

ANA 12 PROFILE

SYNOPSIS

RDL's **ANA 12 Profile**, the most comprehensive, cost-effective autoantibody panel available for laboratory evaluation of suspected antinuclear antibody (ANA)-positive rheumatic disease, was developed for its clinical relevance as a complete diagnostic aid with potential prognostic utility. The **ANA 12 Profile** is performed reflexively. If the ANA is negative, no further testing is performed except for anti-Ro (which is performed at no additional charge). If the ANA is positive, the entire profile is performed and includes the following assays:

- ▶ ANA (pattern & titer)
- ▶ Anti-Sm Ab
- ▶ Anti-La (SS-B) Ab
- ▶ C3 Complement
- ▶ AntiCardiolipin Abs (IgG, IgA, IgM Isotypes)
- ▶ Anti-dsDNA Ab
- ▶ Anti-RNP Ab
- ▶ Anti-Scl-70 Ab
- ▶ C4 Complement
- ▶ Anti-Centromere Ab
- ▶ Anti-Ro (SS-A) Ab
- ▶ Anti-Chromatin Ab
- ▶ Anti-Thyroid Microsome Ab

UNIQUELY AVAILABLE FROM RDL AT NO ADDITIONAL CHARGE

Immunofluorescence patterns on routine ANA studies which suggest the presence of Proliferating Cell Nuclear Antigen (PCNA), Ribosomal P Protein and Mitochondrial autoantibodies are reflexively evaluated by traditional techniques.

ANA PROFILES IN ANA-POSITIVE RHEUMATIC DISEASE

ANTIBODY SPECIFICITY	ACTIVE SLE	MCTD	PSS	CREST	PRIMARY SJOGREN'S	RA	DRUG-INDUCED SLE
ANA	>95%	>95%	70-90%	60-90%	>70%	40-50%	100%
Anti-dsDNA	60%	Negative	Negative	Negative	Rare	Rare	Negative
Anti-Sm	30%	Negative	Negative	Negative	Negative	Negative	Negative
Anti-RNP	30%	>95% (high titer)	Common (low titer)	Negative	Rare (low titer)	Rare	10-20% (low titer)
Anti-Centromere	Rare	Rare	10-15%	60-90%	Negative	Negative	Negative
Anti-Ro (SS-A)	30%	Rare	Rare	Negative	70%	10-15%	Negative
Anti-La (SS-B)	15%	Rare	Rare	Negative	60%	Rare	Negative
Anti-Nucleolar	Occasional	Negative	Common	Negative	Occasional	Rare	Negative
Anti-Scl-70	Rare	Negative	10-20%	Negative	Negative	Negative	Negative
Anti-Histone	24-95%	Occasional	Occasional	Occasional	Occasional	20%	Procainamide: 67-100% Sensitivity Hydralazine: 50-100% Sensitivity

