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Short Communication Open Access

Identification of a New HLA-B*27 Allele, B*27:05:31, in a Russian Individual

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Introduction

The human leukocyte antigen (HLA) genes are the most polymorphic in the human genome. According to the World Health Organization (WHO) Nomenclature Committee for Factors of the HLA System in July 2015, a total of 10 297 HLA class I alleles and 3 543 HLA class II alleles have been described [1]. Currently, there are over 4700 HLA-B alleles described [2].

It is well documented that the frequencies of HLA alleles differ with different ethnic groups. For example, the frequency of B*27 alleles in Caucasian populations varies between 0.0% and 8.8%, while in Oriental populations this may exceed 10% [3]. Russia is a multinational state with a poly-ethnic population. At present, information about the ethnic polymorphism of HLA in Russia is negligible. In this study, we describe the identification of a new allele, B*27:05:31, in a Russian individual.

Genomic DNA was isolated from frozen collected anticoagulated ethylene diaminetetraacetic acid (EDTA) whole blood of Russian unrelated hematopoietic stem cell volunteer by using the QIAamp DNA Blood Mini Kit on the automatic workstation QIACube (Qiagen, Hilden, Germany). It was typed for the HLA-A, HLA-B, HLA-C and HLA-DRB1 loci. HLA alleles were sequenced through exons 2-4 in both directions using reagent kit AlleleSEQR HLA from Celera (Abbott, IL, USA) and analyzed with SBTengine software (GenDx, Utrecht, Netherlands). The sample showed the following genotypes: HLA*A02, 11, HLA-B*27NEW, 56, HLA-C*01, 02, HLA-DRB1*01, 09.

The complete sequence for this sample for the HLA-A, HLA-B, HLA-C, HLA-DRB1 and HLA-DQB1 loci was obtained by Next Generation Sequence (GenDx, Utrecht, Netherlands) on the platform IonTorrent. HLA typing results analyzed with NGSengine (GenDx, Utrecht, Netherlands).The sample showed the following genotypes: HLA*A02:01:01:01/02:01:01:01L, 11:01:01:01, HLA-B*27NEW, 56:01:01:01, HLA-C*01:02:01, 02:02:02:01, HLA-DRB1*01:01:01, 09:01:02/09:21, DQB1*03:03:02, 05:01:01:02.

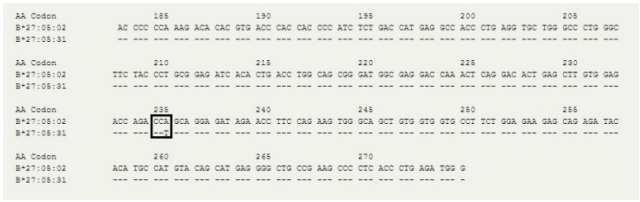

Figure 1: Comparison of exon 4 sequences for alleles B*27:05:02 and B*27:05:31. B*27:05:31 differs from B*27:05:02 by an A to T in codon 235 as indicated by a box. This figure is derived from the IMGT/HLA database [2].

The new allele B*27:05:31 differs from B*27:05:02 by an A>T in exon 4, but the change codon 235 from CCA to CCT does not change the amino acid (Pro) (Figure 1). The name HLA-B*27:05:31allele was officially assigned by the WHO Nomenclature Committee in February 2015. The nucleotide sequence is available in the European molecular biology laboratory (EBML) sequence database under the accession number LN810554.

References

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