

Gephebase Gene		GepheID
opsin - rhodopsin1-B (RH1-B) (https://www.gephebase.org/search-criteria?/and+Gene	GP00000794	
Gephebase="opsin - rhodopsin1-B (RH1-B)"#gephebase-summary-title)		Main curator
Published	Entry Status	Martin

Physiology (#https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology)		Trait Category	
Color vision (blue shift) (#https://www.gephebase.org/search-criteria?/and+Trait=~Color+vision+(blue+shift)#gephebase-summary-title)		Trait	
Conger myriaster		Trait State in Taxon A	
Anguilla japonica		Trait State in Taxon B	
Taxon A		Ancestral State	
Intergeneric or Higher (#https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intergeneric+or+Higher)		Taxonomic Status	
Taxon A		Taxon B	
Conger myriaster (#https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Conger+myriaster)		Anguilla japonica (#https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Anguilla+japonica)	
whitespotted conger		Japanese eel	
Anguilla myriaster; Astroconger myriaster; whitespotted conger; conger eel; Anguilla myriaster Brevoort, 1856; Conger myriaster (Brevoort, 1856)		Japanese eel; Anguilla japonica Temminck & Schlegel, 1846	
species		species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Elopoccephalai; Elopoccephala; Elopomorpha; Anguilliformes; Congridae; Congrinae; Conger		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Elopoccephalai; Elopoccephala; Elopomorpha; Anguilliformes; Anguillidae; Anguilla	
Conger () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7942)		Anguilla () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7935)	
NCBI Taxonomy ID 7943 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7943)		NCBI Taxonomy ID 7937 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7937)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

RHO	Generic Gene Name	P08100 (http://www.uniprot.org/uniprot/P08100)	UniProtKB Homo sapiens
RP4; OPN2; CSNBAD1	Synonyms	CAB56647 (https://www.ncbi.nlm.nih.gov/nuccore/CAB56647)	GenebankID or UniProtKB
9606.ENSPP00000296271 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPP00000296271)	String		
	Sequence Similarities		
Belongs to the G-protein coupled receptor 1 family. Opsin subfamily.			
	GO - Molecular Function		
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)			
GO:0004930 : G protein-coupled receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004930)			
GO:0008020 : G protein-coupled photoreceptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008020)			
GO:0005502 : 11-cis retinal binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005502)			

GO - Biological Process

GO:0007186 : G protein-coupled receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007186>)
GO:0001523 : retinoid metabolic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001523>)
GO:0006468 : protein phosphorylation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006468>)
GO:0018298 : protein-chromophore linkage
(<https://www.ebi.ac.uk/QuickGO/term/GO:0018298>)
GO:0007601 : visual perception (<https://www.ebi.ac.uk/QuickGO/term/GO:0007601>)
GO:0071482 : cellular response to light stimulus
(<https://www.ebi.ac.uk/QuickGO/term/GO:0071482>)
GO:0007602 : phototransduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007602>)
GO:0016038 : absorption of visible light
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016038>)
GO:0045494 : photoreceptor cell maintenance
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045494>)
GO:0007603 : phototransduction, visible light
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007603>)
GO:0022400 : regulation of rhodopsin mediated signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0022400>)
GO:0060041 : retina development in camera-type eye
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060041>)
GO:0016056 : rhodopsin mediated signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016056>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
GO:0000139 : Golgi membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0000139>)
GO:0005887 : integral component of plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)
GO:0005794 : Golgi apparatus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005794>)
GO:0005911 : cell-cell junction (<https://www.ebi.ac.uk/QuickGO/term/GO:0005911>)
GO:0001750 : photoreceptor outer segment
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001750>)
GO:0097381 : photoreceptor disc membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0097381>)
GO:0060170 : ciliary membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0060170>)
GO:0030660 : Golgi-associated vesicle membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030660>)
GO:0001917 : photoreceptor inner segment
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001917>)
GO:0060342 : photoreceptor inner segment membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060342>)
GO:0042622 : photoreceptor outer segment membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042622>)

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title)	Presumptive Null
Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding~#gephebase-summary-title)	Molecular Type
SNP (https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP~#gephebase-summary-title)	Aberration Type
Nonsynonymous	SNP Coding Change
D83N	Molecular Details of the Mutation
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene~#gephebase-summary-title)	Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Elephants and human color-blind deuteranopes have identical sets of visual pigments. (2005) (https://pubmed.ncbi.nlm.nih.gov/15781694)	Main Reference
Yokoyama S; Takenaka N; Agnew DW; Shoshani J	Authors
Being the largest land mammals, elephants have very few natural enemies and are active during both day and night. Compared with those of diurnal and nocturnal animals, the eyes of elephants and other arrhythmic species, such as many ungulates and large carnivores, must function in both the bright light of day and dim light of night. Despite their fundamental importance, the roles of photosensitive molecules, visual pigments, in arrhythmic vision are not well understood. Here we report that elephants (<i>Loxodonta africana</i> and <i>Elephas maximus</i>) use RH1, SWS1, and LWS pigments, which are maximally sensitive to 496, 419, and 552 nm, respectively. These light sensitivities are virtually identical to those of certain “color-blind” people who lack MWS pigments, which are maximally sensitive to 530 nm. During the day, therefore, elephants seem to have the dichromatic color vision of deuteranopes. During the night, however, they are likely to use RH1 and SWS1 pigments and detect light at 420-490 nm.	Abstract

RELATED GEPHE

1 (opsin - rhodopsin1-A (RH1-A)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^7943^/and+Trait=Color vision/or+Taxon ID=^7937^/and+Trait=Color vision/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS