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ABSTRACT

Identification of Antinuclear Antibodies' Epitopes to be Used in Serodiagnostic Purposes Using M13 Phage Display Libraries

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Antinuclear antibodies (ANAs) are specific autoantibodies that target components of the cell nucleus, including DNA, RNA, histones, and other proteins. They serve as well-established serological markers in various systemic autoimmune diseases (SADs) and play a crucial role in diagnosis and treatment strategies.

While molecular diagnostic techniques are highly sensitive and specific, but highly expensive, serodiagnostic approaches remain widely used for ANA detection. This study employed a phage display library, a serological approach, to identify specific ANA epitopes using human serum samples positive for ANAs. Next-generation sequencing and bioinformatics tools were used to analyze the phage sequences, and the results were validated using an ELISA test. Three main epitopes, including “CLRCGR”, “VLRVR,” and “RLMVL” were identified as specific epitopes against ANAs, highlighting their potential utility in developing more efficient and targeted serodiagnostic tests for autoimmune diseases. These findings could contribute to improved diagnostic accuracy and patient management.

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