Autoantibodies against Centromere Proteins CENP-A and CENP-B

The centromere is a defined DNA region of a chromosome where the sister chromatids are connected, and the attachment site of the kinetochore. The latter connects the chromosomes to the microtubules of the spindle apparatus, which segregates the sister chromatids during mitosis.

At least 9 different proteins associated with the centromere, the so-called centromere proteins (CENP), have been identified and termed CENP-A through I. CENP-A and CENP-B are among the best studied CENP proteins. CENP-A is a histone H3 variant that is specifically found in nucleosomes at the centromere. CENP-B is a DNA-binding protein that recognizes the so-called CENP-B boxes located in the centromeric DNA, and is involved in the assembly of centromeric structures including the kinetochore.

Anti-centromere autoantibodies (ACA) have been first described by Moroi *et al.* in 1980 by analyzing sera from systemic sclerosis (SSc)/scleroderma patients using indirect immunofluorescence (IIF). While in the interphase nucleus a punctuated but dispersed signal pattern was observed, this pattern became restricted to the centromere/kinetochore during mitosis. Depending on the study, ACA are reported to have an overall prevalence of 20-40% among SSc patients.

SSc/scleroderma is a generalized term for a systemic connective tissue disorder affecting skin and internal organs, which is characterized by fibrotic arteriosclerosis of peripheral and visceral arteries. A more limited form of SSc/slceroderma, termed CREST syndrome, has been described.

Studies following the initial description of ACA identified CENP-A and CENP-B to represent major ACA antigens. In general, ACA appear to correlate with a more limited form of Ssc/scleroderma. This is supported by the finding that CENP-B autoantibodies exert a prevalence of up to 80% in patients diagnosed with CREST syndrome. In CENP-B negative patients, CENP-A autoantibodies represent an important marker.

Ordering Information		
12500	Centromere Protein B (CENP-B)	0.1 mg
12501		1.0 mg
16900	Centromere Protein A (CENP-A)	0.1 mg
16901		1.0 mg

Within the last couple of years, the availability of recombinant CENP-A and CENP-B enabled the high-throughput screening of patient sera for the respective autoantibodies using solid-phase based methods, e.g. ELISA. Recently, several studies reported that ELISA tests using recombinant CENP-A and CENP-B are similar or even superior to IIF in detecting CENP-A and CENP-B autoantibodies.

CENP-B and CENP-A antigens from DIARECT are produced in the baculovirus/insect cell expression system.

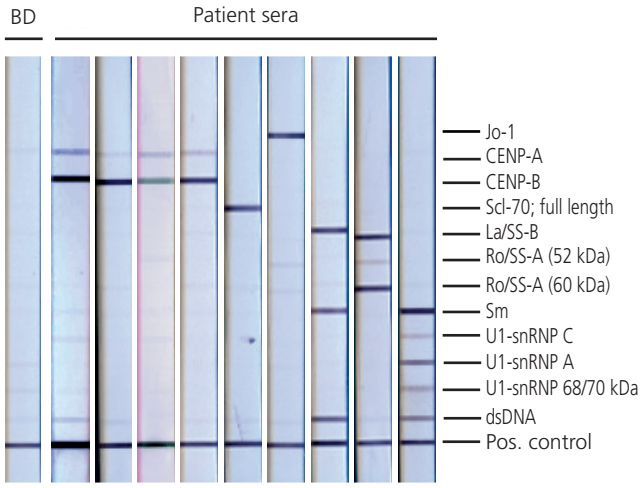

Figure: Analyses of sera from a blood donor (BD) and patients with presumed systemic sclerosis/scleroderma for the presence of autoantibodies using line assays. Besides recombinant CENP-A and CENP-B a select panel of other recombinant antigens including double-stranded DNA (dsDNA) were included in the assay.

References:
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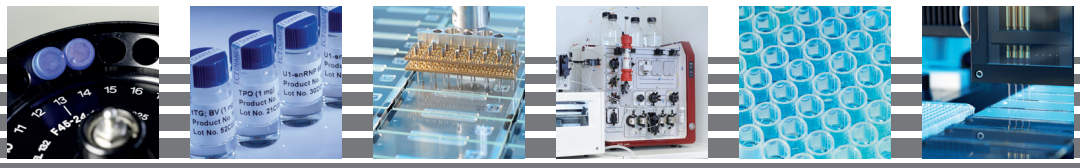

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