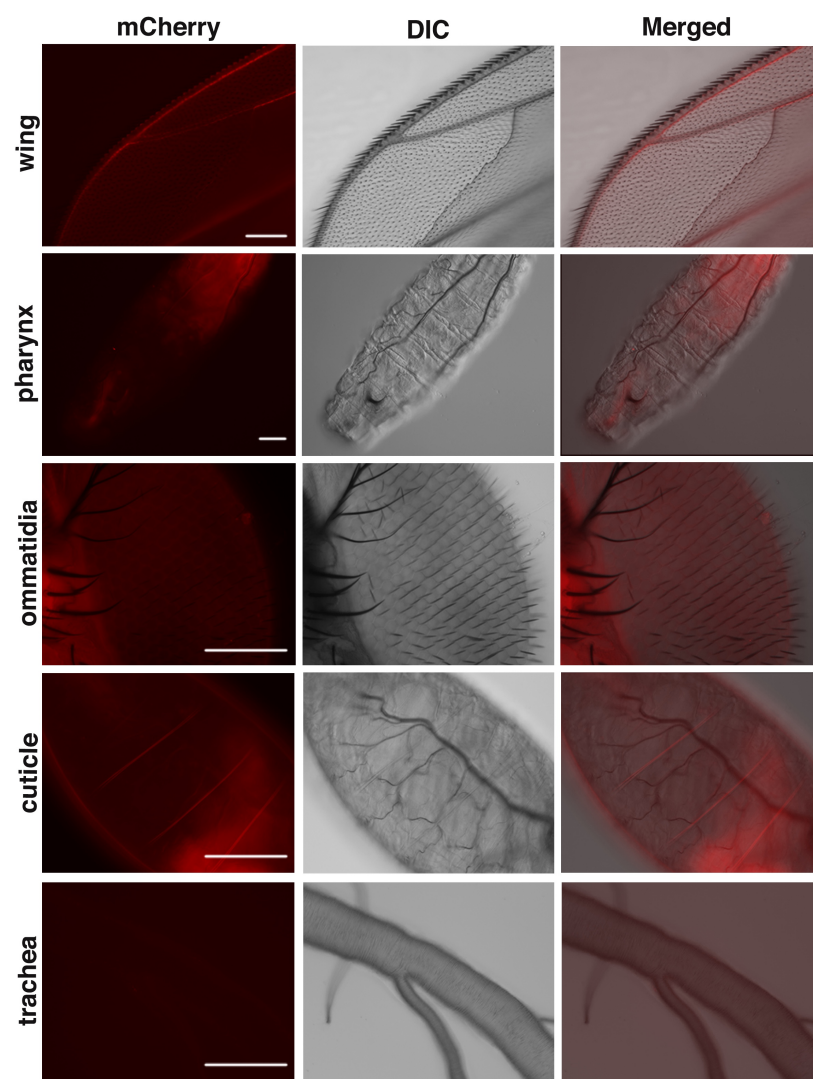
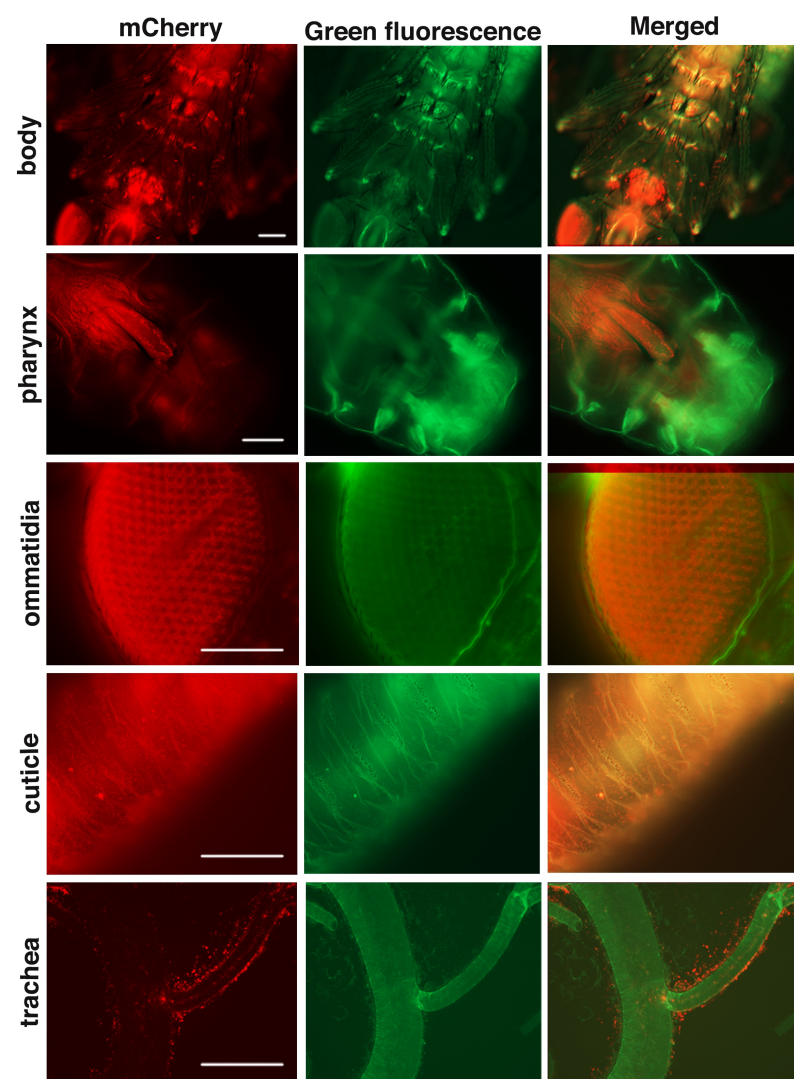
* : **** :

mel	fvph-diattgppiiyyewk--vpsngleppkldppigvdgreypettgdygvtskqdvf	496
LuciliaCuprina	fith-dvattgppiiyyewk--vpsdgleppkldspigvdgreypetvidynsistnngf	537
StomoxysCalceitans	fvqh-dvattgppiiyyewk--vpsdgleppkmevpigvdgrqypetvldynsisasgtf	542
CeratitisCapitata	fvqh-diattgppiiyyewk--vpsngleppkldppigvdgreypepsfdyntisgaseg	591
AedesAegypti	yvfy-ddattkppiiyyqkwksipsfgleppldapltdeek--llt-----	638
BombyxMori	ysqspldsttmppiiyyewkwavpafgllppkegnitnsta--lp-----	412
PlutellaXylostella	yavi--psttvppvyyewkwavpafdlplagnstdnst--aae-----	528
	+ * * * * * * * *	

