

GEPHE SUMMARY

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)	Gephebase Gene	GP00001816	GepheID
	Entry Status		Main curator
	Published		

PHENOTYPIC CHANGE

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)		Trait Category		
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)		Trait		
sensitive		Trait State in Taxon A		
resistant		Trait State in Taxon B		
Taxon A		Ancestral State		
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)		Taxonomic Status		
Taxon A			Taxon B	
Haemonchus contortus (<a +haemonchus+contortus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Haemonchus+contortus+"#gephebase-summary-title)		Latin Name	Haemonchus contortus (<a +haemonchus+contortus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Haemonchus+contortus+"#gephebase-summary-title)	
barber pole worm		Common Name	barber pole worm	
barber pole worm; red stomach worm; Haemonchus contortus (Rudolphi, 1803)		Synonyms	barber pole worm; red stomach worm; Haemonchus contortus (Rudolphi, 1803)	
species		Rank	species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Strongylida; Trichostrongyloidea; Haemonchidae; Haemonchus		Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Strongylida; Trichostrongyloidea; Haemonchidae; Haemonchus	
Haemonchus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6288)		Parent	Haemonchus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6288)	
6289 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6289)		NCBI Taxonomy ID	6289 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=6289)	
is Taxon A an Intraspecies?			is Taxon B an Intraspecies?	
No			No	

GENOTYPIC CHANGE

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

Polymerisation and benzimidazole binding assays with recombinant α - and β -tubulins from *Haemonchus contortus* . (2000) (<https://pubmed.ncbi.nlm.nih.gov/00000000.000007>)

Authors

Prichard R; Oxberry M; Bounhas Y; Sharma S; Lubega G; Geary T

Abstract

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Additional References

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>)

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

2 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~beta-tubulin~/and+Taxon ID=~6289~/or+Gene Gephebase=~beta-tubulin~/and+Taxon ID=~6289~#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

This mutation Phe167Tyr is different from Phe200Tyr which is found in other resistant strains Main paper not curated - information curated from Sylvestre and Cabaret paper.

