

## Names for AUG (ISBT 036) Blood Group Alleles

### Intro

General description: The Augustine (AUG) blood group system consists of four antigens carried on a multipass membrane glycoprotein equilibrative nucleoside transporter 1 (ENT1). It consists of 456 amino acids with an intracellular amino terminus and extracellular carboxyl terminus.

Gene name: *SLC29A1*  
Number of exons: 13  
Initiation codon: within exon 1  
Stop codon: within exon 13  
Entrez Gene ID: 2030

LRG: LRG\_1027  
LRG sequence: NG\_042893.1 (genomic)  
NM\_001304463.1 (transcript)

Reference allele: *AUG\*01*  
Reference allele: AUG1, At<sup>a</sup>, ATAM  
*AUG\*01* encodes:

Phenotype	Allele name	Nucleotide change	Exon Intron	Predicted amino acid change	(Reference No.) PMID	Accession number	rs number
AUG1+, At(a+), ATML-, ATAM+ AUG:1,2,-3,4	<b>AUG*01</b>						
At(a-) AUG:-2	<b>AUG*02</b>	c.1171G>A	12	p.Glu391Lys	PMID: 25896650		rs45458701
ATML+ AUG:3	<b>AUG*03</b>	c.1159A>C	12	p.Thr387Pro	PMID: 29504136	MF034879	rs1131690802
ATAM- AUG:-4	<b>AUG*04</b>	c.242A>G	4	p. Asn81Ser	(1), Abstract		rs72555353
<b>Null phenotype</b>							
AUG1- AUG:-1	<b>AUG*01N</b>	c.589+1G>C	i6-i7	p.Ser197fs	PMID: 25896650		

## References

- PMID 25896650 Daniels G, Ballif B, Helias V, et al. Lack of the nucleoside transporter ENT1 results in the Augustine-null blood type and ectopic mineralization. *Blood* 2015;125(23):3651-4.
- PMID 29504136 Millard GM, McGowan EC, Wilson B et al. A proposed new low-frequency antigen in the Augustine blood group system associated with a severe case of hemolytic disease of the fetus and newborn. *Transfusion* . 2018;58:1320-1322
- Abstract (1) Vrignaud C, Mikdar M, Raneri A, et al. Characterization of a novel high-prevalence red blood cell antigen in the Augustine blood group system. *Vox Sang* 2018;113(Suppl.1):64-5 [Abstract]

## Track of changes

			from	to
<b>1</b>	<b>Version</b>		<b>v1.0 08-APR-2019</b>	<b>v2.0 31-MAR-2022</b>
<b>2</b>	Author	created:	Thierry Peyrard, April 2019	Jill Storry, January 2022
<b>3</b>	Review	reviewed:	Slim Azouzi, April 2019	Nicole Thornton, February 2022
<b>4</b>	General	document	v4.0 Word-document	First Excel map version. Spread-sheets 'Intro', 'Allele Table', 'References', 'Versioning (v1.1)' created.
<b>5</b>	Intro	update to reference allele information		ATAM added to antigens encoded by reference-allele <i>AUG*01</i> encodes:
<b>6</b>	Table	update to the reference-allele		Complete phenotype information added for reference-allele <i>AUG*01</i>
<b>7</b>	Table	formatting		Format changed for phenotype entry of <i>AUG*03</i> , to bring in line with other table entries
<b>8</b>	Table	correction		Phenotype information for <i>AUG*04</i> allele changed from ATAM+, AUG:4 to ATAM-, AUG:-4. Also format change as above.
<b>9</b>	Table	update to allele entry		Alternative phenotype nomenclature (AUG1+) added to <i>AUG*01N</i> entry
<b>10</b>	<b>End Version</b>		<b>v1.0 08-APR-2019</b>	<b>v2.0 31-MAR-2022</b>