

## Supplementary Table S1 with References

Table S1: 50 opsin sequences (with GenBank accession numbers) used for this study. For opsins for which  $\lambda_{\max}$  is not given, predictions were made based on molecular analysis. Adapted from Porter et al. (Porter et al., 2007) and Maksimovic et al. (Maksimovic et al., 2011).

	Species	Taxon	GenBank #	$\lambda_{\max}$	Reference
LONG WAVELENGTH	<i>Apis mellifera</i>	Insecta	U26026	540	Townson et al., 1998
	<i>Thermonectus marmoratus</i>	Insecta	EU921225.1	520-540	Maksimovic et al., 2011
	<i>Camponotus abdominalis</i>	Insecta	U32502	510	Popp et al., 1996
	<i>Drosophila melanogaster Rh6</i>	Insecta	Z86118	508	Salcedo et al., 1999
	<i>Limulus polyphemus (lateral eye)</i>	Chelicerata	L03781	520	Smith et al., 1993
	<i>Limulus polyphemus (ocelli)</i>	Chelicerata	L03782	530	Smith et al., 1993
	<i>Manduca sexta</i>	Insecta	L78080	520	White et al., 1983
	<i>Megoura viciae</i>	Insecta	AF189714	LW predicted	Gao et al., 2000
	<i>Neogonodactylus oerstedii Rh1</i>	Crustacea	DQ646869	489	Cronin and Marshall, 1989
	<i>Neogonodactylus oerstedii Rh2</i>	Crustacea	DQ646870	528	Cronin and Marshall, 1989
	<i>Neogonodactylus oerstedii Rh3</i>	Crustacea	DQ646871	522	Cronin and Marshall, 1989
	<i>Papilio glaucus Rh1</i>	Insecta	AF077189	LW predicted	Briscoe, 2000
	<i>Papilio glaucus Rh2</i>	Insecta	AF077190	LW predicted	Briscoe, 2000
	<i>Papilio glaucus Rh3</i>	Insecta	AF067080	LW predicted	Briscoe, 2000
	<i>Papilio glaucus Rh4</i>	Insecta	AF077193	LW predicted	Briscoe, 2000
	<i>Papilio xuthus Rh1</i>	Insecta	AB007423	520	Arikawa et al., 1987
	<i>Papilio xuthus Rh2</i>	Insecta	AB007424	520	Arikawa et al., 1987
	<i>Papilio xuthus Rh3</i>	Insecta	AB007425	575	Arikawa et al., 1987
	<i>Pieris rapae</i>	Insecta	AB177984	540	Ichikawa and Tateda, 1982
	<i>Procambarus clarkii</i>	Crustacea	KT304796.1	533	Zeiger and Goldsmith, 1994
<i>Schistocerca gregaria</i>	Insecta	X80072	520	Gartner and Towner, 1995	
<i>Sphodromantis sp</i>	Insecta	X71665	515	Rossel, 1979	
<i>Tribolium castaneum</i>	Insecta	NM_001162519.1	LW predicted	Jackowska et al., 2007	
<i>Vanessa cardui</i>	Insecta	AF385333	530	Briscoe et al., 2003	
BLUE-GREEN	<i>Calliphora vicina Rh1</i>	Insecta	M58334	490	Paul et al., 1986
	<i>Drosophila melanogaster Rh1</i>	Insecta	K02315	478	Feiler et al., 1988
	<i>Drosophila melanogaster Rh2</i>	Insecta	M12896	420	Feiler et al., 1988
	<i>Hemigrapsus sanguineus Rh1</i>	Crustacea	D50583	480	Sakamoto et al., 1996
	<i>Hemigrapsus sanguineus Rh2</i>	Crustacea	D50584	480	Sakamoto et al., 1996
BLUE	<i>Apis mellifera</i>	Insecta	AF004168	439	Townson et al., 1998
	<i>Drosophila melanogaster Rh5</i>	Insecta	U67905	437	Salcedo et al., 1999
	<i>Manduca sexta</i>	Insecta	AD001674	450	White et al., 1983
	<i>Papilio glaucus Rh6</i>	Insecta	AF077192	Blue predicted	Briscoe, 2000
	<i>Papilio xuthus Rh4</i>	Insecta	AB028217	460	Arikawa et al., 1987

	<i>Schistocerca gregaria</i>	Insecta	X80072	430	Gartner and Towner, 1995
	<i>Vanessa cardui</i>	Insecta	AF414075	470	Briscoe et al., 2003
ULTRA VIOLET	<i>Apis mellifera</i>	Insecta	AF004169	353	Townson et al., 1998
	<i>Camponotus abdominalis</i>	Insecta	AF042788	360	Smith et al., 1997
	<i>Cataglyphis bombycinus</i>	Insecta	AF042787	360	Smith et al., 1997
	<i>Drosophila melanogaster Rh3</i>	Insecta	M17718	345	Feiler et al., 1992
	<i>Drosophila melanogaster Rh4</i>	Insecta	AH001040	375	Feiler et al., 1992
	<i>Manduca sexta</i>	Insecta	L78081	357	White et al., 1983
	<i>Megoura viciae</i>	Insecta	AF189715	UV predicted	Gao et al., 2000
	<i>Papilio glaucus Rh5</i>	Insecta	AF077191	UV predicted	Briscoe, 2000
	<i>Papilio xuthus Rh5</i>	Insecta	AB028218	360	Arikawa et al., 1987
	<i>Tribolium castaneum</i>	Insecta	XM_965251	UV predicted	Jackowska et al., 2007
	<i>Vanessa cardui</i>	Insecta	AF414074	360	Briscoe et al., 2003
	<i>Procambarus clarkii</i>	Crustacea	KT304797.1	440	Kingston and Cronin, 2015
	<i>Thermonectus marmoratus</i>	Insecta	EU921226.1	UV predicted	Maksimovic et al., 2009
	<i>Thermonectus marmoratus</i>	Insecta	EU921227.1	374	Maksimovic et al., 2011

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