mel	ntrlndigshqkppvqitsplqgsstshrlaisrsikpkeegasq-----	542
LuciliaCuprina	tsi-ssfgidqkrsnntsksenktivpsrspiarsiketggpkgvnetkak----tsnt	591
StomoxysCalcitrans	spn-phfgidqkkevdsr-----ptlrpptsrsvketaqpngvstrrka----dkpt	589
CeratitisCapitata	knt-qt---aksnssptdkvasdksqtartpiarsiketgqpsvhrvvvestkatstt	647
AedesAegypti	--q-----lnpasqdspdsnrehnqtarsiss----etgnpgenp-----sts	675
BombyxMori	-----tkspk--tgkspfs-tarrtti-----kaeda-----	436
PlutellaXylostella	--v-----pqgrsns--ggnrpfs-nwrptt-----eep-----	553

mel	-----rrsdvvasstdishlrkqflipeyafpletigr--tgygpgagaaagsgssng	594
LuciliaCuprina	sptrastttqkssnpgdifqirkelsvpeyafplenvgr--tgyl-----dt	636
StomoxysCalceitans	k--atgtaptssnepedifqiskdlsvpeyafplenvgr--tgyl-----ds	632
CeratitisCapitata	tpvatdrsdtsaptsditqlrrdysvpeylfplesagr--tgyl-----st	692
AedesAegypti	ntiaeanrkriqlpthnylelrkqlaipdfthplessagtaqsvye-----ge	722
BombyxMori	----tpkprnve-----ynissyyvpdyvfpldkp--hpgye-----sd	469
PlutellaXylostella	----dlnpnsve-----ynissyfvpdyqfpldkp--hpgye-----de	586

mel	dlynsfqlkipeqra-----kwfgenpkcpechpsfvlpgtcepcirr--	637
LuciliaCuprina	dvynsfqlkiperra-dtdehwhwygenpkcpechpsvvrpgtcepcirr--	685
StomoxysCalcitrans	dvynsfqlkiperra-dtdehlhwfgenpkcpechpsvvrpgtcepcirr--	681
CeratitisCapitata	dsynsfqlkiperehgeeeiedhrhwfgenpkcpechpsfvlpgtcepcirr--	742
AedesAegypti	gavnsfqikipayar-sdddsrawygenakcpqchpafmrpgscepckirr	773
BombyxMori	daqtsfqvqvsr-----pgrssygenpkcpqchpaylkgpscepckivr	513
PlutellaXylostella	naetsfqvkvgr-----pgr-sfgenpncphchpaylnpgtcepcivkr-	629

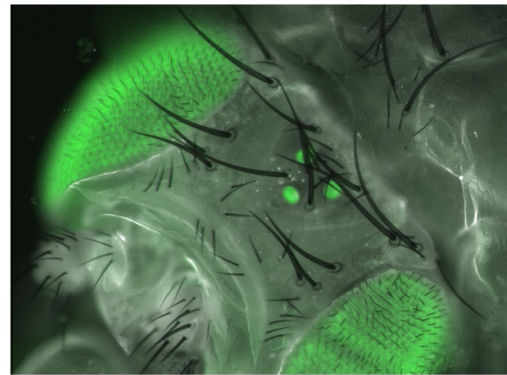
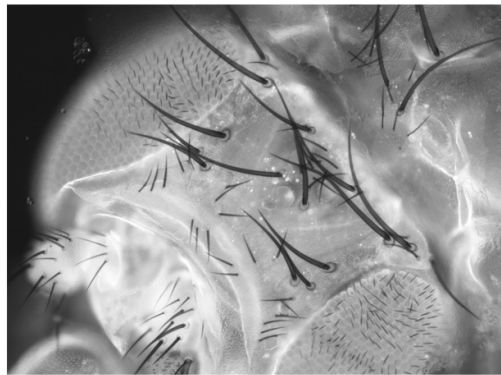
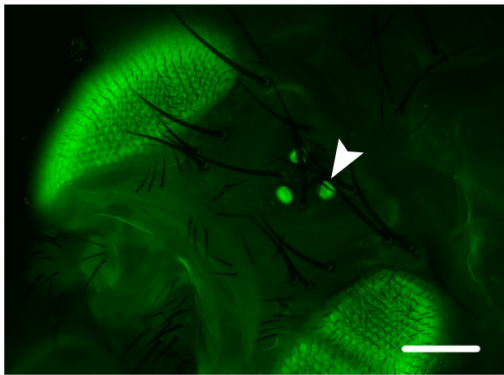


EGFP

BF

Merged

ocelli



ommatidia

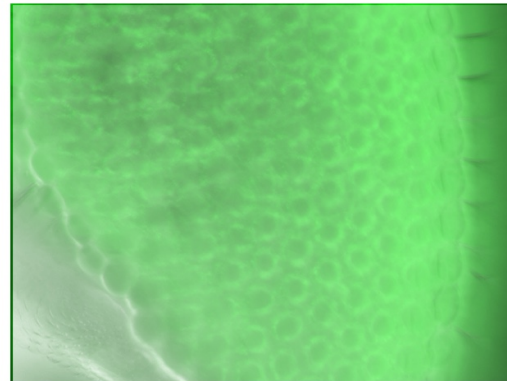
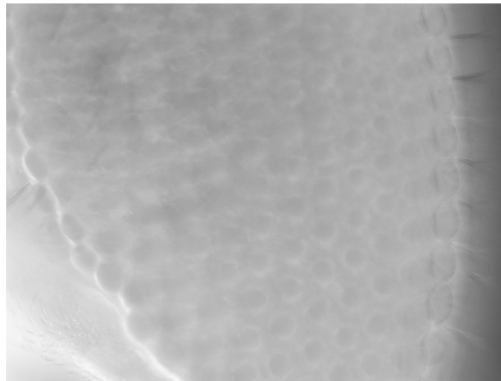
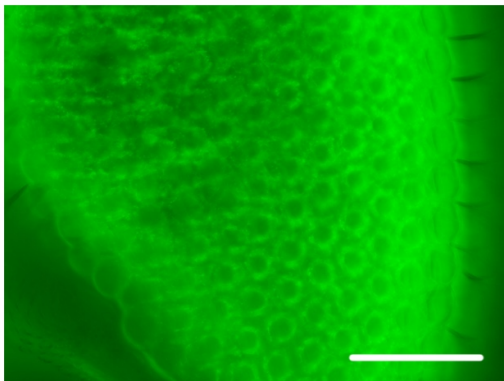


Table S1. Amino acid compositions of Mucin-D and JS⁴

Amino acid composition ¹	Mucin-D ²	JS ³
Asp+Asn	7.5	8.3
Thr	11.5	11.4
Ser	10.8	9.5
Glu+Gln	10.5	10.1
Pro	7.3	11.6
Gly	15	5.1
Ala	8.4	7.1
Cys	1.5	1.7
Val	4	4
Met	1.1	0.7
Ile	2.2	4.3
Leu	5.5	6
Tyr	1.4	3.5
Phe	3.5	3.6
Lys	4.6	4.3
His	0.9	1.7
Arg	3.3	7

¹: Three letter abbreviations of analyzed residues

²: The amino acid composition of Mucin-D was taken from Kramerov et al. (1996) as “number of residues per 100 amino acids”.

