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### Scientific comment

## Comments on: “Frequency of alleles and haplotypes of the human leukocyte antigen in Bauru, São Paulo”<sup>☆</sup>

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Genes from the human major histocompatibility complex, also known as human leukocyte antigens (HLAs), encode proteins involved in the presentation of antigens and the activation of immune response. This genomic region is of high density and diversity and has often been associated with susceptibility to infectious diseases,<sup>1</sup> autoimmunity, cancer, and neuropathies.<sup>2</sup> The study of HLAs has also been useful for anthropological approaches, helping in the understanding of migratory routes and the origin of different populations.<sup>3</sup> With the development of transplantation, there have been significant advances in understanding the role and variability of HLA molecules. The typing of these variants to match donors and recipients based on their HLA compatibility has become an important tool for the success of transplantation.<sup>4</sup>

The determination of the frequency of HLA alleles is fundamental to the characterization of the immunogenetic profile prevalent in different regions. In the context of public health, such information contributes to the development of donor search strategies that are more suited to the demand of transplant services, especially for bone marrow transplantation.

The study “Frequency of alleles and haplotypes of the human leukocyte antigen system in Bauru, São Paulo”,<sup>5</sup> published in this issue of *Revista Brasileira de Hematologia e Hemoterapia*, investigated the frequency of alleles and haplotypes HLA-A, HLA-B and HLA-DR in the region of Bauru,

State of São Paulo, Brazil. The study involved 3542 candidates for bone marrow donation who registered in the National Registry of Voluntary Bone Marrow Donors.

The general characteristics of the population from Bauru were representative of the demographic data described by the Brazilian Institute for Geography and Statistics (IBGE) and the profile of this population was similar to that described in other studies.<sup>6</sup> In this study, 20 HLA-A, 36 HLA-B, and 13 HLA-DRB1 groups were identified. The most common alleles were HLA-A\*02 (26.3%), HLA-B\*35 (12.0%), and HLA-DRB1\*07 (14.9%). The haplotype A\*01-B\*08-DRB1\*03 was the most commonly found and was present in 1.9% of participants.

In addition to reporting the profile of the population, the authors compared their data with previously published reports that described other Brazilian populations from Ribeirão Preto (SP), São Paulo, Paraná, Rio Grande do Sul, Minas Gerais, Pernambuco, and Piauí. The differences detected between populations reflect the great genetic diversity that has resulted from intense miscegenation throughout the history of the Brazilian population, as well as distinct colonization.

The population from Bauru was similar to those from São Paulo and Ribeirão Preto, which are geographically close. Interestingly, similarities were also reported to the populations from Pernambuco and Piauí, which are geographically distant from Bauru. The genetic similarities between these populations could be related to similarities in the colonizing

<sup>☆</sup>See paper by Salvadori et al. on pages 108-14.

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populations of these regions, which were composed mainly of Portuguese and Indians, with little influence of Blacks. In addition, migration from the northeast region to the state of São Paulo may have contributed to this similarity. However, the populations assessed in Ribeirão Preto, São Paulo, Pernambuco, and Piauí were small; therefore, the comparison of data should be made with caution since these populations may not be well represented. Furthermore, the statistical significance of the differences between populations may have been diminished by the low number of participants in the studies.

Considering that this is the first report of the immunogenetic profile of this region, the study of Salvadori et al.<sup>5</sup> is of great value and should encourage similar initiatives that contribute to the immunogenetic characterization of the Brazilian population. Data from such studies would aid in optimizing the search for bone marrow donors, as well as contributing to national anthropological knowledge.

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### Conflicts of interest

The author declares no conflicts of interest.

### REFERENCES

1. Blackwell JM, Jamieson SE, Burgner D. HLA and infectious diseases. *Clin Microbiol Rev.* 2009;22(2):370–85.
2. Trowsdale J, Knight JC. Major histocompatibility complex genomics and human disease. *Annu Rev Genomics Hum Genet.* 2013;14:301–23.
3. Fernandez Vina MA, Hollenbach JA, Lyke KE, Sztein MB, Maier M, Klitz W, et al. Tracking human migrations by the analysis of the distribution of HLA alleles, lineages and haplotypes in closed and open populations. *Philos Trans R Soc Lond B Biol Sci.* 2012;367(1590):820–9.
4. Chinen J, Buckley RH. Transplantation immunology: solid organ and bone marrow. *J Allergy Clin Immunol.* 2010;125(2 Suppl 2):S324–35.
5. Salvadori LC, Santana FC, Marcos EV. Frequency of alleles and haplotypes of the human leukocyte antigen in Bauru, São Paulo, Brazil. *Rev Bras Hematol Hemoter.* 2014;36:108-14.
6. Instituto Brasileiro de Geografia e Estatística. Brasil 500 anos [cited 10 Feb 2014]. Available from: <http://brasil500anos.ibge.gov.br/en/>