

Tissue-specific auto antibodies in systemic lupus erythematosus

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Systemic lupus erythematosus (SLE) is a chronic complex autoimmune disease involving multi-organ and organ systems. At the devastating disease stage, abnormal immune response can lead to vital damage to the kidneys, brain, heart, blood vessels, and lungs. Although anti-nuclear auto antibodies have been shown to play an important role in SLE disease pathogenesis, the types of auto antibodies causing specific end-organ manifestations are still unclear. To identify auto antibodies that may lead to organ-specific damage in SLE, we generated a large panel of recombinant monoclonal antibodies from SLE patients using the advanced single cell RT-PCR technology. We screened the recombinant antibodies for their reactivity to different tissue cells including neutrophils, blood vessel endothelial cells, and neuronal cells. For the antibodies that react with those cells, protein array or immunoprecipitation assays followed by mass spectrometry analysis are performed to identify their cognate antigens. In particular, we have identified that SLE-derived S4Ab2 antibody recognizes membrane bound protein disulfide isomerase (PDI) and S4Ab4 antibody recognizes a novel pattern recognition receptor NLRC5/NOD27. Administration of either antibody in NZB/W F1 lupus-prone mice induced transient proteinuria and kidney damage. Furthermore, SLE patients with active disease have increased titers of anti-PDI and anti-NLRC5 antibodies in their sera. Our studies suggest that anti-PDI and anti-NLRC5 auto antibodies may play an important role in the disease progression and organ damage in SLE patients.

Biography

Kaihong Su obtained her doctorate degree and post-doctoral training from the University of Alabama at Birmingham (UAB). After being a faculty member at UAB for 5 years, she joined the University of Nebraska Medical Center in 2008 to continue her research. The long-term goal of her lab is to understand the molecular mechanisms for autoimmune diseases, including SLE and RA. She has published 26 papers in reputed journals and served as ad-hoc reviewers for a number of scientific journals.

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