³: Calculated amino acid composition of JS protein with the predicted signal peptide residues not included in the calculation.

⁴: A spearman correlation test yields $r_s = 0.8135$, $p(2\text{-tailed})=7\text{E-}05$.

Table S2. Primer list

Primer name	Sequence
Construct of pUAST-<i>js</i> cDNA	
14880cDNA FP	ATGTTGGCACAAACGCAAATTATCC
14880cDNA RP	CTATCTGCGCAGGCAGGGCT
Pet28a-JS antigen	
pet28a-EcoRI-14880cDNA FP	ATCTATGAATTCATGTTGGCACAAACGC
pet28a-HindIII-14880cDNA RP	ATCTATAAAGCTTCTATCTGCGCAGGCAGG
pUAST-<i>js</i> cDNA-dsRED	
14880-cDNA-dsRED YJ FP	GTTCTGCCGGGCACCTGCGAGCCCTGCCTGCGCAGAGGC GGAGGGGCCTCCTCCGAGAACGTCATCAC
14880cDNA YJ RP	TCTGCGCAGGCAGGGCTCGCAGGTG
N-terminal gRNA primer	
ATG -gRNA-FP	GTCGAGAACAATCGTCGAAATGT
ATG-gRNA-RP	AAACACATTTGACGATTGTTCT
C-terminal gRNA primer	
TAG-gRNA-FP	GTCGGAATCAGGACTATCTGCGC
TAG-gRNA-RP	AAACGCGCAGATAGTCCTGATTC
<i>Js</i>³⁻¹ insert fragment PCR	
14880-w ⁺ -FP-2	ATCCGATGTCGACTCCAACC
14880-exon2-RP-1	CGAATTGCGAACCGTCAGAT

Sequencing results

(1) CRSPR/Cas9 induced *js* mutations

In the sequences below, the start codon **ATG** is in bold.

TGCCACAGAGAACAATCGTCGAA**ATG**TTGGCACAAACGCAAA *wt*
TGCCACAGAGAACAATCGTC-----GCACAAACGCAAA *js^{cas-1}*

TGCCACAGAGAACAATCGTCGAA**ATG**TTGGCACAAACGCAAA *wt*
TGCCACAGAGAACAACAATCG-----**TG**TTGGCACAAACGCAAA *js^{cas-2}*

In the sequences below, the stop codon **TAG** is in bold.

CACCTGCGAGCCCTGCCTGCGCAGAT**TAG**TCCTGATTCCAT *wt*
CACCTGCGAGCCCTGCCTGC-----**G**TCCTGATTCCAT *js^{c-term}*

(2) *P* element in *js³⁻¹* (imprecise excision)

Sequences in bold are from the 5'UTR of CG14880. Sequence underlined is the 5' end of *P* element. *Sequences in italic are part of the origin of the yeast 2micron plasmid.*

GACTAGTGACATGATGTGCTAAAGTGTTGATGGCATGTCCATGATGAAATAACATAA
GGTGGTCCCGTCGATAGCCGAAGCTTACCGAAGTATACACTTAAATTCAGTGCACGT
TTGCTTGTTGAGAGGAAAGGTTGTGTGCGGACGAATTTTTTTTGAAAACATTAACC
CTTACGTGGAATAAAAAAATGAAATATTGCAATTTTGCTGCAAAGCTGTGACTGG
AGTAAATTAATTCACGTGCCGAAGTGTGCTATTAAGAGAAAATTGTGGGAGCAGAG
CCTTGGGTGCAGCCTTGGTGAAAACTCCCAAATTTGTGATACCCACTTTAATGATTC
GCAGTGGAAGGCTGCACCTGCAAAGGTCAGACATTTAAAGGAGGCGACTCAAC
GCAGATGCCGTACCTAGTAAAGTGATAGAGCCTGAACCAGAAAAGATAAAAGAAGG
CTATACCAGTGGGAGTACACAAACAGAGTAAGTTTGAATAGTAAAAAAAATCATTAT
GTAAACAATAACGTGACTGTGCGTTAGGTCCTGTTCAATTGTTTAATGAAAATAAGAGC
TTGAGGGGAAAAAATTCGTACTTTGGAGTACGAAATGCGTCGTTTAGAGCAGCAGCC
GAATTCCACGGACTATAGACTATACTAGTATACTCCGTCTACTGTACGATACACTTCC
GCTCAGGTCCTTGTCTTTAACGAGGCCTTACCACTCTTTTGTTACTCTATTGATCCA
GCTCAGCAAAGGCAGTGTGATCTAAGATTCTATCTTCGCGATGTAGTAAAACTAGCT
AGACCGAGAAAGAGACTAGAAATGCAAAAGGCACTTCTACAATGGCTGCCATCATT
TTATCCGATGTGACGCTGCAGCTTCTCAATGATATTCTGAATACGCTTTGAGGAGATAC
AGCCTAATATCCGACAACTGTTTACAGATTACGATCGTACTGGTACCCATCATGAT
TTTGACATCGACCTGGGAGTTTCCCTGAAACAGATAGTATAATTGACTGTATAATAATA
TATAGTCTAGCGCTTACCGAGACATGATTGTATTTGCTCTGGAAAACTATGCATCATG
CATAGGTATCTTGG

(3) *js* knock-in alleles

In the sequences below, small letters represent genomic sequences from *js*, LARGE LETTERS REPRESENT CODING SEQUENCES FOR FLUORESCENT PROTEINS.

