

HNA alleles and antigens, up-date 2015																
Allele	Description	Nucleotide positions of the corresponding alleles (formerl position no)						Amino acid positions of the corresponding glycoproteins						Epitopes ^{§§}		Glyco- protein
		(141)	(147)	(227)	(266)	(277)	(349)									
FCGR3B*01		108G*	114C*	194A*	233C*	244G*	316G*	36Arg	38Leu	65Asn	78Ala	82Asp	106Val	HNA-1a		Fc γ RIIIb, CD16
FCGR3B*02		108C	114T	194G	233C	244A	316A	36Ser	38Leu	65Ser	78Ala	82Asn	106Ile	HNA-1b	HNA- 1d**	
FCGR3B*03		108C	114T	194G	233A	244A	316A	36Ser	38Leu	65Ser	78Asp	82Asn	106Ile	HNA-1b	HNA-1c	
FCGR3B*04	<i>FCGR3B*01</i>	108G	114C	194A	233C	244G	316A	36Arg	38Leu	65Asn	78Ala	82Asp	106Ile	HNA-1a		
FCGR3B*05	<i>FCGR3B*02</i> <small>316G>A 244A>G</small>	108C	114T	194G	233C	244G	316A	36Ser	38Leu	65Ser	78Ala	82Asp	106Ile	HNA-1b***		
FCGR3B*null	<i>FCGR3B gene deletion</i>	no alleles						no glycoprotein (gp)						HNA-1null		no gp
CD177		Allelic variation of this gene does not code for different serological phenotypes												HNA-2 [#]		CD177
		Differential mRNA splicing:						HNA-2 negative phenotype						HNA-2null		no gp
SLC44A2*01		451C ^{##}	455G ^{##}					151Leu ^{##}	152Arg ^{##}					HNA-3a		CTL2
SLC44A2*02		451C	455A					151Leu	152Gln					HNA-3b		
SLC44A2*03	<i>SLC44A2*01</i> <small>451C>T</small>	451T	455G					151Phe	152Arg					HNA-3a***		
ITGAM*01		230G						Arg61						HNA-4a		CD11b
ITGAM*02		230A						His61						HNA-4b		
ITGAL*01		2372G [§]						Arg766						HNA-5a		CD11a
ITGAL*02		2372C [§]						Thr766						--		

* numbering according to *FCGR3B* transcript variant 2 (NM_000570.4) which corresponds to the amino acid positions of the mature glycoprotein

** HNA-1d is the antithetical epitope of HNA-1c and consists of 78Ala and 82Asn

*** Variation of reactivity with human antisera can be noticed

currently HNA-2 appears to be an isoantigen without allelic variation and therefore should be named HNA-2 (instead of HNA-2a)

^{##} numbering according to CTL2 transcript variant 2 (NM_001145056.1), which is expressed on neutrophils; the originally described transcript variant 1 (NM_020428.3) is not expressed on neutrophils

[§]The SNP was originally assigned to position 2466, but the correct numbering according to *ITGAL* transcript variant 1 is 2372 .

An allele can encode more than one epitope, e.g. HNA-1b and HNA-1c are encoded by *FCGR3B*03* and HNA-1b and HNA-1d are encoded by *FCGR3B*02*.

An antigen can be encoded by more than one allele (e.g. HNA-1a by *FCGR3B*01* and *FCGR3B*04*).

^{§§} The term epitope(s) define(s) the antigenic determinant(s) or antibody binding region(s) on an immunogenic molecule. This is used in preference to the term 'antigen', which is the superordinate term for a molecule inducing immunization, e.g. HNA. The HNA nomenclature is an epitope based rather than antigen based system.

Recently a single nucleotide exchange of the CD177 gene has been addressed as a cause for the HNA-2 negative phenotype in cases of HNA-2 antibody formation (Li Y et al. PloS Genet 2015;29:e1005255, Bayat B et al. Transfusion 2016;56:2127-2132). This is under further investigation.

04.11.2016 Brigitte Flesch, PhD, chair of the ISBT GIWP HNA nomenclature subcommittee, b.flesch@bsdwest.de

