

## GEPHE SUMMARY

<p>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>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001815</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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## PHENOTYPIC CHANGE

<p>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>)</p> <p>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>)</p> <p>sensitive</p> <p>resistant</p> <p>Taxon A</p> <p>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>)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Teladorsagia circumcincta (<a +teladorsagia+circumcincta+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Teladorsagia+circumcincta+"#gephebase-summary-title</a>)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Ostertagia circumcincta; Teladoragia circumcincta</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Strongylida; Trichostrongyloidea; Haemonchidae; Teladorsagia</p> <p>Parent</p> <p>Teladorsagia () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=94964">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=94964</a>)</p> <p>NCBI Taxonomy ID</p> <p>45464 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=45464">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=45464</a>)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Teladorsagia circumcincta (<a +teladorsagia+circumcincta+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Teladorsagia+circumcincta+"#gephebase-summary-title</a>)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Ostertagia circumcincta; Teladoragia circumcincta</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Nematoda; Chromadorea; Strongylida; Trichostrongyloidea; Haemonchidae; Teladorsagia</p> <p>Parent</p> <p>Teladorsagia () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=94964">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=94964</a>)</p> <p>NCBI Taxonomy ID</p> <p>45464 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=45464">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=45464</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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## GENOTYPIC CHANGE

<p>TUB2</p> <p>ARM10; SHE8; YFL037W</p> <p>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>)</p> <p>Belongs to the tubulin family.</p> <p>GO - Molecular Function</p> <p>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>)</p> <p>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>)</p> <p>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>)</p> <p>GO - Biological Process</p> <p>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>)</p> <p>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>)</p> <p>GO:0000070 : mitotic sister chromatid segregation</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p>	<p>UniProtKB Saccharomyces cerevisiae (strain ATCC 204508 / S288c)</p> <p>P02557 (<a href="http://www.uniprot.org/uniprot/P02557">http://www.uniprot.org/uniprot/P02557</a>)</p> <p>GenebankID or UniProtKB</p> <p>()</p>
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(<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

Phe200Tyr

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	200

Main Reference

Importance of the mutation of amino acid 200 of the isotype 1 beta-tubulin gene in the benzimidazole resistance of the small-ruminant parasite *Teladorsagia circumcincta*. (1999)  
 (<https://pubmed.ncbi.nlm.nih.gov/10344538>)

Authors

Elard L; Humbert JF

Abstract

In this work we demonstrated that the acquisition of benzimidazole (BZ) resistance in the small-ruminant parasite *Teladorsagia circumcincta* is linked to the selection of individuals that are characterized by a tyrosine (Tyr) at amino acid 200 of their isotype 1 beta-tubulin gene. This mutation appears to be recessive, since only homozygous mutant (Tyr/Tyr) individuals survived after BZ treatment of two resistant populations in which the three genotypes (rr, rs, ss) were initially present. In comparison with natural BZ-susceptible populations, a decrease in the restriction polymorphism (RFLP) of the isotype 1 beta-tubulin gene was observed in natural resistant populations. It seems that this decrease in beta-tubulin polymorphism results from the selection of homozygous mutant individuals.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

1 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^beta-tubulin^/and+Taxon ID=^45464^/or+Gene Gephebase=^beta-tubulin^/and+Taxon ID=^45464^#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

Effect of the amino acid change tested in *C. elegans*