js^{mcherry}

ccaccctttgtgtaccccatctacaatctagaagagtcccagaccagaacgcggcagtcgccaccacactgcgcacat
caacggcgggtcctttcagtcctgttccaagtcgcaaggaggtcagcaccacaactccacgaccactgagtcgaccgac
gaccttggccggtgtacccttctcctctgccacacaccaactacggttacgacggtcggagtaccgccacgcagcgata
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gagaccactggagactacggggtcaccagcaagcaggatgtattcaacacccgactaaacgatattggaagccatcaa
aagaagccagtccagataacctcgccgctccaacagtcgagcacaagccatcgttggccatctcgagatccattaagc
ccaaagaggagcaggaatcggcacagcggcgatccgatgtggtggccagctccacggatataagccatctgcgcaag
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agagaaccccaagtgcccgagtgcctccttcgttcgttctgccgggcacctgcgagccctgctgcgcagaGGCG
GAGGGGTGAGCAAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCG
CTTCAAGGTGCACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGG
CGAGGGCGAGGGCCGCCCTACGAGGGCACCCAGACCGCCAAGCTGAAGGTGA
CCAAGGGTGGCCCCCTGCCCTTCGCCTGGGACATCCTGTCCCCTCAGTTCATGTA
CGGCTCCAAGGCCTACGTGAAGCACCCCGCCGACATCCCCGACTACTTGAAGCTG
TCCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACTTCGAGGACGGCGGC
GTGGTGACCGTGACCCAGGACTCCTCCTTGACAGGACGGCGAGTTCATCTACAAGG
TGAAGCTGCGCGGCACCAACTTCCCCTCCGACGGCCCCGTAATGCAGAAGAAGAC
CATGGGCTGGGAGGCCTCCTCCGAGCGGATGTACCCCGAGGACGGCGCCCTGAA
GGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCTGA
GGTCAAGACCACCTACAAGGCCAAGAAGCCCGTGACGCTGCCCGGCGCCTACAAC
GTCAACATCAAGTTGGACATCACCTCCCACAACGAGGACTACCCATCGTGGAACA
GTACGAACGCGCCGAGGGCCGCACTCCACCGGCGGCATGGACGAGCTGTACAA
GGGGCGCGCCTAGtcttgattccatatccattcccgtctccgtccgtcccatcgccattatccgcatccgcatctgc
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tctggaaatcacccaaaggaggaatatatatactgttaataaatatggtggttaaatctgcacaattcgttattttaagagcg
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gcatgcataaaattgtacaaaacacatcacactagcttaaatctactttcaatgaaattatattttaaatatcaaccgaagtc
cgggaaatatacc

js^{egfp}

ccaccctttgtgtaccccatctacaatctagaagagtcccagacccagaacgcggcagtcgccaccacactgcgcacat
caacggcggctcctttcagtcctgttccaagtcgcaaggaggtcagcaccacaactccacgaccactgagtcgaccgac
gaccttggccggtgtacccttctcctctgccacacaccaactacggttacgacggtcggagtagccgccacgcagcgata
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cagttgcccttcaacgatttactgccgcccgttctgtgactttgtgccccacgatatagccaccaccaaggaccgcctatctat
tacgaatggaaggtgccctcgaacggtcttgagcctcccaaattagaccacccattggtgtggatggacgtgagtatccc
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ccaaagaggagcaggaatcggcacagcggcgatccgatgtgtgtggccagctccacggatataagccatctgcgcaag
caattcctcattccggagtacgccttcccgtggaaccattgggcgacgggttatggtcctggtgcaggagcagcggt
gggggctccggctccagcaacggcgatctgtataactcgttccagctgaagatccccgagcagcgcgctaagtgttcgg
agagaaccccaagtgcccgagtgccatccttcgttctgtccgggcacctgcgagccctgcctgcgcagaGGGC
GCGCCAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGC
TGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCG
ATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCC
CGTGCCCTGGCCCAACCCTCGTGACCACCCTGACCTACGGCGTGCAAGTGTCTCAGC
CGCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAG
GCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCG
CGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGG
CATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTAC
AACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAA
CTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAAGCTCGCCGACCACTAC
CAGCAGAACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCCGACAACCACTAC
CTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGG
TCCTGCTGGAGTTCGTGACCGCCGCGGGGATCACTCTCGGCATGGACGAGCTGTA
CAAGTAGtcttgattcatatccattcccgtctccgtccgtcccatcgccattatccgcatccgcatctgtactagcccta
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atatgttttgtaatgattatttcgcctgtggtcgtgggtcattgtgtaatttatatgcaaagaatatctttatgagtaggctaag
atatttcatgggtaacctaaaaaatttgattattaactcttgatagccaattttcacagttgttaaaattgagacaccactgaa
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tcagatcagtaaaatacagtattatgggggactgcgcagatgaaaattagttagtcgagttacggtgccaccaataaccga
aacttggcgacatgcacatgtattgggtgtggcgaatgctgattaaatcatatttgatgctataggcttttggtctggaaatca
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ctcgaggaacgatatgctatcactaacaatgacaaacgaggtcagttggcaatggatagattttttaaaatcaataagatt
tgtttttagactctatgtacaacttttgattgtgcctggattactactgtagtgaataaaatctcaaactcaatatataattata
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cc

