GEPHE SUMMARY

Gephebase Gene
beta-tubulin (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^beta-tubulin^#gephebase-summary-title)

GepheID
GP00001792

Entry Status
Published

Main curator
Courtier

PHENOTYPIC CHANGE

Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)

Trait
Xenobiotic resistance (benomyl) (https://www.gephebase.org/search-criteria?/and+Trait=^Xenobiotic resistance (benomyl)^#gephebase-summary-title)

Trait State in Taxon A
sensitive

Trait State in Taxon B
resistant

Ancestral State
Taxon A

Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Intraspecific^#gephebase-summary-title)

Taxon A

Latin Name
Penicillium aurantiogriseum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Penicillium aurantiogriseum^#gephebase-summary-title)

Common Name
-

Synonyms
ATCC 48920; ATCC:48920; FRR 971; FRR:971; IBT 14016; IBT:14016; IMI 195050; IMI:195050; MUCL 29090; MUCL:29090; NRRL 971; NRRL:971

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Fungi; Dikarya; Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; Eurotiomycetes; Eurotiomycetidae; Eurotiales; Aspergillaceae; Penicillium

Parent
Penicillium () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5073)

NCBI Taxonomy ID
36655 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 36655)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Penicillium aurantiogriseum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Penicillium aurantiogriseum^#gephebase-summary-title)

Common Name
-

Synonyms
ATCC 48920; ATCC:48920; FRR 971; FRR:971; IBT 14016; IBT:14016; IMI 195050; IMI:195050; MUCL 29090; MUCL:29090; NRRL 971; NRRL:971

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Fungi; Dikarya; Ascomycota; saccharomyceta; Pezizomycotina; leotiomyceta; Eurotiomycetes; Eurotiomycetidae; Eurotiales; Aspergillaceae; Penicillium

Parent
Penicillium () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5073)

NCBI Taxonomy ID
36655 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 36655)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
TUB2

Synonyms
ARM10; SHE8; YFL037W

String
4932.YFL037W (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 4932.YFL037W)

Sequence Similarities
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 - Biological Process
GO:0007010 : cytoskeleton organization (https://www.ebi.ac.uk/QuickGO/term/GO:0007010)
GO:0000278 : mitotic cell cycle (https://www.ebi.ac.uk/QuickGO/term/GO:0000278)

UniProtKB Saccharomyces cerevisiae (strain ATCC 204508 / S288c)
P02557 (http://www.uniprot.org/uniprot/P02557)

GenebankID or UniProtKB
()

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

Glu198Lys

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	GAG	AAG	-
Amino-acid	Glu	Lys	198

Main Reference

Characterization of mutations in the beta-tubulin gene of benomyl-resistant field strains of Venturia inaequalis and other plant pathogenic fungi. . (https://pubmed.ncbi.nlm.nih.gov/00000000.000004)

Authors

Koenraadt Harrie; Somerville Shauna C; Jones AL

Abstract

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Additional References

Mechanism of action of N-phenylcarbamates in benzimidazole-resistant Neurospora strains . (1990) (https://pubmed.ncbi.nlm.nih.gov/00000000.000005)

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

1 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^beta-tubulin^/and+Taxon ID=^36655^/or+Gene Gephebase=^beta-tubulin^/and+Taxon ID=^36655^#gephebase-summary-title)

EXTERNAL LINKS

COMMENTS

The amino acid change Glu198Gly was shown to confer resistance in Neurospora crassa