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Short Communication

Low Frequency of CCR5Δ32 Allele among Greeks in Cyprus

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THE HUMAN CHEMOKINE RECEPTOR 5 (CCR5) is the major coreceptor on $CD4^+$ cells for monocytotropic non-syncytium-inducing strains of HIV-1.[1–4] It has been shown[5–8] that individuals who are homozygous for an inherited 32-base deletion (Δ32) in the CCR5 gene (CCR5Δ32) are highly protected against HIV infection, although exceptional cases of HIV-1-infected individuals who are homozygous for CCR5Δ32 have been reported.[9,10] Population-based studies have shown that the frequency of the CCR5Δ32 allele in the Caucasian population is overall ~0.09 and is virtually zero in people with African or Asian ancestry.[5–8] Among the Caucasians, individuals studied thus far include Central and Northern Europeans, North Americans, or Australians with European ancestry.[9]

We conducted an expanded population-based study on 1002 HIV-1-seronegative Greeks from Cyprus who were unselected for a personal or family history, and who previously participated in population-based studies for genetic defects related to thalassemia, a common genetic trait in the eastern Mediterranean,[10] and other genetic disorders. The findings from this study (Table 1) reveal that the CCR5Δ32 allele is at a significantly lower frequency (0.029) ($p < 0.0001$) compared with findings from previous studies on Caucasian populations. The genotype distribution (5.6% heterozygous and 0.1% homozygous) is in equilibrium as predicted by the Hardy–Weinberg equation ($p > 0.85$), showing that no strong selection process is currently affecting the population.

TABLE 1. PERCENTAGES OF CCR5 GENOTYPES

CCR5 genotype	*Male*	*Female*	*Overall*
Homozygous wild type (wt/wt)	93.6%	95%	94.3%
Heterozygous (mut/wt)	6.4%	4.9%	5.6%
Homozygous (mut/mut)	0%	0.2%	0.1%
Total number of cases	487	515	1002

The reason for the lower frequency of CCR5Δ32 in the Greek population in Cyprus compared with other Caucasian populations from Central or Northern Europe is currently unknown. However, given the results from the limited population-based studies thus far, the frequencies of CCR5Δ32 allele among Caucasian groups tend to exhibit a gradient of values from northern regions[5,7] to virtually zero in sub-Sahara regions.[5,7,8] Additional population-based studies are needed to understand the pressure of selection on CCR5Δ32 among distinct Caucasian populations.

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