ccaccctttgtgtaccccatctacaatctagaagagtcccagacccagaacgcggcagtcgccaccacactgcgcacat
caacggcgggtcctttcagtcctgttccaagtcgcaaggaggtcagcaccacaactccacgaccactgagtcgaccgac
gaccttggccggtgtaccttctcctctgccacacaccaactacggttacgacggtcggagtaccgccacgcagcgata
atcggactccagctccggcccagagcttccgcctggccacgcccaccagcactgcagcaccaccatcgcgcccggca
cagttgcccttcaacgatttactgccgcccgttcgttgactttgtgccccacgatatagccaccaccaaggaccgcctatctat
tacgaatggaagggtgccctcgaacgggtcttgagcctcccaaattagaccacccattgggtgtggatggacgtgagtatccc
gagaccactggagactacggggtcaccagcaagcaggatgtattcaacacccgactaaacgatattggaagccatcaa
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gggggctccggctccagcaacggcgtatctgtataactcgttcagctgaagatccccgagcagcgcgctaagtgggtcgg
agagaaccccaagtgcgcggagtgcctccttcgttcgttctgccgggcacctgcgagccctgcctgcgcagaATGGC
CTCCTCCGAGAACGTCATCACCGAGTTCATGCGCTTCAAGGTGCGCATGGAGGGC
ACCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGAGGGCCGCCCTAC
GAGGGCCACAACACCGTGAAGCTGAAGGTGACCAAGGGCGGCCCCCTGCCCTTC
GCCTGGGACATCCTGTCCCCCAGTTCAGTACGGCTCCAAGGTGTACGTGAAGC
ACCCCGCCGACATCCCCGACTACAAGAAGCTGTCCTTCCCCGAGGGCTTCAAGTG
GGAGCGCGTGATGAACTTCGAGGACGGCGGCGTGCGGACCGTGACCCAGGACTC
CTCCCTGCAGGACGGCTGCTTCATCTACAAGGTGAAGTTCATCGGCGTGAACTTCC
CCTCCGACGGCCCCGTGATGCAGAAGAAGACCATGGGCTGGGAGGCCTCCACCG
AGCGCCTGTACCCCCGCGACGGCGTGCTGAAGGGCGAGACCCACAAGGCCCTGA
AGCTGAAGGACGGCGGCCACTACCTGGTGGAGTTCAAGTCCATCTACATGGCCAA
GAAGCCCGTGCAGCTGCCCGGCTACTACTACGTGGACGCCAAGCTGGACATCACC
TCCCACAACGAGGACTACACCATCGTGGAGCAGTACGAGCGCACCGAGGGCCGC
CACCACCTGTTCTGTAGTccttgattccatattcccgctcctcgctcccattatccgcacatccgc
atctgctactagccctagtagttagcttccgctgagaagtcccggagtgaagcatccacgcatttattgtatatccgcagattaa
ttattaaactacacaaatatgtttgtgaatgatttatttcgcctgtggtcgtgggtcatttgtgtaattttatatgcaaagaatatcttt
atgagttaggctaagatatttcatgggtaacctaaaaaatttgattattaactcttgatagccaattttcacagttgttaaatt
gagacaccactgaaactttcgaactcgaatttgggcagtcacaccgtaatgatatttctgtctttatgggttttagatcaatttt
cggtttttcaaaatttattcagatcagtaaaatacagtattatgggggactgcgcagatgcaaatttagttagtcgagttacg
gtgccaccaataccgaaacttggcgacatgcacatgtattgggtgtggcgaatgctgattaaatcatatttggatgctatagg
tctttggtctggaaatcacccaaaggaggtaatatatactgttaataaatatgggtggttaaatctgcacaattcgttatttta
gagcgcccatacaaaatttgtgctgctgagcacgttggaaatatgggttgtaagaagggaatacgaatgagcagc
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atttaaaatcaataagatttgttttatttagactctatgtacaacttttgattgctgcctggattactactgtagttaataaatctca
aacttcaatatataattatataattataaaatttggtgaaaattgtcgatctcggacgggttgatattatcatttaaaatttgc
atggtgaagcatgcataaaattgtacaaaacacatcacactagcttaaatctactttcaatgaaattatatttaaatatcaacc
gaagtcccgggaaatatacc

(4) *js* overexpression constructs

UAS-js

In the sequences below, small letters represent pUAST sequence. LARGE LETTERS REPRESENT JS CDNA SEQUENCE.

acaggcggcagctgacagctaaacaatctgcagtaaagtgaagttaaagtgaatcaattaaagtaaccagcaacca
agtaaataactgcaactactgaaatctgccaagaagtaattattgaatacaagaagagaactctgaataggggaattggg
aatcgttaacagatctgATGTTGGCACAAACGCAAATTATCCCAACGCCTTGGCGACTTTTG
ACCCTGGCTTTATTCTGCTCAGCTTTATTTTTGGCCAGTGAGGCTCAAAATGCCATC
CCAAAAACGAATCCTGCCTCGCTGCTGATACAGAAGACATCCTTCTCCTGCGCCGG
ACGTCCAGCCGGATATTATGCGGATGTGGAGACGGGCTGCCAGGTGTACCACATGT
GCGATGGCCTGGGTGCGCCAGTTCAGCTACACCTGCCCAAACACGACACTTTTCCA
GCAGCGAATGCTTATCTGCGACCACTGGTACATGGTGAAGTGTCCAAGGCGGAG
AGCAACTATGCTGCCAATCTCCTAATTGGTCAGCGGGACAAGCCCTTCGTAAACGA
CGAGGAAAACAGCTTGCGCACTCCAAGACCCGATCTTCTGGATCGTCCTTATGCGC
CCGACTATTCCGGCGAGTCCTTCAGAAGCCAATATAAGCAGTTTACTTCCAACCAGA
ATCAGATACGTGATGAGTCCGTCAAAGGAGCCGGTGCGGGTAAATCGGATCCCCA
GATATCGCAGACGCGTTGGCGCATTCCACCACCCAGCCGGACGATCCTTCCACCG
GCCTATGAACCGCAAATCGAGCTGCCCAGTGCCCAATCGGCCAAGCCCAGGATAC
CCATTATCACTAGCACCAACCACAACCACTCGAGCGACCAACCACCCGACCAACA
ACCACAACCTCGTGCCACCACCACAACAACAACCACTCGAAGACCTCCGGTAACCG
CCAGGCCGAAGGAGGCCTTGACAACAGGCGGCCAAATTTCCAGGAGCATGATAT
GGATGACTTGGGCACCAGCCACAGCACACGGTACAACACCTCGGCAGACTTCAAC
TCGGCGGAGTCGCCGCTCCGTGAAACGAAACAGTCCAGCACCAAGCTGACCAAGT
TCATCAAGCCGCCGTCCAAGATCTATGAGCCACCCTTTGTGTACCCCATCTACAATC
TAGAAGAGTCCCAGACCCAGAACGCGGCAGTCGCCACCACACTGCGCACATCAAC
GGCGGCTCCTTTCAGTCCTGTTCCAAGTCGCAAGGAGGTCAGCACCAACAACCTCCA
CGACCACTGAGTCGACCGACGACCTTGGCCGGTGTACCCTTCTCCTCTGCCACAC
ACCCAACCTACGGTTACGACGGTTCGGAGTACCGCCACGCGAGCGATAATCGGACTCC
AGTCCGGCCCAGAGCTTCCGCCTGGCCACGCCCACCAGCACTGCAGCACCAACC
ATCGCGCCCGGCACAGTTGCCCTTCAACGATTTACTGCCGCCGTTTCGTTGACTTTG
TGCCCCACGATATAGCCACCACCCAAGGACCGCCTATCTATTACGAATGGAAGGTG
CCCTCGAACGGTCTTGAGCCTCCCAAATTAGACCCACCCATTGGTGTGGATGGACG
TGAGTATCCCGAGACCACTGGAGACTACGGGGTCACCAGCAAGCAGGATGTATTCA
ACACCCGACTAAACGATATTGGAAGCCATCAAAGAAGCCAGTCCAGATAACCTCG
CCGCTCCAACAGTCGAGCACAAGCCATCGTTTGGCCATCTCGAGATCCATTAAGCC
CAAAGAGGAGCAGGAATCGGCACAGCGGCGATCCGATGTGGTGGCCAGCTCCAC
GGATATAAGCCATCTGCGCAAGCAATTCTCATTCCGGAGTACGCCTTCCCGCTGG
AAACCATTGGGCGCACGGGTTATGGTCCTGGTGCAGGAGCAGCGGCTGGGGGCT
CCGGCTCCAGCAACGGCGATCTGTATAACTCGTTCCAGCTGAAGATCCCCGAGCA
GCGCGCTAAGTGGTTCGGAGAGAACCCCAAGTGCCCGGAGTGCCATCCTTCGTTT
GTTCTGCCGGGCACCTGCGAGCCCTGCCTGCGCAGATAGggatctttgtgaaggaaccttactt
ctgtggtgtgacataattggacaaactacctacagagatttaaagctctaaggtaaataaaaatttttaagtgtataatgtgt
aaactactgattctaattgtttgtatttttagattccaacctatggaactgatgaatgggagcagtggtggaatgccttaatga
gaaaccgtgtccgaag

UAS-js-dsRED

In the sequences below, small letters are pUAST sequence. LARGE LETTERS ARE JS CDNA SEQUENCE. Underlined letters are dsRED sequence.

agctaaacaatctgcagtaaagtgaagttaaagtgaatcaattaaaagtaaccagcaaccaagtaaataactgcaac
tactgaaatctgccaagaagtaattattgaatacaagaagagaactctgaatagggaattggaattcgtaacagatctg
smaATGTTGGCACAAACGCAAATTATCCCAACGCCTTGGCGACTTTTGACCCTGGCT
TTATTCTGCTCAGCTTTATTTTTTGGCCAGTGAGGCTCAAATGCCATCCCAAAAACG
AATCCTGCCTCGCTGCTGATACAGAAGACATCCTTCTCCTGCGCCGGACGTCCAGC
CGGATATTATGCGGATGTGGAGACGGGCTGCCAGGTGTACCACATGTGCGATGGC
CTGGGTGCGCCAGTTCAGCTACACCTGCCCAAACACGACACTTTTCCAGCAGCGAAT
GCTTATCTGCGACCACTGGTACATGGTGAAGTCTCCAAGGCGGAGAGCAACTATG
CTGCCAATCTCCTAATTGGTCAGCGGGACAAGCCCTTCGTAAACGACGAGGAAAAC
AGCTTGCGCACTCCAAGACCCGATCTTCTGGATCGTCCTTATGCGCCCGACTATTC
CGGCGAGTCCTTCAGAAGCCAATATAAGCAGTTTACTTCCAACCAGAATCAGATACG
TGATGAGTCCGTCAAAGGAGCCGGTGCGGGTAAATCGGATCCCCAGATATCGCAG
ACGCGTTGGCGCATTCCACCACCCAGCCGGACGATCCTTCCACCGGCCTATGAAC
CGCAAATCGAGCTGCCCAGTGCCCAATCGGCCAAGCCCAGGATACCCATTATCACT
AGCACCAACCACAACCACTCGAGCGACCACCAACCCGACCAACAACCACAACCTC
GTGCCACCACCACAACAACAACCACTCGAAGACCTCCGGTAACCGCCAGGCCGAA
GGAGGCCTTGCACAACAGGCGGCCAAATTTCCAGGAGCATGATATGGATGACTTGG
GCACCAGCCACAGCACACGGTACAACACCTCGGCAGACTTCAACTCGGCGGAGTC
GCCGCTCCGTGAAACGAAACAGTCCAGCACCAAGCTGACCAAGTTCATCAAGCCG
CCGTCCAAGATCTATGAGCCACCCTTTGTGTACCCCATCTACAATCTAGAAGAGTCC
CAGACCCAGAACGCGGCAGTCGCCACCACACTGCGCACATCAACGGCGGGCTCCT
TTCAGTCCTGTTCCAAGTCGCAAGGAGGTCAGCACCACAACTCCACGACCACTGA
GTCGACCGACGACCTTGGCCGGTGTACCCTTCTCCTCTGCCACACACCCAACTAC
GGTTACGACGGTCGGAGTACCGCCACGCAGCGATAATCGGACTCCAGCTCCGGCC
GAGAGCTTCCGCCTGGCCACGCCACCAGCACTGCAGCACCAACCATCGCGCCCG
GCACAGTTGCCCTTCAACGATTTACTGCCGCCGTTTCGTTGACTTTGTGCCCCACGA
TATAGCCACCACCCAAGGACCGCCTATCTATTACGAATGGAAGGTGCCCTCGAACG
GTCTTGAGCCTCCCAAATTAGACCCACCCATTGGTGTGGATGGACGTGAGTATCCC
GAGACCACTGGAGACTACGGGGTCAACAGCAAGCAGGATGTATTCAACACCCGAC
TAAACGATATTGGAAGCCATCAAAAGAAGCCAGTCCAGATAACCTCGCCGCTCCAA
CAGTCGAGCACAAAGCCATCGTTTGGCCATCTCGAGATCCATTAAGCCCAAAGAGGA
GCAGGAATCGGCACAGCGGCATCCGATGTGGTGGCCAGCTCCACGGATATAAGC
CATCTGCGCAAGCAATTCCTCATTCCGGAGTACGCCTTCCCGCTGGAAACCATTGG
GCGCACGGGTTATGGTCCTGGTGCAGGAGCAGCGGCTGGGGGCTCCGGCTCCAG
CAACGGCGATCTGTATACTCGTTCCAGCTGAAGATCCCCGAGCAGCGCGCTAAGT
GGTTCGGAGAGAACCCCAAGTGCCCGGAGTGCCATCCTTCGTTTCGTTCTGCCGGG
CACCTGCGAGCCCTGCCTGCGCAGAGGCGGAGGGAGGTCTTCCAAGAATGTTATC
AAGGAGTTCATGAGGTTTAAGGTTTCGCATGGAAGGAACGGTCAATGGGCACGAGTT

