Names for FORS (ISBT 031) Blood Group Alleles

Intro

General description: The FORS blood group system consists of one antigen, FORS1 (rare), and this carbohydrate structure is present in the RBC membrane as part of the globo-series biosynthetic pathway of glycolipids. The terminal carbohydrate moiety is a GalNAc extension of the P antigen (globoside, Gb4). The glycosyltransferase that synthesizes the FORS1 antigen consists of 347 amino acids and is considered non-functional in most individuals. In antigen-positive individuals the glycosyltransferase is made active by an amino acid substitution due to a point mutation in exon 7.

Gene name:	*GBGT1*
Number of exons:	7
Initiation codon:	Within exon 2
Stop codon:	Within exon 7
Entrez Gene ID:	26301
LRG:	NG_033868.1 (genomic)
LRG sequence:	NM_021996.5 (transcript)
Reference allele:	*GBGT1*01N.01*
Antithetical antigens:	n.a.

Phenotype	Allele name	Nucleotide change	Exon Intron	Predicted amino acid change	(Reference No.) PMID	Accession number	rs number
Null phenotypes							
FORS:-1 (FORS-)	*GBGT1*01N.01*				PMID: 23255552	HE583599	
FORS:-1 (FORS-)	*GBGT1*01N.02*	c.58C>T	2	p.Leu20Phe	PMID: 23255552	HE583600	rs2073924
FORS:-1 (FORS-)	*GBGT1*01N.03 (old: GBGT1*02N)*	c.363C>A	7	p.Tyr121Ter			rs35898523
FORS:-1 (FORS-)	*GBGT1*01N.04*	c.363C>A c.870C>T	7 7	p.Tyr121Ter p.Gly290Gly	PMID: 23255552	HE583596	rs35898523 rs35902535
Activating variation							
FORS:1 (FORS+)	*GBGT1.01.01*	c.887G>A	7	p.Arg296Gln	PMID: 23255552	HE583597	rs375748588
FORS:1 (FORS+)	*GBGT1.01.02*	c.58C>T c.887G>A	2 7	p.Leu20Phe p.Arg296Gln	PMID: 23255552	HE583598	rs2073924 rs375748588

References

PMID 23255552 Svensson L, Hult AK, Stamps R, Ångström J, Teneberg S, Storry JR, Jørgensen R, Rydberg L, Henry SM, Olsson ML.Forssman expression on human erythrocytes: biochemical and genetic evidence of a new histo-blood group system. *Blood*. 2013:21;121(8):1459-68.

Track of changes

			from	to
1	**Version**		**v1.0 170822**	**v2.0 30-JUN-2022**
2	Author	created	Martin Olsson, August 2017	Annika Hult, Martin Olsson, June 2022
3	Review	reviewed	n.a.	n.a.
4	General		Last word version publiced on ISBT website	First Excel map version. Spread-sheets "Intro", "Allele Table", "References", and "Versioning" created.
5	Reference	added		PMID: 23255552
6	Accesssion number	added		HE583599, HE583600, HE583596, HE583597, HE583598
7	rsnumber	added		rs2073924, rs35898523, rs35898523, rs35902535, rs375748588, rs2073924, rs375748588
8	Allele	changed	*GBGT1*02N*	*GBGT1*01N.03*
9	Allele	added		*GBGT1*01N.04*
10	**End Version**		**v1.0 170822**	**v2.0 30-JUN-2022**