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U1-snRNP A, U1-snRNP C, and U1-snRNP 68/70 kDa Antigens

Small nuclear ribonucleoprotein complexes (snRNP) are essential for the splicing of mRNA precursor molecules. U1-snRNP is the most abundant RNP particle in the nucleus and consists of one small uridylate-rich RNA (U1-RNA) complexed with several proteins. The three proteins 68/70 kDa, A, and C are unique to the U1-snRNP particle, whereas seven so-called Sm proteins (B/B', D1, D2, D3, E, F, G) form a core subparticle that is common to all U-snRNP complexes.

Both the U1-specific proteins and the Sm core particle are targets of autoantibodies, which classically have been called the RNP and RNP/Sm antigens, respectively. The nomenclature of the U1-snRNP 68/70 kDa protein refers to the fact that different splice variants of this protein are found in human cells. A clear diagnostic distinction of the specificities of these autoantibodies has been complicated by the biochemical difficulties of producing homogeneous subparticle fractions from native sources. The use of single recombinant proteins as antigenic targets guarantees a much higher sensitivity and specificity in immunodiagnostic assays. Recombinant RNP and RNP/Sm antigens do not only allow the discrimination between these autoantibodies, but also the detection of autoantibodies that might be missed in diagnostic assays using the RNP/Sm complex due to sterical hindrances making epitopes inaccessible.

Autoantibodies to U1-snRNP specific proteins are present in 95% of patients with mixed connective tissue disease (MCTD) and are considered as a serological hallmark. Especially antibodies against the U1-snRNP 68/70 kDa protein are known to have a high clinical significance in MCTD patients. However, these autoantibodies are also detected in 30% of patients with systemic lupus erythematosus (SLE). On the contrary, RNP/Sm autoantibodies appear to be restricted to SLE patients, although at a low sensitivity, and are therefore also considered a serological hallmark,

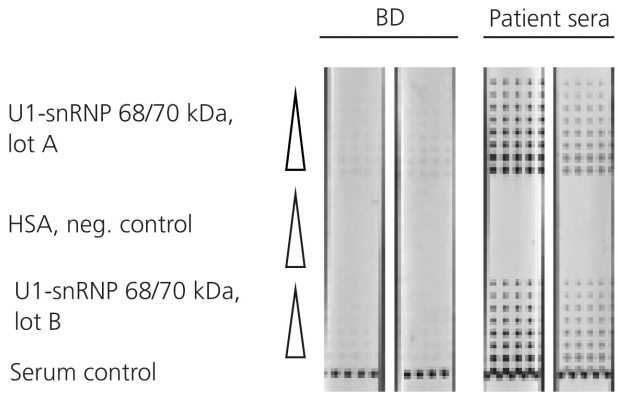

Figure 1: Immunodot analyses of increasing amounts of two different lots of recombinant U1-snRNP 68/70 kDa using sera from blood donors (BD) and patients with mixed connective tissue disease. To ensure specific antibody binding, human serum albumin (HSA) as a negative control and a serum control were also spotted on the nitrocellulose membrane.

which further highlights the importance of recombinant RNP and RNP/Sm antigens in the diagnosis of MCTD and SLE.

U1-snRNP A and U1-snRNP C are produced in the baculovirus/insect cell expression system. U1-snRNP 68/70 kDa is produced in *E. coli*.

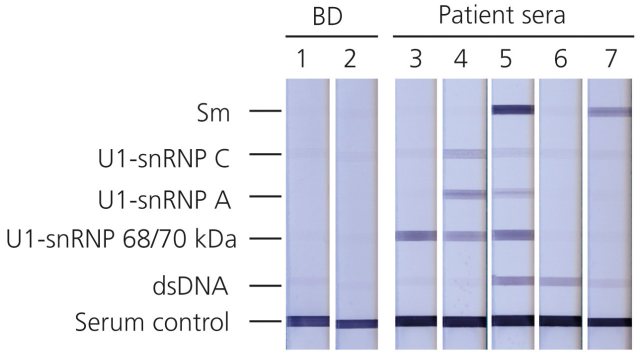

Figure 2: Analyses of sera from blood donors (BD) and patients with mixed connective tissue disease (3-4) and SLE (5-7) for the presence of autoantibodies using line assays. Besides recombinant U1-snRNP proteins native Sm purified from bovine tissue (Sm) and double-stranded DNA (dsDNA) were included in the assay to better visualize differences in autoantibody patterns.

Ordering Information		
13000	U1-snRNP 68/70 kDa	0.1 mg
13001		1.0 mg
13100	U1-snRNP A	0.1 mg
13101		1.0 mg
13200	U1-snRNP C	0.1 mg
13201		1.0 mg
13300	U-snRNP B/B'	0.1 mg
13301		1.0 mg

References:
Cozzani *et al.* (2014) Autoimmune Dis. 321359
Sharp *et al.* (1972) Am J Med. 52:148-159
Tani *et al.* (2014) J Autoimmune. 48-49:46-49

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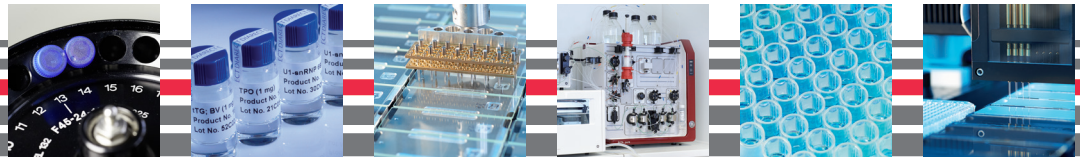

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