

Molecule/Sites	110	113	134-136	181	185	187	296	302-306	310-312
C-opsins ( <i>Bos taurus</i> rhodopsin)	C	E	ERY	E	T	C	K	NPxxY	NKQ
R-opsins ( <i>Octopus vulgaris</i> rhodopsin)	C	R	DKY	E	C	C	K	NPxxY	HPK
Mizuhopectenyessoensis_2164	C	Y	DKY	S	G	C	Q	NSxxY	NKI
Candidulaunifasciata_278	C	Y	DKY	H	G	C	L	HAxxY	NQI
Gigantopeltaegis_1215	C	Y	DKY	V	G	C	Q	NAxxY	NKI
Octopusvulgaris_2483	C	Y	DKY	D	A	C	Q	NAxxY	NKI
Candidulaunifasciata_22	C	Y	DKY	F	G	C	L	HAxxY	NPI
Mercenariamercenaria_1853	C	Y	DKY	H	G	C	L	HSxxY	NKI
Crassostreavirginica_878	C	Y	DKY	H	G	C	Q	NGxxY	NKI
Pectenmaximus_2863	C	Y	DKY	S	G	C	Q	NSxxY	NKI
Oweniafusiformis_2741	C	Y	DKY	H	T	C	Y	NAxxY	NRI
Mytilusgalloprovincialis_2322	C	Y	DKY	H	D	C	Q	NGxxY	NKI
Octopusbimaculoides_2422	C	Y	DKY	D	A	C	Q	NAxxY	NKI
Nautiluspompilius_786466	C	Y	DKY	H	A	C	Q	NAxxY	NKI
Elysiachlorotica_1045	C	Y	DKY	H	G	C	L	HAxxY	NQI
Architeuthisdux_201604	C	Y	DKY	D	A	C	Q	NAxxY	NKI
Elysiamarginata_1135	C	Y	DKY	H	G	C	L	HAxxY	NQI
Plakobranhusocellatus_2988	C	Y	DKY	H	G	C	L	HAxxY	NQI
Sepiapharaonis_3310	C	Y	DKY	H	A	C	Q	NAxxY	NKI
Biomphalariaglabrata_157	C	Y	DKY	H	A	C	Q	HAxxY	NQI
Lineuslongissimus_618617	C	Y	DRY	D	G	C	T	NPxxY	NKQ

**Supplementary Figure S1 - Residues and motifs comparison between opsins and pseudopsins.**

Table showing the comparison of key residues and motifs between representative c-opsins and r-opsins and pseudopsins, referred with respect to *Bos taurus* rhodopsin. Pale yellow indicates structural residues, pink the counterion sites, red the retinal binding site, and green the residues involved in the G-protein binding activation.