

Polymorphism of *CD209* and *TLR3* Genes in Populations of North Eurasia

A. V. Barkhash^a, V. N. Babenko^a, M. I. Voevoda^{a, b, c}, and A. G. Romaschenko^a

^a*Institute of Cytology and Genetics, Siberian Branch,
Russian Academy of Sciences, Novosibirsk, 630090 Russia*

^b*Institute of Internal and Preventive Medicine, Novosibirsk, 630089 Russia*

^c*Novosibirsk State University, Novosibirsk, 630090 Russia*

e-mail: barkhash@bionet.nsc.ru

Received September 2, 2015; in final form, October 20, 2015

Abstract—The DC-SIGN (dendritic cell-specific intercellular adhesion molecule (ICAM)-3-grabbing non-integrin) and TLR3 (toll-like receptor 3) proteins are key effectors of the innate immunity and particularly play an important role in the organism's antiviral defense as pattern-recognition receptors. Previously, we demonstrated that certain genotypes and alleles of single nucleotide polymorphisms (SNPs) rs2287886 (G/A) in the promoter region of the *CD209* gene (encoding DC-SIGN) and rs3775291 (G/A, Leu412Phe) in the exon 4 of the *TLR3* gene are associated with human predisposition to tick-borne encephalitis in the Russian population. In the present work, the distribution of genotype and allele frequencies for these SNPs was studied in seven populations of North Eurasia, including Caucasians (Russians and Germans (from Altai region)), Central Asian Mongoloids (Altaians, Khakass, Tuvinians, and Shorians), and Arctic Mongoloids (Chukchi). It was found that the *CD209* gene rs2287886 SNP A/A genotype and A allele, as well as the *TLR3* gene rs3775291 SNP G/G genotype and G allele (the frequencies of which in our previous studies were increased in tick-borne encephalitis patients as compared with the population control (Russian citizens of Novosibirsk)), are preserved with a high frequency in Central Asian Mongoloids (who for a long time regularly came in contact with tick-borne encephalitis virus in places of their habitation). We suggested that predisposition to tick-borne encephalitis in Central Asian Mongoloid populations can be predetermined by a different set of genes and their polymorphisms than in the Russian population.

Keywords: *CD209* and *TLR3* genes, innate immunity, human populations, North Eurasia, single nucleotide polymorphism (SNP), predisposition to tick-borne encephalitis

DOI: 10.1134/S1022795416040025