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NEW ALLELE ALERT

Discovery of the Novel HLA-B*27:284 Allele Identified by Next Generation Sequencing

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ABSTRACT

HLA-B*27:284 differs from HLA-B*27:07:01 by one nucleotide substitution in exon 4, at gDNA position 1614 (G>A).

More than 10,000 HLA-B alleles are currently listed in the IPD-IMGT/HLA Database (Version 3.59 2025-01) [1]. We report here a novel HLA-B allele that was identified in a living Belgian kidney transplant donor. The high-resolution HLA typing was performed using next-generation sequencing (NGSgo-MX11-3, GenDX, Utrecht, the Netherlands) on the MiSeq system platform (Illumina, USA). Data were analysed by NGSengine software and compared with the IPD/IMGT-HLA Database. The full-length sequence of HLA-B*27:284 was identical to that of HLA-B*27:07:01, except for one nucleotide change in exon 4. A substitution at gDNA position 1614 was exclusively present in the reads assigned to the B*27:284 allele and not in the B*42:01 allele also present in the donor. This substitution resulted in an amino acid change from Alanine a to Threonine at residue 199 in the protein (Figure 1). The complete HLA typing of the donor was: HLA-A*02:02, 23:01; -B*27:284, 42:01; -C*07:01, 15:02;

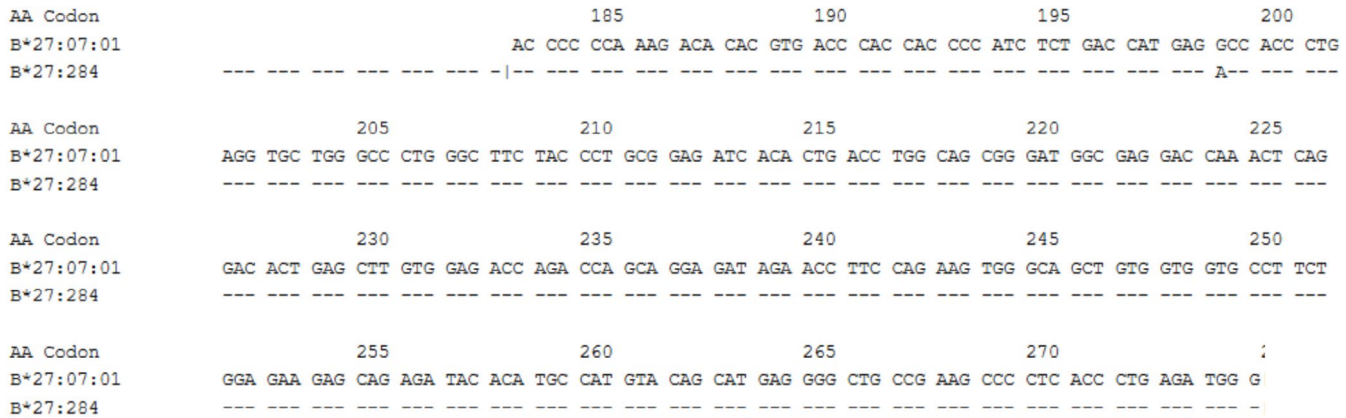

FIGURE 1 | Comparison of the exon 4 sequences for the HLA-B*27:284 and -B*27:07:01 alleles, which differ at codon 199. Dashes indicate nucleotide sequence identity to HLA-B*27:01:01 allele. The numbers above the sequence indicate the codon position.

-DRB1*03:01, 04:05; -DRB3*02:02, -DRB4*01:03; -DQA1*03:03, 05:01; -DQB1*02:01, 02:02; -DPA1*01:03, 02:01; DPB1*04:01, 17:01.

The nucleotide sequence of the novel B*27:284 allele has been submitted to the GenBank database (accession number PP481374) and IPD-IMGT/HLA Database (submission ID HWS 10069961). The name B*27:284 has been officially assigned by the WHO Nomenclature Committee for Factors of the HLA System in October 2024. This follows the agreed policy that, subject to the conditions stated in the most recent Nomenclature Report [2], 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.

Author Contributions

Justine Schmitt contributed to the design of the study and data analysis. André Gothot participated in the critical revision of the manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are openly available in the IPD-IMGT/HLA Database at https://www.ebi.ac.uk/ipd/hla/, reference number HWS10069920.

References

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