GEPHE SUMMARY

Gephebase Gene
RNASE1B (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^RNASE1B^#gephebase-summary-title)

GepheID
GP00001414

Entry Status
Published

Main curator
Prigent

PHENOTYPIC CHANGE

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

Trait
Folivory (digestion of bacteria at low pH) (https://www.gephebase.org/search-criteria?/and+Trait=^Folivory (digestion of bacteria at low pH)^#gephebase-summary-title)

Trait State in Taxon A
ancestral colobine monkey with RNASE1B similar to RNASE1A

Trait State in Taxon B
asian colobine monkey (P. melalophos) with adapted RNASE1B to low pH

Ancestral State
Taxon A

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

Taxon A

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

Common Name
-

Synonyms
-

Rank
subfamily

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Cercopithecoidea; Cercopithecidae

Parent
Cercopithecidae (Old World monkeys) - (Rank: family) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9527)

NCBI Taxonomy ID
9569 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9569)

is Taxon A an Infraspecies?
No

Taxon B

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

Common Name
mitred leaf monkey

Synonyms
mitred leaf monkey; Presbytis melalophos (Raffles 1821)

Rank
species

Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Cercopithecoidea; Cercopithecidae; Colobinae; Presbytis

Parent
Presbytis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9573)

NCBI Taxonomy ID
78451 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 78451)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
RNASE1B

Synonyms
-

String
-

Sequence Similarities
Belongs to the pancreatic ribonuclease family.

GO - Molecular Function
GO:0003676 : nucleic acid binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003676)
GO:0004522 : ribonuclease A activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004522)

GO - Biological Process
-

GO - Cellular Component
GO:0005576 : extracellular region (https://www.ebi.ac.uk/QuickGO/term/GO:0005576)

UniProtKB Pygathrix nemaeus
Q8SPN3 (http://www.uniprot.org/uniprot/Q8SPN3)

GenebankID or UniProtKB
KF877746 (https://www.ncbi.nlm.nih.gov/nuccore/KF877746)

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

p.Arg39Gln

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	-	-	-

Main Reference

Whole-genome sequencing of the snub-nosed monkey provides insights into folivory and evolutionary history. (2014) (https://pubmed.ncbi.nlm.nih.gov/25362486)

Authors

Zhou X; Wang B; Pan Q; Zhang J; Kumar S; Sun X; Liu Z; Pan H; Lin Y; Liu G; Zhan W; Li M; Ren B; Ma X; Ruan H; Cheng C; Wang D; Shi F; Hui Y; Tao Y; Zhang C; Zhu P; Xiang Z; Jiang W; Chang J; Wang H; Cao Z; Jiang Z; Li B; Yang G; Roos C; Garber PA; Bruford MW; Li R; Li M

Abstract

Colobines are a unique group of Old World monkeys that principally eat leaves and seeds rather than fruits and insects. We report the sequencing at 146Ã— coverage, de novo assembly and analyses of the genome of a male golden snub-nosed monkey (Rhinopithecus roxellana) and resequencing at 30Ã— coverage of three related species (Rhinopithecus bieti, Rhinopithecus brelichi and Rhinopithecus strykeri). Comparative analyses showed that Asian colobines have an enhanced ability to derive energy from fatty acids and to degrade xenobiotics. We found evidence for functional evolution in the colobine RNASE1 gene, encoding a key secretory RNase that digests the high concentrations of bacterial RNA derived from symbiotic microflora. Demographic reconstructions indicated that the profile of ancient effective population sizes for R. roxellana more closely resembles that of giant panda rather than its congeners. These findings offer new insights into the dietary adaptations and evolutionary history of colobine primates.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

2 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^RNASE1B^/and+Taxon ID=^9569^/or+Gene Gephebase=^RNASE1B^/and+Taxon ID=^78451^#gephebase-summary-title)

EXTERNAL LINKS

COMMENTS