



# Blood Screening for Herpesviruses using qPCR

In North America alone, approximately eight million volunteers donate blood each year (estimate from the American Association of Blood Banks, see [www.aabb.org/content](http://www.aabb.org/content)). To ensure the safety of this blood supply, extensive screening occurs prior to donation and through mandatory testing of the blood once it has been received by the blood bank. Mandatory testing includes screening for several viruses and bacteria, including: Hepatitis B, Hepatitis C, HIV-1, HIV-2, HTLV-I and -II, West Nile Virus, and syphilis. In general the blood supply is extremely safe, with relatively few cases of disease transmitted by transfusion each year.

However, in recent years it has been proposed that testing be considered for a number of newly emerging infectious diseases and disease agents, including Chagas disease, Parvovirus B19, Babesia and malaria<sup>1,4</sup>. In particular, there have been few studies on the frequency with which many of the human herpesviruses (HSV-1, HSV-2, VZV, EBV, CMV, HHV-6, HHV-7, HHV-8) are found in donated blood, and, prior to the appearance of the work highlighted here<sup>3</sup>, only one publication had examined the presence of all eight viruses in a single study<sup>2</sup>.

Hudnall, et. al., (2008) developed a series of probe-based qPCR assays for each human herpesvirus using the 5' nuclease format. These assays were developed using general rules for primer and probe design. The primers and probes were manufactured by Sigma Custom Products. The assays were demonstrated to be robust, highly sensitive and specific. The prevalence and viral load for each herpesvirus were examined in leukocyte-enriched blood from a total of 100 randomly selected and healthy donors from southeast Texas.

HSV-1, HSV-2, VZV and HHV-8 were not found in any of the donations. On the other hand, EBV was found in 72%, HHV-7 in 65%, HHV-6 type B in 30%, and CMV in 1% of the samples. Most remarkably, one donor sample was found to have greater than  $6.1 \times 10^7$  HHV-6 type B genome equivalents per mL of blood. This appears to be only the second report of such high levels of HHV-6 type B in an otherwise healthy adult donor<sup>5</sup>.

The studies of Hudnall et. al. (2008) and others demonstrate the utility and the relative ease with which blood donations may be screened for a variety of unusual and emerging infectious diseases. The application of these assays to the donated blood supply will add significantly to maintaining the current high levels of safety and relative lack of transfusion associated disease transmission.

## References

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