TGAAATAGAAGGCGAAGGAGAGGGGAGGCCATACGAAGGCCACAATACCGTAAAG
CTTAAGGTAACCAAGGGGGGACCTTTGCCATTTGCTTGGGATATTTTGTCAACCACAA
TTTCAGTATGGAAGCAAGGTATATGTCAAGCACCTGCCGACATACCAGACTATAAA
AAGCTGTCATTTCTGAAGGATTTAAATGGGAAAGGGTCATGAACTTTGAAGACGGT
GGCGTCGTTACTGTAACCCAGGATTCCAGTTTGCAGGATGGCTGTTTCATCTACAA
GGTCAAGTTCATTGGCGTGAACCTTTCCTTCCGATGGACCTGTTATGCAAAAGAAGA
CAATGGGCTGGGAAGCCAGCACTGAGCGTTTGTATCCTCGTGATGGCGTGTTGAA
AGGAGAGATTCATAAGGCTCTGAAGCTGAAAGACGGTGGTCATTACCTAGTTGAATT
CAAAAGTATTTACATGGCAAAGAAGCCTGTGCAGCTACCAGGGTACTACTATGTTGA
CTCCAAACTGGATATAACAAGCCACAACGAAGACTATACAATCGTTGAGCAGTATGA
AAGAACCGAGGGACGCCACCATCTGTTCTTTAGggatcttgtgaaggaaccttactctgtggtgt
gacataattggacaaactacctacagagatttaaagctctaaggtaaataaaaattttaagtgtataatgtgttaaactact
gattctaattgttgtatttttagattccaacctatggaactgatgaatgggagcagtggtggaat

UAS-jsΔCBD-I-dsRED

In the sequences below, small letters are pUAST sequence. LARGE LETTERS ARE JS CDNA SEQUENCE. Underlined letters are dsRED sequence.

agctaaacaatctgcagtaaagtgcaagttaaagtgatcaattaaaagtaaccagcaaccaagtaaataactgcaac
tactgaaatctgccaagaagtaattattgaatacaagaagagaactctgaatagggaattgggaattcggttaacagatctg
smaATGTTGGCACAAACGCAAATTATCCCAACGCCTTGGCGACTTTTGACCCTGGCT
TTATTCTGCTCAGCTTTATTTTTGGCCAGTGAGGCTCAAATGCCATCCCAAAAACG
AATCCTGCCTCGCTGCTGATACAGAAGACATCCTTCTCCTGCGCCGGACGTCCAGC
CGGATATTATGCGGATGTGGAGACGGGCGGGCGCGCCGATGGCCTGGGTGCGCA
GTTTCAGCTACACCTGCCCCAACACGACACTTTTCCAGCAGCGAATGCTTATCTGCG
ACCACTGGTACATGGTGAACCTGCTCCAAGGCGGAGAGCAACTATGCTGCCAATCTC
CTAATTGGTCAGCGGGACAAGCCCTTCGTAAACGACGAGGAAAACAGCTTGCGCA
CTCCAAGACCCGATCTTCTGGATCGTCCTTATGCGCCCGACTATTCCGGCGAGTCC
TTCAGAAGCCAATATAAGCAGTTTACTTCCAACCAGAATCAGATACGTGATGAGTCC
GTCAAAGGAGCCGGTGCGGGTAAATCGGATCCCCAGATATCGCAGACGCGTTGGC
GCATTCCACCACCCAGCCGGACGATCCTTCCACCGGCCTATGAACCGCAAATCGA
GCTGCCCAGTGCCCAATCGGCCAAGCCCAGGATACCCATTATCACTAGCACCACCA
CAACCACTCGAGCGACCACCACCCGACCAACAACCACAACCTCGTGCCACCAC
CACAACAACAACCACTCGAAGACCTCCGGTAACCGCCAGGCCGAAGGAGGCCTTG
CACAACAGGCGGCCAAATTTCCAGGAGCATGATATGGATGACTTGGGCACCAGCCA
CAGCACACGGTACAACACCTCGGCAGACTTCAACTCGGCGGAGTCGCCGCTCCGT
GAAACGAAACAGTCCAGCACCAAGCTGACCAAGTTCATCAAGCCGCCGTCCAAGA
TCTATGAGCCACCCTTTGTGTACCCCATCTACAATCTAGAAGAGTCCCAGACCCAGA
ACGCGGCAGTCGCCACCACACTGCGCACATCAACGGCGGCTCCTTTCAGTCCTGT
TCCAAGTCGCAAGGAGGTCAGCACCACTCCACGACCACTGAGTCGACCGACG
ACCTTGCCGGTGTACCCTTCTCCTCTGCCACACACCCAACTACGGTTACGACGGT
CGGAGTACCGCCACGCAGCGATAATCGGACTCCAGCTCCGGCCGAGAGCTTCCGC
CTGGCCACGCCCACCAGCACTGCAGCACCAACCATCGCGCCCGGCACAGTTGCC

TTCAACGATTTACTGCCGCCGTTTCGTTGACTTTGTGCCCCACGATATAGCCACCACC
 CAAGGACCGCCTATCTATTACGAATGGAAGGTGCCCTCGAACGGTCTTGAGCCTCC
 CAAATTAGACCCACCCATTGGTGTGGATGGACGTGAGTATCCCGAGACCACTGGAG
 ACTACGGGGTCAACCAGCAAGCAGGATGTATTCAACACCCGACTAAACGATATTGGA
 AGCCATCAAAAGAAGCCAGTCCAGATAACCTCGCCGCTCCAACAGTCGAGCACAA
 GCCATCGTTTGGCCATCTCGAGATCCATTAAGCCCAAAGAGGAGCAGGAATCGGCA
 CAGCGGCGATCCGATGTGGTGGCCAGCTCCACGGATATAAGCCATCTGCGCAAGC
 AATTCCTCATTCCGGAGTACGCCTTCCCGCTGGAAACCAATTGGGCGCACGGGTTAT
 GGTCTTGGTGCAGGAGCAGCGGCTGGGGGCTCCGGCTCCAGCAACGGCGATCTG
 TATAACTCGTTCCAGCTGAAGATCCCCGAGCAGCGCGCTAAGTGGTTCGGAGAGAA
 CCCCAAGTGCCCGGAGTGCCATCCTTCGTTTCGTTCTGCCGGGCACCTGCGAGCCC
 TGCCTGCGCAGAGGCGGAGGGAGGTCTTCCAAGAATGTTATCAAGGAGTTCATGA
GGTTTAAGGTTTCGCATGGAAGGAACGGTCAATGGGCACGAGTTTGAAATAGAAGGC
GAAGGAGAGGGGAGGCCATACGAAGGCCACAATACCGTAAAGCTTAAGGTAACCA
AGGGGGGACCTTTGCCATTTGCTTGGGATATTTTGTCAACCACAATTTTCAGTATGGAA
GCAAGGTATATGTCAAGCACCTTGCCGACATACCAGACTATAAAAAGCTGTCATTTT
CTGAAGGATTTAAATGGGAAAGGGTCATGAACTTTGAAGACGGTGGCGTCGTTACT
GTAACCCAGGATTCCAGTTTGCAGGATGGCTGTTTCATCTACAAGGTCAAGTTCATT
GGCGTGAACTTTCCTTCCGATGGACCTGTTATGCAAAAGAAGACAATGGGCTGGGA
AGCCAGCACTGAGCGTTTGTATCCTCGTGATGGCGTGTTGAAAGGAGAGATTCTATA
AGGCTCTGAAGCTGAAAGACGGTGGTCATTACCTAGTTGAATTCAAAAGTATTTACA
TGGCAAAGAAGCCTGTGCAGCTACCAGGGTACTACTATGTTGACTCCAAACTGGAT
ATAACAAGCCACAACGAAGACTATACAATCGTTGAGCAGTATGAAAGAACCGAGGG
ACGCCACCATCTGTTTCTTTAGggatctttgtgaaggaaccttacttctgtggtgtgacataattggacaaact
 acctacagagatttaaagctctaaggtaaataaaaattttaagtgtataatgtgttaaactactgattctaattgtttgtgtattt
 agattccaacctatggaactgatgaatgggagcagtggtggaat

