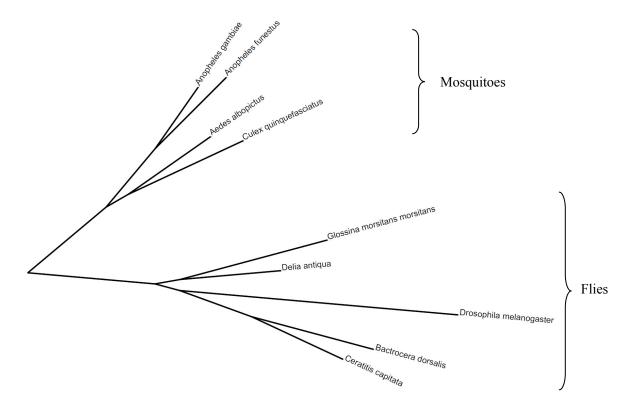
## **Supplementary Information**

Figure S1. A species phylogenetic tree to show the relationships between different species, including Anopheles gambiae, Anopheles funestus, Aedes albopictus, Culex quinquefasciatus, Drosophila melanogaster, Bactrocera dorsalis, Delia antiqua, Ceratitis capitata, and Glossina morsitans morsitans.



**Figure S2.** Alignment of the "Dimer" OBP (BdorOBP8) with those "Dimer" OBPs of other insect species. Full-length amino acid sequences of BdorOBP8 are aligned by ClustalX 1.83 and edited using GeneDoc. Yellow boxes show the conserved cysteine and black boxes show proline residues in the "Dimer" OBPs. The other insect species are: *D. melanogaster* (Dmel) and *G. morsitans morsitans* (Gmor). GenBank accession numbers for the "Dimer" OBPs are: Dmel OBP83ef: NP 731042; Dmel OBP83ed: NP 649612; GmorOBP3: CBA11307; GmorOBP7: CBA11311.

DmelOBP83cd : MQM DmelOBP83ef : MSS GmorOBP3 :	REASQVVLLIAVAY KSGILIAL L LSIN PRAVLVSLFLI S	EGLAL QALAD	lehegetinr <mark>c</mark> ion Lsgdaqtlekclrq nseilrk <mark>c</mark> peb	* 60 VGSKDLVGELQKVAJ YGGLTAENAERLBI LSSPESIAGDLRKLBI IDQSQYNSSEVLLEKFKI FGGYTLENDQRLQI	RFKEWSDSYEEIP <mark>C</mark> F RYSSWTREEVP <mark>C</mark> I RYAYWSHEEIP <mark>C</mark> P	TR <mark>C</mark> LASMKHWPDADE TRCYLSEMPDFYNNI MRCLAREKGWPDVEE ARCLASEKGWPDIDI	JTGFNKDGIVGVFG : 93 SNKWRLKQLTEDLG : 91 JSRWNKQRLVDELG : 69
DmelOBP83cd : RFV DmelOBP83ef : ADV GmorOBP3 : ANM	YBA <mark>C</mark> RKKLELPFESG YNY <mark>C</mark> RFELRRMG YNY <mark>C</mark> RFELNRAF	ESS <mark>C</mark> KHAYEGFH <mark>C</mark> ITN SDGCSPAYRGLRCLKQ KNVCSPAPKGLK <mark>C</mark> LKQ	MESHPFTVIDNMPN AEMHAGTSLSTLLQ AEMNVIITHNNLLB	ISPSAKDAMKD LODVH SRQLNATNVELLO VKEKSISMDQLLE	DEWKSFDAFAYYPV YSKLKS YYHPPQ	NEPIR <mark>CETRC</mark> EVDKI KEPIRCLEQCEADAF LEHIRCLEK <mark>C</mark> EADKS	* INFYTPTY-EWNLD : 195 HIFEEKTRLWKLE : 201 IGFYDPDG-NWRLE : 183 SHLYTVHY-EWNVL : 161 IQLYNHRLRSWNIA : 196
DmelOBP83cd : AMK DmelOBP83ef : NWK GmorOBP3 : NWL	DAFGPMRQDRT DALG-IPAKGA DAFGPSGNEDQSSGA KAFGPIRNENA	RIRT <mark>C</mark> HRHRGR DYSG <mark>C</mark> RLSGTQREVAL DISI <mark>C</mark> RVNANEREK-M	dr <mark>c</mark> atyykoft <mark>c</mark> ya skcswmyheykowe di <mark>c</mark> aimyeeyn <mark>o</mark> we	* 280 RLNYNTDGSYPLESTTL MAV RVNG	NKLVEDNBEQ SVTYKKALKKIPNP	: 242 : 245 : 227	