Autoantibodies to Nucleolin in Systemic Autoimmune Diseases

Nucleolin, one of the major and most studied nucleolar proteins, was first described by Orrick et al. (1973). In humans it is encoded by the NCL gene. Nucleolin is a nucleolar phosphoprotein implicated in the synthesis, processing, and transport of ribosomal RNA and gene transcription. The association of several structural domains allows the interaction of nucleolin with DNA and RNA sequences and nucleic acid-binding proteins. More precisely, nucleolin has been implicated in chromatin structure, rDNA transcription, rRNA maturation, ribosome assembly, and nucleocytoplasmic transport. Furthermore, it is a target of granzyme A of cytotoxic T cells.

The development of distinct combinations of autoantibodies has been recognized as an important characteristic of certain systemic autoimmune diseases. Nucleolin was identified as autoantigen in systemic lupus erythematosus (SLE) and certain other systemic autoimmune diseases by Minota et al. (1992). A strong association of IgM autoantibodies to nucleolin and histone H1 in the serum of patients with SLE was also shown earlier (Jarjour et al., 1992).

Data recorded in a mouse model indicate that nucleolin is one of the immunodominant molecules that break down self-tolerance and initiate autoantibody-spreading (Hirata et al., 2000). Anti-DNA antibodies occurred almost at the same time or after the ones against nucleolin. The number of antigens reactive with autoantibodies in immuno- blots increased gradually with age. Two sets of immunogenic regions at amino acids 314–389 and 387–461 were identified; each contained overlapping discontinuous epitopes and a centrally located RNA recognition motif (Valdez et al., 1995).

DIARECT’s human recombinant nucleolin antigen has been optimally designed for assay performance and high-level expression of diagnostically relevant epitopes in the baculovirus/insect cell system. Preliminary clinical data with the recombinant antigen show specific reactions of sera from patients with SLE and systemic sclerosis, respectively.

References:

Ordering Information

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<tr>
<th>Code</th>
<th>Product</th>
<th>Quantity</th>
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</thead>
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<td>19700</td>
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<tr>
<td>19701</td>
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For test purposes ß-samples are now available!

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