

## GEPHE SUMMARY

	Gephebase Gene		GepheID
beta-tubulin ( <a +beta-tubulin+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+beta-tubulin+"#gephebase-summary-title</a> )		GP00001817	
Published	Entry Status	Courtier	Main curator

## PHENOTYPIC CHANGE

	Trait Category		
Physiology ( <a +physiology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title</a> )			
	Trait		
Xenobiotic resistance (benzimidazole) ( <a +xenobiotic+resistance+(benzimidazole)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Xenobiotic+resistance+(benzimidazole)+"#gephebase-summary-title</a> )			
	Trait State in Taxon A		
sensitive			
	Trait State in Taxon B		
resistant			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Intraspecific ( <a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title</a> )			
Taxon A		Taxon B	
	Latin Name		Latin Name
Cyathostoma ( <a +cyathostoma+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Cyathostoma+"#gephebase-summary-title</a> )		Cyathostoma ( <a +cyathostoma+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Cyathostoma+"#gephebase-summary-title</a> )	
	Common Name		Common Name
-		-	
	Synonyms		Synonyms
-		-	
	Rank		Rank
genus		genus	
	Lineage		Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Strongyloidea; Syngamidae		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Rhabditida; Rhabditina; Rhabditomorpha; Strongyloidea; Syngamidae	
	Parent		Parent
Syngamidae () - (Rank: family) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=120855">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=120855</a> )		Syngamidae () - (Rank: family) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=120855">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=120855</a> )	
	NCBI Taxonomy ID		NCBI Taxonomy ID
291936 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=291936">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=291936</a> )		291936 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=291936">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=291936</a> )	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

## GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Saccharomyces cerevisiae (strain ATCC 204508 / S288c)
TUB2		P02557 ( <a href="http://www.uniprot.org/uniprot/P02557">http://www.uniprot.org/uniprot/P02557</a> )	
	Synonyms		GenebankID or UniProtKB
ARM10; SHE8; YFL037W		A2TF56 ( <a href="https://www.ncbi.nlm.nih.gov/nucleotide/A2TF56">https://www.ncbi.nlm.nih.gov/nucleotide/A2TF56</a> )	
	String		
4932.YFL037W ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=4932.YFL037W">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=4932.YFL037W</a> )			
	Sequence Similarities		
Belongs to the tubulin family.			
	GO - Molecular Function		
GO:0005525 : GTP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005525">https://www.ebi.ac.uk/QuickGO/term/GO:0005525</a> )			
GO:0003924 : GTPase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003924">https://www.ebi.ac.uk/QuickGO/term/GO:0003924</a> )			
GO:0005200 : structural constituent of cytoskeleton ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005200">https://www.ebi.ac.uk/QuickGO/term/GO:0005200</a> )			
	GO - Biological Process		
GO:0007010 : cytoskeleton organization ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0007010">https://www.ebi.ac.uk/QuickGO/term/GO:0007010</a> )			
GO:0000278 : mitotic cell cycle ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000278">https://www.ebi.ac.uk/QuickGO/term/GO:0000278</a> )			
GO:0000070 : mitotic sister chromatid segregation			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0000070>)  
 GO:0007017 : microtubule-based process  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0007017>)  
 GO:0046677 : response to antibiotic (<https://www.ebi.ac.uk/QuickGO/term/GO:0046677>)  
 GO:0000226 : microtubule cytoskeleton organization  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0000226>)  
 GO:0045143 : homologous chromosome segregation  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0045143>)  
 GO:0030473 : nuclear migration along microtubule  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0030473>)  
 GO:0090316 : positive regulation of intracellular protein transport  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0090316>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)  
 GO:0005874 : microtubule (<https://www.ebi.ac.uk/QuickGO/term/GO:0005874>)  
 GO:0005816 : spindle pole body (<https://www.ebi.ac.uk/QuickGO/term/GO:0005816>)  
 GO:0005881 : cytoplasmic microtubule  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0005881>)  
 GO:0005828 : kinetochore microtubule  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0005828>)  
 GO:0005880 : nuclear microtubule (<https://www.ebi.ac.uk/QuickGO/term/GO:0005880>)  
 GO:0045298 : tubulin complex (<https://www.ebi.ac.uk/QuickGO/term/GO:0045298>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

Phe167Tyr - In vitro assays have demonstrated that a Tyr residue in position 167 of b-tubulin impeded BZ binding with recombinant *H. contortus* and *S. cerevisiae* b-tubulin (produced in a prokaryote system)

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Phe	Tyr	167

Main Reference

Mutation in position 167 of isotype 1 beta-tubulin gene of Trichostrongylid nematodes: role in benzimidazole resistance?. (2002) (<https://pubmed.ncbi.nlm.nih.gov/11897135>)

Authors

Silvestre A; Cabaret J

Abstract

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Additional References

Site-directed mutagenesis of *Saccharomyces cerevisiae* beta-tubulin: interaction between residue 167 and benzimidazole compounds. (1996) (<https://pubmed.ncbi.nlm.nih.gov/8641470>)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Main paper is Kaplan RM, Chapman MR, Tolliver SC, Lyons ET, Klei TR. Characterization of beta-tubulin genes from cyathostome populations with differing sensitivities to benzimidazole anthelmintics. American Association of Veterinary Parasitologists, Forty-fifth Annual Meeting. 2000. Main paper not curated - information curated from Silvestre and Cabaret paper.

