

GEPHE SUMMARY

Luciferase (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^luciferase^#gephebase-summary-title)	Gephebase Gene	GP00000552	GepheID
	Entry Status	Martin	Main curator
	Published		

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Physiology^#gephebase-summary-title)		Trait Category	
Bioluminescence spectrum (https://www.gephebase.org/search-criteria?/and+Trait=^Bioluminescence spectrum^#gephebase-summary-title)		Trait	
Photinus pyralis		Trait State in Taxon A	
Pyrophorus plagiophthalmus		Trait State in Taxon B	
Data not curated		Ancestral State	
Intergeneric or Higher (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Intergeneric or Higher^#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Photinus pyralis (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Photinus pyralis^#gephebase-summary-title)		Pyrophorus plagiophthalmus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Pyrophorus plagiophthalmus^#gephebase-summary-title)	
common eastern firefly		-	
common eastern firefly; North American firefly; Photinus pyralis (Linnaeus, 1767)		Pyrophorus plagiophthalmus	
species		species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Coleoptera; Polyphaga; Elateriformia; Elateroidea; Lampyridae; Lampyrinae; Photinus		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Coleoptera; Polyphaga; Elateriformia; Elateroidea; Elateridae; Agrypninae; Pyrophorus	
Photinus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7053)		Pyrophorus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 30010)	
7054 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7054)		30011 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 30011)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

GENOTYPIC CHANGE

-		Generic Gene Name	UniProtKB Photinus pyralis
-		Synonyms	P08659 (http://www.uniprot.org/uniprot/P08659)
-		String	AF543415 (https://www.ncbi.nlm.nih.gov/nuccore/AF543415)
-		Sequence Similarities	GenebankID or UniProtKB
Belongs to the ATP-dependent AMP-binding enzyme family.			
GO - Molecular Function			
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)			
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)			
GO:0051087 : chaperone binding (https://www.ebi.ac.uk/QuickGO/term/GO:0051087)			
GO:0047077 : Photinus-luciferin 4-monooxygenase (ATP-hydrolyzing) activity (https://www.ebi.ac.uk/QuickGO/term/GO:0047077)			
GO - Biological Process			
GO:0008218 : bioluminescence (https://www.ebi.ac.uk/QuickGO/term/GO:0008218)			
GO - Cellular Component			
GO:0005777 : peroxisome (https://www.ebi.ac.uk/QuickGO/term/GO:0005777)			

No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title>)

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding~#gephebase-summary-title>)

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP~#gephebase-summary-title>)

Nonsynonymous

several nucleotide substitutions leading to several amino acid changes -exact amino acid changes unknown

Candidate Gene (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene~#gephebase-summary-title>)

Presumptive Null

Molecular Type

Aberration Type

SNP Coding Change

Molecular Details of the Mutation

Experimental Evidence

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

Complementary DNA coding click beetle luciferases can elicit bioluminescence of different colors. (1989) (<https://pubmed.ncbi.nlm.nih.gov/2655091>)

Wood KV; Lam YA; Seliger HH; McElroy WD

Eleven complementary DNA (cDNA) clones were generated from messenger RNA isolated from abdominal light organs of the bioluminescent click beetle, *Pyrophorus plagiophthalmus*. When expressed in *Escherichia coli*, these clones can elicit bioluminescence that is readily visible. The clones code for luciferases of four types, distinguished by the colors of bioluminescence they catalyze: green (546 nanometers), yellow-green (560 nanometers), yellow (578 nanometers), and orange (593 nanometers). The amino acid sequences of the different luciferases are 95 to 99 percent identical with each other, but are only 48 percent identical with the sequence of firefly luciferase (*Photinus pyralis*). Because of the different colors, these clones may be useful in experiments in which multiple reporter genes are needed.

Main Reference

Authors

Abstract

Additional References

RELATED GEPHE

No matches found.

No matches found.

Related Genes

Related Haplotypes

EXTERNAL LINKS

COMMENTS