1. A negative **ANA** excludes active Systemic Lupus Erythematosus (SLE) in >95% of cases.
2. False-positive **ANAs** occur in the following frequencies:
 - at 1:40: 32%
 - at 1:80: 13%
 - at 1:320: 3%
 - The number of false-positive **ANAs** increases with age.
3. Positive **ANAs** lack specificity, and can occur in many autoimmune rheumatic diseases, chronic inflammatory and infectious diseases, malignancies, and can also be induced by certain drugs.
4. Although unusual, low titer **ANAs** (1:40, 1:80) can be accompanied by other autoantibodies including Anti-DNA, Anti-Chromatin, Anti-RNP, Anti-Ro and others.
5. **Anti-Centromere Abs** strongly suggest CREST Syndrome and are occasionally seen in Progressive Systemic Sclerosis (PSS), Raynaud's Phenomenon and Primary Biliary Cirrhosis.
6. **Anti-dsDNA Abs** are essentially restricted to SLE and are seen infrequently in severe Rheumatoid Arthritis (RA). Increases in Anti-dsDNA Ab titers may predict flares in SLE.
7. **Anti-Sm Abs** are 99% specific for SLE. Sensitivity is higher in Blacks and Asians than Caucasians of European descent.
8. High titer **Anti-RNP Abs** (>1:10,000) are characteristic of Mixed Connective Tissue Disease (MCTD), particularly if unaccompanied by other autoantibody specificities.
9. **Anti-RNP Abs**, which are diagnostic for MCTD, especially at high titer, are also commonly seen in SLE, but titers are usually modest. Anti-RNP Abs can also be seen in PSS, Myositis, some RA and Sjogren's in low to modest titers.
10. **Anti-Ro and Anti-La Abs** are most often seen in Primary Sjogren's Syndrome, less frequently in SLE and least frequently in Secondary Sjogren's Syndrome. Anti-Ro and Anti-La Abs are strongly associated with Subacute Cutaneous LE, Neonatal Lupus Dermatitis, Congenital Complete Heart Block and rarely in Lupus Nephritis.
11. **Anti-Ro Ab** has also been associated with:
 - Photosensitive skin rash in SLE
 - Homozygous C2 Deficiency in SLE-like illness
 - Congenital Complete Heart Block
 - Interstitial Pneumonitis Disease in SLE
 - Pregnant women with Lupus accompanied by Anti-Ro have a 5% chance of having an infant with Congenital Complete Heart Block
 - Asymptomatic mothers of infants born with Congenital Complete Heart Block are at increased risk of developing a Connective Tissue Disease.
 - Thrombocytopenia (SLE, Sjogren's)
 - Lymphopenia (SLE, Sjogren's)
 - Nephritis, Anti-Ro without Ant-La
12. **Anti-Sci-70 Abs** (Anti-Topoisomerase 1 Abs) are seen in PSS and correlate with Pulmonary Fibrosis.
13. **Anti-PCNA (Proliferating Cell Nuclear Ag) Abs** are highly specific for SLE, but sensitivity is only ~4%.
14. **Anti-Ribosomal P Protein Abs:**
 - Psychosis/depression in SLE: 45-90% reported (controversial)
 - Highly specific for SLE occurring in 10-20% of patients
 - CNS neuropsychiatric association in children and adolescents is less reliable than in adults.
15. **Anti-Chromatin Abs:**
 - Useful marker for SLE with Nephritis and can be seen in the absence of Anti-DNA
 - Seen in SLE with sensitivity of 70%
 - Seen in Drug Induced LE where it targets H₂A - H₂B linked to DNA which appears to be the major antigen in Drug Induced LE compared to Anti-Histone Abs which are directed against potentially all histone components H₁, H₂A, H₂B, H₃, H₄ as well as H₂A-H₂B-DNA in SLE and other disorders.
 - Can help to distinguish Drug Induced LE (Anti-H₂A-H₂B-DNA) compared to Drug Induced ANA.
 - Specificity overall is good for SLE, Drug Induced LE, but can be seen in PSS, RA, MCTD and Type I Chronic Autoimmune Hepatitis.
16. **Anti-Mitochondrial Abs** are associated with Primary Biliary Cirrhosis, Scleroderma and CREST Syndrome.
17. **Anti-Thyroid Microsomal (Thyroid Peroxidase) Abs** are associated with Autoimmune Thyroid Disease, are predictive of development of biochemical Hypothyroidism and occur commonly with positive ANAs.
18. **Anti-Histone Abs** may help in confirming a suspicion of Drug Induced LE but cannot distinguish Drug Induced ANA from Drug Induced LE which typically targets H₂A-H₂B-DNA (Anti-Chromatin), particularly in Pronestyl Induced LE.
 - 95% of Drug Induced LE
 - 70-80% of SLE
 - Can be seen occasionally Scleroderma, RA, Sjogren's, JRA, Felty's Syndrome, MCTD, VasculitisNeoplasms and Liver Disease.