Ribosomal Phosphoproteins P0, P1 and P2

The eukaryotic ribosome is composed of a 40S and 60S subunit. While the 40S subunit comprises one ribosomal RNA and 33 different basic proteins, the 60S subunit comprises three ribosomal RNAs and 46 different basic proteins and, in addition, three phosphorylated and acidic proteins. These so-called ribosomal phosphoproteins (P0, P1, P2) form a pentameric complex consisting of one P0, two P1 and two P2 proteins (Barkhudarova *et al.* 2011; Elkon *et al.* 1986; Kiss *et al.* 2007).

Systemic lupus erythematosus (SLE) is a debilitating and chronic life threatening tissue disease that can virtually affect any organ. Early diagnosis is essential to alleviate the progression of SLE. Although more than 100 autoantibodies have been associated with SLE, complicating its diagnosis, several autoantibodies have been reported to be detectable years before symptoms (Arbuckle *et al.* 2003; Cozzani *et al.* 2014; Sherer *et al.* 2004).

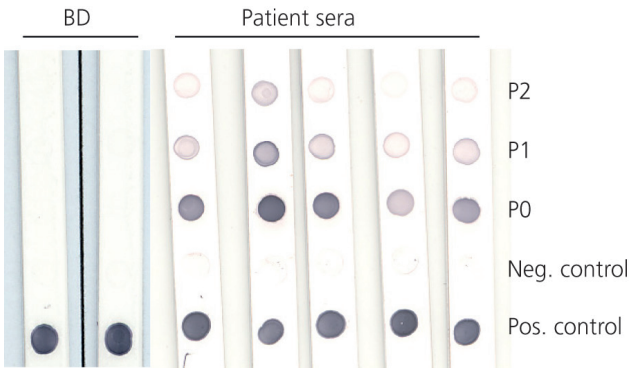

Figure: Immunodot analyses of sera from blood donors (BD) and patients with presumed systemic lupus erythematosus for autoantibodies against ribosomal phosphoproteins P0, P1 and P2.

Autoantibodies against the ribosomal phosphoproteins are, on average, detected in approximately 15–30% of all SLE patients. However, a prevalence of up to 40% has been found for patients from Asia. The importance of autoantibodies against ribosomal phosphoproteins is further highlighted by studies reporting that these autoantibodies can be detected up to 1.7 years prior to the diagnosis of SLE (Arbuckle *et al.* 2003; Heinlen *et al.* 2010).

Although autoantibodies against double-stranded DNA (dsDNA) and the spliceosomal Sm proteins are considered the hallmarks of SLE serology, SLE patients who are serologically negative for these autoantibodies are known. Intriguingly, 10–28% of these patients were positive for autoantibodies against ribosomal phosphoproteins underlining their role in SLE serology (Li *et al.* 2013).

Historically, autoantibodies against the ribosomal phosphoproteins were detected by their cytoplasmic pattern in indirect immunofluorescence (IIF) (Mahler *et al.* 2008). Due to false-negative results, other immunoassays using purified native ribosomal phosphoprotein complex or recombinant P0 - P2 have been established. Since all three ribosomal phosphoproteins share a major immunodominant C-terminal domain, the so-called C22 peptide, commercial assays using this peptide as antigen have also been established (Elkon *et al.* 1986). However, autoantibodies against other epitopes, e.g., residues 99–113 (Epitope 3) of P0 or conformational epitopes, have been identified (Mahler *et al.* 2003). In addition, Heinlen *et al*. (2010) reported that autoantibodies against Epitope 3 were detectable prior to autoantibodies against the C-22 peptide.

When comparing the sensitivity of ELISA for the detection of autoantibodies against ribosomal phosphoproteins, Barkhudarova *et al.* (2011) and Li *et al.* (2013) reported that, at a specificity cut off of 99%, individual recombinant ribosomal phosphoproteins outcompete the native ribosomal phosphoprotein complex as coating antigens. As suggested by the authors, this might be due to the inaccessibility of certain epitopes in the complex.

DIARECT produces full length ribosomal phosphoproteins P0, P1 and P2 in the baculovirus/insect cell expression system.

Ordering Information		
14100	Ribosomal Phosphoprotein P0	0.1 mg
14101		1.0 mg
14200	Ribosomal Phosphoprotein P1	0.1 mg
14201		1.0 mg
14300	Ribosomal Phosphoprotein P2	0.1 mg
14301		1.0 mg

References:
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Heinlen *et al.* (2010) J Mol Med (Berl). 88 (7): 719-727
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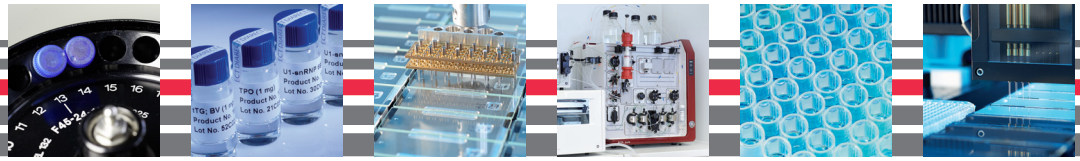

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