

Names for YT (ISBT 011) Blood Group Alleles

Intro

General description: The Yt blood group system consists of 5 antigens carried on a membrane bound GPI-linked glycoprotein acetylcholinesterase (AChE) that consists of 617 amino acids. It has a leader sequence of 31 amino acids and a carboxyl-terminal GPI motif of 29 amino acids, both of which are cleaved from the mature erythrocyte isoform AChE-E. The protein is encoded by ACHE (or YT, acceptable if analysis is to predict a blood group antigen).

Gene name: *ACHE* (*YT*)
Number of exons: 6
Initiation codon: Beginning of exon 2
Stop codon: Within exon 6 (exon 5 in *ACHE-E*)
Entrez Gene ID: 43
LRG: 804
LRG sequence: NG_007474.2 (genomic)
NM_001302621.1 (transcript)
NP_001289550.1 (protein)

Reference allele: *YT*01* (shaded)
Acceptable: *YT*A* , or Yt^a if inferred by haemagglutination

Antithetical antigens: [YT1 YT2]

Phenotype	Allele name	Nucleotide change	Exon	Predicted amino acid change	(Reference No.) PMID	Accession number	rs number
YT:1,-2 or Yt(a+b-)	<i>YT*01</i> or <i>YT*A</i>				(1), PMID: 8488842	M55040	
YT:-1,2 or Yt(a-b+)	<i>YT*02</i> or <i>YT*B</i>	c.1057C>A	2	p.His353Asn	(1), PMID: 8488842	n.a.	rs1799805
YT:-3 or YTEG-	<i>YT*01.-03</i>	c.266G>A	2	p.Gly89Glu	(2), Abstract	MF194018	rs114367422
YT:-4 or YTLI-	<i>YT*01.-04</i>	c.169G>A	2	p.Gly57Arg	(3), Abstract	MH253764	rs17234982
YT:-5 or YTOT-	<i>YT*01.-05</i>	c.101G>A	2	p.Arg34Gln	(3), Abstract	MH253765	rs17881553

References

1. PMID: 8488842 Bartels CF, Zelinski T, Lockridge O. Mutation at codon 322 in the human acetylcholinesterase (ACHE) gene accounts for Yt blood group polymorphism. *Am J Hum Genet* (1993) 52,928-936.
2. Abstract Laundry R, Karamatic Crew V, Davies H, et al: A novel high frequency antigen in the Yt blood group system. *Transfusion Medicine* (2017) 27 (Suppl. 2): 42-43.
3. Abstract Karamatic Crew V, Laundry R, Walser P, et al: Serological and molecular characterisation of two novel high frequency antigens in the Yt blood group system. *Vox Sang* (2018) 113 (Suppl. 1): 63.

Track of changes		from v6.0 8th April 2019	to v7.0 25-FEB-2020
	Created:	Vered Yahalom, April 2019	Vered Yahalom, December 2019
	Reviewed:	Vanja Karamatic Crew & Nicole Thornton, April 2019	Nicole Thornton & Vanja Karamatic Crew, January 2020
General			First Excel map version. Spread-sheets "Intro", "Allele Table", "References", and "Versioning" created.
Intro	Antithetical alleles line added	n.a	[YT1 YT2]
Allele Table	Table column and header additions	n.a.	Table columns "(Reference No.) PMID", "Accession number" and "rs-number" created and content to table columns added.
References	PMID added Reference added for YT polymorphism		8488842 Bartels CF, Zelinski T, Lockridge O. Mutation at codon 322 in the human acetylcholinesterase (ACHE) gene accounts for YT blood group polymorphism. Am J Hum Genet (1993) 52,928-936.
End of changes		from v6.0 8th April 2019	to v7.0 25-FEB-2020