Proliferating Cell Nuclear Antigen (PCNA)

Proliferating cell nuclear antigen (PCNA) is an auxiliary protein of DNA polymerase delta, forms homotrimers around double stranded DNA, and is involved in DNA replication and repair. Its expression rate correlates with the rate of DNA replication and cell growth, and is therefore often used as a cellular proliferation marker in basic research (Celis *et al.* 1984; Bravo *et al.* 1987; Krishna *et al.* 1994).

Systemic lupus erythematosus (SLE) is a debilitating, chronic, life-threatening systemic autoimmune disease. The course of SLE varies from mild episodic illness to a fatally severe disease. Symptoms emerge in intermittent and unpredictable periods and are mostly ambiguous. SLE is a tissue disease that can affect virtually any organ. The time from SLE-onset to diagnosis could take years, but early recognition is essential to alleviate the progression of SLE (Arbuckle *et al.* 2003; Sherer *et al.* 2004; Cozzani *et al.* 2014).

More than 100 different autoantibodies have been associated with SLE and several reports highlight the diagnostic value of SLE specific antibodies, which were detected even before the onset of diagnostic symptoms (Heinlen *et al.* 2010 (a); Heinlen *et al.* 2010 (b); Eriksson *et al.* 2011). Autoantibodies against PCNA were first reported by Miyachi *et al.* (1978) and are detected in approximately 5–10% of SLE patients. PCNA autoantibodies have been reported to be present in those patients suffering from arthritis and hypocomplementemia, and to drop below detection limits following drug treatment (Cozzani *et al.* 2014). Originally, PCNA autoantibodies were detected by indirect immunofluorescence (IIF) showing a characteristic cell cycle dependent pattern. As pointed out by Mahler *et al.* (2010), IIF based analyses might lead to an underestimation of PCNA autoantibodies due to masking effects of other autoantibodies, underlining the benefits of defined recombinant antigens.

DIARECT produces full length PCNA in the baculovirus/insect cell expression system, which is bound by PCNA autoantibodies present in the serum of patients with presumed SLE (Fig. 1). In 1994, Brand *et al.* identified that nearly full length recombinant PCNA is required to be bound by PCNA autoantibodies, which is indicative of conformational epitopes. As shown in Fig. 2, DIARECT's recombinant PCNA shows a similar reactivity as native PCNA in ELISA assays indicating its correct conformation.

Ordering Information		
15400	Proliferating Cell Nuclear Antigen (PCNA)	0.1 mg
15401		1.0 mg

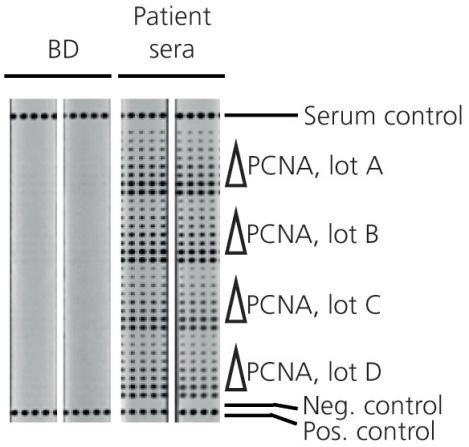

Figure 1: Immunodot analyses of increasing amounts of different lots of PCNA using sera from blood donors (BD) and patients with presumed systemic lupus erythematosus.

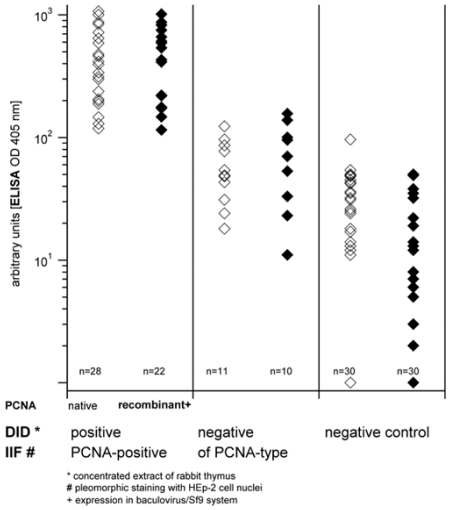

Figure 2: Comparison of native and recombinant PCNA in ELISA vs. native PCNA in DID and IIF (data kindly provided by Prof. R.-L. Humbel and P. Schmitt, CHL, Luxembourg).

References:
Arbuckle *et al.* (2003) N Engl J Med. 349 (16): 1526-1533
Brand *et al.* (1994) J Immunol. 152 (8): 4120-4128
Bravo *et al.* (1987) Nature. 326 (6112): 515-517
Celis *et al.* (1984) Leuk Res. 8 (2): 143-157
Cozzani *et al.* (2014) Autoimmune Dis. 2014: 321359
Eriksson *et al.* (2011) Arthritis Res Ther. 13 (1): R30
Heinlen *et al.* (2010) (a) J Mol Med (Berl). 88 (7): 719-727
Heinlen *et al.* (2010) (b) PloS One. 10 (3): e9599
Krishna *et al.* (1994) Cell. 79 (7): 1233-1243
Mahler *et al.* (2010) Lupus. 19 (13): 1527-1533
Miyachi *et al.* (1978) J Immunol. 121 (6): 2228-2234
Sherer *et al.* (2004) Semin Arthritis Rheum. 34 (2): 501-537