Names for LW (ISBT 016) Blood Group Alleles

Intro

General description:	The LW blood group system consists of four antigens carried on a glycoprotein of 241 amino acids, ICAM-4, which belongs to the ICAM family of proteins. It has a leader sequence of 30 amino acids, and two I-set IgSF domains that characteristic of this family.
Gene name:	*ICAM4; LW*
Number of exons:	3
Initiation codon:	Beginning of exon 1
Stop codon:	End of exon 3
Entrez Gene ID:	3386
LRG:	LRG_809
LRG sequence:	NG_007728.1 (genomic) NM_001544.4 (transcript)
Reference allele:	*LW*05* (shaded) Acceptable: *LW*A* , or LW^a if inferred by haemagglutination
Reference allele *LW*05* encodes:	LW5, LW6, LW8

Phenotype	Allele name	Nucleotide change	Exon Intron	Predicted amino acid change †	(Reference No.) PMID	Accession number	rs number
LW:5 or LW(a+)	*LW*05 or LW*A*				PMID: 7632968	KF725837	
LW:7 or LW(b+)	*LW*07* or *LW*B*	c.299A>G	1	p.Gln100Arg	PMID: 7632968	AH004780.1	rs77493670
LW:–8 or LWEM–	*LW*05.–8*	c.309C>A	1	p.Asp103Glu	PMID: 35412682	MN412704	n.a.
Null phenotypes							
LW:–6 or LW(a–b–)	*LW*05N.01*	c.346_355del	1	p.Thr116Glufs*19	PMID: 8639917	X93093.1	rs778248852 rs1476627024
LW:–6 or LW(a–b–)	*LW*05N.02*	c.137delT	1	p.Val46Glyfs*7	(1) Abstract		n.a.
LW:–6 or LW(a–b–)	*LW*05N.03*	c.2T>A	1	p.Met1Lys	(1) Abstract		n.a.

† change from historical counting of #1 as Ala of the mature (membrane-bound protein): 100 as 70; thus, all amino acid numbers will increase by 30.

References

PMID 7632968 Molecular basis and expression of the LWa/LWb blood group polymorphism. Hermand P, Gane P, Mattei MG, Sistonen P, Cartron JP, Bailly P. Blood 1995;86(4):1590-4.

PMID 35412682 A new high-prevalence LW antigen detected by an antibody in an Indigenous Australian homozygous for LW*A c.309C>A variant. Lopez GH, Wilson B, Millard GM, Cawthorne TL, Grey DE, Fong EA, Flower RL, Hyland CA, Liew YW. Vox Sang 2022;DOI: 10.1111

PMID 8639917 Characterization of the gene encoding the human LW blood group protein in LW+ and LW- phenotypes. Hermand P, Le Pennec PY, Rouger P, Cartron JP, Bailly P. Blood 1996;87(7):2962-7

Abstract (1) Gauthier E, Kappler-Gratias S, Vallet S, Gien D, Auxerre C, Le Pennec P, et al. LWnull phenotype: identification of two novel mutations in LW gene. Transfusion. 2012;52(Suppl):158A [SP276 Abstract].

k of changes

		from	**to**
Version		**v3.0 160623**	**v4.0 30-JUN-2022**
Author	created	C. Lomas, June 2016	C. Lomas, June 2022
Reviewer	reviewed	n.a.	Lilian Castilho, June 2022
General		Word version	First Excel map version. Spread-sheets 'Intro', 'Allele Table', 'References' and 'Versioning' created.
Intro	LRG added		LRG 809 added
Intro			Changed number of antigens from three to four
Intro	LW8		Added to antigens encoded by reference allele
Allele Table	Antigen/allele added		*LW*05.–8*
Allele Table	Antigen/allele added		*LW*05N.02*
Allele Table	Antigen/allele added		*LW*05N.03*
References	added		References added
Allele	changed		added rsnumber to *LW*05N.01*
End Version		**v3.0 160623**	**v4.0 30-JUN-2022**