

A novel full-length two-domain KIR2DL5A allele isolated in Zimbabwean samples: KIR2DL5A*0010104

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The authors confirm that there are no conflicts of interest.

Abstract

The full-length sequence of KIR2DL5A*001:01:04 differs from that of KIR2DL5A*001:01:01 with 8 single intronic nucleotide changes.

Keywords: KIR2DL5, new allele, SBT, Zimbabwe.

Natural killer (NK) cells survey the immune system through various receptors expressed on their surface. Among these receptors are the killer-cell immunoglobulin-like receptors (KIR) that have major histocompatibility complex (MHC) I molecules serving as their ligands. KIR2DL5 is a two-domain receptor variant and is presumed to have inhibitory functions based on the fact that it has immunoreceptor tyrosine-based inhibitory motifs (ITIMs) on its cytoplasmic tail (1). When the receptor recognises self-peptide bound to MHC-I molecules, the cytolytic function of the NK cell is inhibited preventing damage to unblemished cells (2). The KIR2DL5 gene exists in two variants, KIR2DL5A and KIR2DL5B, they show 99.5- 99.7% coding sequence identity and are present at the telomeric half and the centromeric half of the KIR-gene cluster respectively (3).

Described here is the identification of a novel KIR2DL5A subtype officially named KIR2DL5A*001:01:04 by the World Health Organisation (WHO) Committee for factors of the HLA System, Subcommittee for Killer-cell Immunoglobulin-like Receptors. This new allele was isolated from the DNA of Zimbabwean donors using previously described high-resolution long-range sequencing techniques (4).

Full-length nucleotide sequences of KIR2DL5A*001:01:04 were compared to the allele KIR2DL5A*001:01:01 and we found 8 intronic single nucleotide polymorphisms four of which occurred in intron 2 as illustrated in Table 1. The nucleotide sequences of KIR2DL5*001:01:04 have been deposited into GenBank with the Accession number MG004194 and IPD-KIR database (ID: IWS40002368).

Table 1. Nucleotide sequences comparison between KIR2DL5A*001:01:01 and KIR2DL5A*001:01:04

| | Chromosomal positions | | | | | | | |
|-----------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|
| | 636 | 638 | 904 | 1290 | 1293 | 1334 | 4161 | 6793 |
| 2DL5A*001:01:01 | A | C | T | G | C | T | A | C |
| 2DL5A*001:01:04 | G | T | A | A | T | G | del | A |
| Location | Int 1 | Int 1 | Int 2 | Int 2 | Int 2 | Int 2 | Int 4 | Int 5 |
| Int: Intron | | | | | | | | |

The name 2DL5*001:01:04 has been officially assigned by the WHO Nomenclature Committee in October 2019. This follows the agreed policy that, subject to the conditions stated in the most recent Nomenclature Report (5), names will be assigned to new sequences as they are identified. Lists of such new names will be published in the following WHO Nomenclature Report.

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