



Frequencies of gene variant CCR5-?32 in 87 countries based on next-generation sequencing of 1.3 million individuals sampled from 3 national DKMS donor centers.

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Abstract: Homozygous carriers of CCR5-?32, a gene variant of CC-type chemokine receptor 5 (CCR5), are highly resistant to infections with human immunodeficiency virus type 1 (HIV-1) and therefore preferred stem cell donors for HIV-infected patients. We analyzed CCR5 typing data of 1,333,035 potential hematopoietic stem cell donors enlisted with three national DKMS donor centers. Allele and genotype frequencies were determined for 87 countries of origin as self-assessed by the donors. CCR5-?32 allele frequencies ranged from 16.4% in the Norwegian sample to 0 in donors from Ethiopia. The highest CCR5-?32/?32 genotype frequency was found in the sample from the Faroe Islands (2.3%), whereas in 27 samples, predominantly of donors from Africa, Asia and South America, none of the individuals carried this genotype. The characteristic CCR5-?32 allele frequency decline from Northern to Southeastern Eurasia supports findings of earlier studies. With available HLA haplotype frequency information for the patient's ethnicity, our data allows upfront estimation of the probability that an HLA-matched donor with CCR5-?32/?32 genotype can be found for a patient in need of hematopoietic stem cell transplantation.

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