UAS-jsΔCBD-II-dsRED

In the sequences below, small letters are pUAST sequence. LARGE LETTERS ARE JS
 CDNA SEQUENCE. Underlined letters are dsRED sequence.

agctaaacaatctgcagtaaagtgcaagttaaagtgaatcaattaaaagtaaccagcaaccaagtaaataactgcaac
 tactgaaatctgccaagaagtaattattgaatacaagaagagaactctgaataggggaattgggaattcgtaacagatctg
 smaATGTTGGCACAACGCAAATTATCCCAACGCCTTGGCGACTTTTGACCCTGGCT
 TTATTCTGCTCAGCTTTATTTTTGGCCAGTGAGGCTCAAAATGCCATCCCCAAAACG
 AATCCTGCCTCGCTGCTGATACAGAAGACATCCTTCTCCTGCGCCGGACGTCCAGC
 CGGATATTATGCGGATGTGGAGACGGGCTGCCAGGTGTACCACATGTGCGATGGC
 CTGGGTGCGCAGTTCAGCTACACCTGCCCAAACACGACACTTTTCCAGCAGCGAAT
 GCTTATCGGGCGCGCCTCCAAGGCGGAGAGCAACTATGCTGCCAATCTCCTAATTG
 GTCAGCGGGACAAGCCCTTCGTAAACGACGAGGAAAACAGCTTGCGCACTCCAAG
 ACCCGATCTTCTGGATCGTCCTTATGCGCCCGACTATTCCGGCGAGTCCTTCAGAA
 GCCAATATAAGCAGTTTACTTCCAACCAGAATCAGATACGTGATGAGTCCGTCAAAG
 GAGCCGGTGCGGGTAAATCGGATCCCCAGATATCGCAGACGCGTTGGCGCATTCC

ACCACCCAGCCGGACGATCCTTCCACCGGCCTATGAACCGCAAATCGAGCTGCCC
AGTGCCCAATCGGCCAAGCCCAGGATACCCATTATCACTAGCACCACCACAACCAC
TCGAGCGACCACCACCACCCGACCAACAACCACAACCTCGTGCCACCACCACAACA
ACAACCACCTCGAAGACCTCCGGTAACCGCCAGGCCGAAGGAGGCCTTGCACAACA
GGCGGCCAAATTTCCAGGAGCATGATATGGATGACTTGGGCACCAGCCACAGCAC
ACGGTACAACACCTCGGCAGACTTCAACTCGGCGGAGTCGCCGCTCCGTGAAACG
AAACAGTCCAGCACCAAGCTGACCAAGTTCATCAAGCCGCCGTCCAAGATCTATGA
GCCACCCCTTTGTGTACCCCATCTACAATCTAGAAGAGTCCCAGACCCAGAACGCGG
CAGTCGCCACCACACTGCGCACATCAACGGCGGCTCCTTTTCAGTCCTGTTCCAAG
TCGCAAGGAGGTCAGCACCACTCCACGACCACTGAGTCGACCGACGACCTTG
GCCGGTGTACCCTTCTCCTCTGCCACACACCCAACTACGGTTACGACGGTCGGAG
TACCGCCACGCAGCGATAATCGGACTCCAGCTCCGGCCGAGAGCTTCCGCCTGGC
CACGCCACCAGCACTGCAGCACCAACATCGCGCCCGGCACAGTTGCCCTTCAAC
GATTTACTGCCGCCGTTTCGTTGACTTTGTGCCCCACGATATAGCCACCACCCAAGG
ACCGCCTATCTATTACGAATGGAAGGTGCCCTCGAACGGTCTTGAGCCTCCCAAAT
TAGACCCACCCATTGGTGTGGATGGACGTGAGTATCCCGAGACCACTGGGAGACTAC
GGGGTCACCAGCAAGCAGGATGTATTCAACACCCGACTAAACGATATTGGAAGCCA
TCAAAGAAGCCAGTCCAGATAACCTCGCCGCTCCAACAGTCGAGCACAAGCCATC
GTTTGGCCATCTCGAGATCCATTAAGCCCAAAGAGGAGCAGGAATCGGCACAGCG
GCGATCCGATGTGGTGGCCAGCTCCACGGATATAAGCCATCTGCGCAAGCAATTCC
TCATTCCGGAGTACGCCTTCCCGCTGGAAACCATTTGGGCGCACGGGTTATGGTCCT
GGTGCAGGAGCAGCGGCTGGGGGCTCCGGCTCCAGCAACGGCGATCTGTATAAC
TCGTTCCAGCTGAAGATCCCCGAGCAGCGCGCTAAGTGGTTCGGAGAGAACCCCA
AGTGCCCGGAGTGCCATCCTTCGTTCTGTCGGGGCACCTGCGAGCCCTGCCT
GCGCAGAGGCGGAGGGAGGTCTTCCAAGAATGTTATCAAGGAGTTCATGAGGTTTA
AGGTTTCGCATGGAAGGAACGGTCAATGGGCACGAGTTTGAAATAGAAGGCGAAGG
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