

GEPHE SUMMARY

	Gephebase Gene	GepheID
ABO histo blood group glycosyltransferase (<a +abo+histo+blood+group+glycosyltransferase+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+ABO+histo+blood+group+glycosyltransferase+"#gephebase-summary-title)	GP00000023	Main curator
	Entry Status	
Published	Martin	

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)	Trait	
ABO antigen blood type (<a +abo+antigen+blood+type+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+ABO+antigen+blood+type+"#gephebase-summary-title)	Trait State in Taxon A	
Pan troglodytes - blood group A	Trait State in Taxon B	
Pan troglodytes - allele Odel	Ancestral State	
Data not curated	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)		
Taxon A		Taxon B
	Latin Name	Latin Name
Pan troglodytes (<a +pan+troglyodytes+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Pan+troglyodytes+"#gephebase-summary-title)	Pan troglodytes (<a +pan+troglyodytes+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Pan+troglyodytes+"#gephebase-summary-title)	Pan troglodytes (<a +pan+troglyodytes+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Pan+troglyodytes+"#gephebase-summary-title)
	Common Name	Common Name
chimpanzee	chimpanzee	chimpanzee
	Synonyms	Synonyms
chimpanzee; Chimpansee troglodytes	chimpanzee; Chimpansee troglodytes	chimpanzee; Chimpansee troglodytes
	Rank	Rank
species	species	species
	Lineage	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; Hominoidea; Hominidae; Homininae; Pan	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; Hominoidea; Hominidae; Homininae; Pan	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; Hominoidea; Hominidae; Homininae; Pan
	Parent	Parent
Pan (chimpanzees) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9596)	Pan (chimpanzees) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9596)	Pan (chimpanzees) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9596)
	NCBI Taxonomy ID	NCBI Taxonomy ID
9598 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9598)	9598 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9598)	9598 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9598)
	is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
No	No	No

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Homo sapiens
ABO	P16442 (http://www.uniprot.org/uniprot/P16442)	GenebankID or UniProtKB
	Synonyms	
GTB; NAGAT; A3GALNT; A3GALT1	AFT65612 (https://www.ncbi.nlm.nih.gov/nucore/AFT65612)	
	String	
-		
	Sequence Similarities	
Belongs to the glycosyltransferase 6 family.		
	GO - Molecular Function	
GO:0003823 : antigen binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003823)		
GO:0004381 : fucosylgalactoside 3-alpha-galactosyltransferase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004381)		
GO:0004380 : glycoprotein-fucosylgalactoside alpha-N-acetylgalactosaminyltransferase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004380)		
GO:0030145 : manganese ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0030145)		

GO:0000166 : nucleotide binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0000166>)

GO:0016757 : transferase activity, transferring glycosyl groups
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016757>)

GO - Biological Process

GO:0005975 : carbohydrate metabolic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005975>)

GO:0030259 : lipid glycosylation (<https://www.ebi.ac.uk/QuickGO/term/GO:0030259>)
GO:0006486 : protein glycosylation (<https://www.ebi.ac.uk/QuickGO/term/GO:0006486>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

GO:0005576 : extracellular region (<https://www.ebi.ac.uk/QuickGO/term/GO:0005576>)

GO:0005794 : Golgi apparatus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005794>)

GO:0032580 : Golgi cisterna membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032580>)

GO:0031982 : vesicle (<https://www.ebi.ac.uk/QuickGO/term/GO:0031982>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null-^No^#gephebase-summary-title](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](https://www.gephebase.org/search-criteria?/and+Molecular+Type+Coding^#gephebase-summary-title))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type+Unknown^#gephebase-summary-title))

Molecular Details of the Mutation

Uncertain; possibly 9bp deletion resultin in 3a.a. deletion

Experimental Evidence

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

Main Reference

Comparison of allele O sequences of the human and non-human primate ABO system. (1999) (<https://pubmed.ncbi.nlm.nih.gov/10380696>)

Authors

Kermarrec N; Roubinet F; Apoil PA; Blancher A

Abstract

Like humans, non-human primates express the antigens A and B of the ABO histoblood group system. In chimpanzees, only A and O types are found, while the types A, B, AB, and O are found in macaques. The sequences of exons 6 and 7 of two chimpanzee O alleles (Odel and O(x), two macaque species O alleles (rhesus monkey and crab-eating macaque), and sequences of exon 7 of two major chimpanzee A alleles (A1ch and A2ch) were established. The sequences of cDNAs corresponding to the chimpanzee and rhesus monkey O alleles were characterized from exon 1 to 7 and from exon 4 to 7, respectively. A comparison of our results with ABO gene sequences already published by others demonstrates that human and non-human primate O alleles are species-specific and result from independent silencing mutations. These observations reinforce the hypothesis that the maintenance of the ABO gene polymorphism in primates reflects convergent evolution more than transpecies inheritance of ancestor alleles.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^ABO histo blood group glycosyltransferase^/and+Taxon ID=^9598^/or+Gene Gephebase=^ABO histo blood group glycosyltransferase^/and+Taxon ID=^9598^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase+ABO+histo+blood+group+glycosyltransferase^/and+Taxon+ID+9598^/or+Gene+Gephebase+ABO+histo+blood+group+glycosyltransferase^/and+Taxon+ID+9598^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS