DIARECT
Part of BBI Solutions

Parvovirus B19 Antigens

Parvovirus B19 is a nonenveloped, single-stranded DNA virus infecting and replicating in human erythroid progenitor cells. Its 5.6-kb genome codes for two proteins, VP1 and VP2, comprising its icosahedral capsid, in which VP2 represents the major structural protein (Corcoran *et al*. 2004; Heegaard and Brown 2002). Being encoded by overlapping reading frames, the 84-kDa VP1 and the 58-kDa VP2 are identical except for VP1's aminoterminal domain of 227 amino acids, the so-called VP1 unique region (Heegaard and Brown 2002). The first description of Parvovirus B19 was published by Cossart *et al*. in 1975, who identified parvovirus-like particles in the sera of patients and blood donors.

Erythema infectiosum is a common childhood disease characterized by an erythema of the cheeks, trunk and limbs, which gave rise to its common name "slapped cheek" disease (Heegaard and Brown 2002). Alternatively, the term "fifth disease" became synonymous for Erythema infectiosum due to its fifth position in a historical list of common childhood exanthemata (Dukes 1900). In 1983, Anderson *et al*. identified Parvovirus B19 as the etiological agent of Erythema infectiosum, which was confirmed by an additional study published in 1984 by Okabe *et al*. While 2-20% of infants and toddlers are serologically positive for Parvovirus B19 specific antibodies, their prevalence increases up to 85% in elderly, indicative of its widely spread presence among populations worldwide and the occurrence of infections in adults (Heegaard and Brown 2002; Marano *et al*. 2015; de Jong *et al*. 2011). Besides Erythema infectiosum, Parvovirus B19 infections have been associated with various clinical symptoms. For instance, approximately 50% of adults with Erythema infectiosum show arthropathy that can mimic rheumatoid arthritis and persist for weeks or months (Heegaard and Brown 2002; Broliden *et al*. 2006). In pregnant women without protective immunoglobulin G antibodies, Parvovirus B19 can be transmitted vertically to the developing fetus and cause non-immune hydrops fetalis, myocarditis, or even intrauterine fetal death. Depending on the study, 15-50% of women have been reported to be seronegative for Parvovirus B19 antibodies (de Jong *et al*. 2011; Lamont *et al*. 2011).

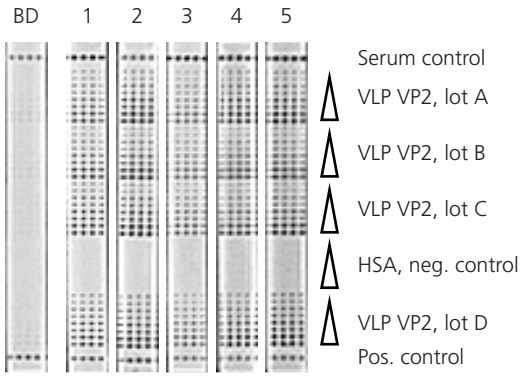

Figure: Immunodot analyses of increasing amounts of four different lots of recombinant VP2 assembled into virus like particles (VLP VP2) using sera negative (BD) and positive (1-5) for Parvovirus B19. To ensure specific antibody binding, human serum albumin (HSA), human IgG, and anti-human IgGMA antibodies were also spotted on the nitrocellulose membrane serving as negative, positive, and serum control, respectively.

When expressed in eukaryotic cells using baculovirus vectors, VP1 and VP2 capsid proteins form virus like particles (VLP) possessing conformational epitopes present in native capsid structures and being important for the detection of Parvovirus B19 specific antibodies (Maple *et al*. 2014; Jordan 2000; Kerr *et al*. 1999).

DIARECT's antigens Parvovirus B19 VLP VP2 and B19 VLP VP1/VP2 Co-Capsid are produced in the baculovirus/insect cell expression system.

Ordering Information		
48000	Parvovirus B19 VLP VP2	0.1 mg
48001		1.0 mg
48100	Parvovirus B19 VLP VP1/VP2	0.1 mg
48101	Co-Capsid	1.0 mg

References:
Anderson *et al*. (1983) Lancet. 1: 1378
Broliden *et al*. (2006) J Intern Med. 260: 285-304
Corcoran *et al*. (2004) J Infect Dis. 189: 1873-1880
Cossart *et al*. (1975) Lancet. 1: 72-73
de Jong *et al*. (2011) Prenat Diagn. 31: 419-425
Dukes (1900) Lancet. 156: 89-95
Heegaard and Brown (2002) Clin Microbiol Rev. 15: 485-505
Jordan (2000) J Clin Microbiol. 38: 1472-1475
Kerr *et al*. (1999) J Med Virol. 57: 179-185
Lamont *et al*. (2011) BJOG. 118: 175-186
Maple *et al*. (2014) J Clin Microbiol. 52: 947-956
Marano *et al*. (2015) Blood Transfus. 13: 184-196
Okabe *et al*. (1984) Arch Dis Child. 59: 1016-1019

In some countries the use of certain antigens in diagnostic tests may be protected by patents. DIARECT is not responsible for the determination of these issues and suggests clarification prior to use.

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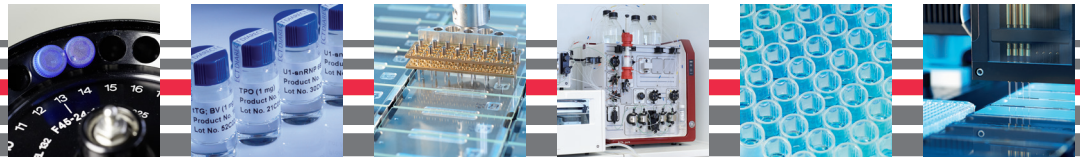

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