Hepatitis B virus (HBV) by PCR

Test codes:

**S0033** - Ultrasensitive qualitative detection of hepatitis B virus by real time PCR

**A0008** - ELISA detection of total antibodies to hepatitis B virus in nonhuman primates

Infection with hepatitis B virus (HBV) is a major global health problem, and is estimated to account for approximately one million deaths from chronic liver disease and hepatocellular carcinoma each year. Although hepatitis virus B was found exclusively in human population and seemed to be specific to humans, a few studies have indicated a wide prevalence in non-human primates (Bancroft et al., 1977; Grethe et al., 2000; Heckel et al., 2001; Kessler et al., 1982; Lanford et al., 2000), especially primates in captivity. Some cases of HBV infection of non-human primates have been traced back to contamination by humans. In the wild, HBV infection has been documented in chimpanzees (*Pan troglodytes*), gibbons (*Hylobates* spp.), orangutan (*Pongo pygmaeus*) and gorilla (*Gorilla gorilla*).

Serological testing to detect HBV is not very reliable. Numerous authors have reported the existence of sera that are HBsAg negative, but HBV DNA PCR positive. For example, Blum et al. (1991) observed that the HBV genome in one such patient had numerous mutations, which resulted in low levels of HBsAg production, absence of HBeAg production, and a defect that terminated virus replication. Michalak et al. (1994) documented that the HBsAg-negative PCR-positive state could last for at least 5 years, and that the HBV particles actually existed as naked core particles but with intact virions, presumably in the form of immune complexes. Rehermann et al. (1996) also found that PCR positivity could persist for at least 23 years after the disappearance of HBsAg. Thus, serological testing can result in a number of false negative results. PCR detection of HBV DNA is now regarded as the most appropriate method to confirm the presence of HBV DNA.

Utilities:
• Help confirm the disease causing agent
• Help ensure that animal colonies are free of Hepatitis B
• Early prevention of spread of this virus among a colony
• Minimize personnel exposure to this virus
• Safety monitoring of biological products and vaccines that derive from primates

References:

Specimen requirement: 0.5 ml whole blood in EDTA (purple top) or ACD (yellow top) tube, or 0.5 ml plasma or serum, or 0.5 ml fresh, frozen or fixed liver tissue.

For specimen types other than those listed here, please call to confirm specimen acceptability and shipping instructions.

For all specimen types, if there will be a delay in shipping, or during very warm weather, refrigerate specimens until shipped and ship with a cold pack unless more stringent shipping requirements are specified. Frozen specimens should be shipped so as to remain frozen in transit. See shipping instructions for more information.

Turnaround time: 2 business days

Methodology: Qualitative real time PCR

Normal range: Non detected