

Systemic Lupus Erythematosus (SLE)

Case Study

SLE

Type III T cell-mediated autoimmune disease.

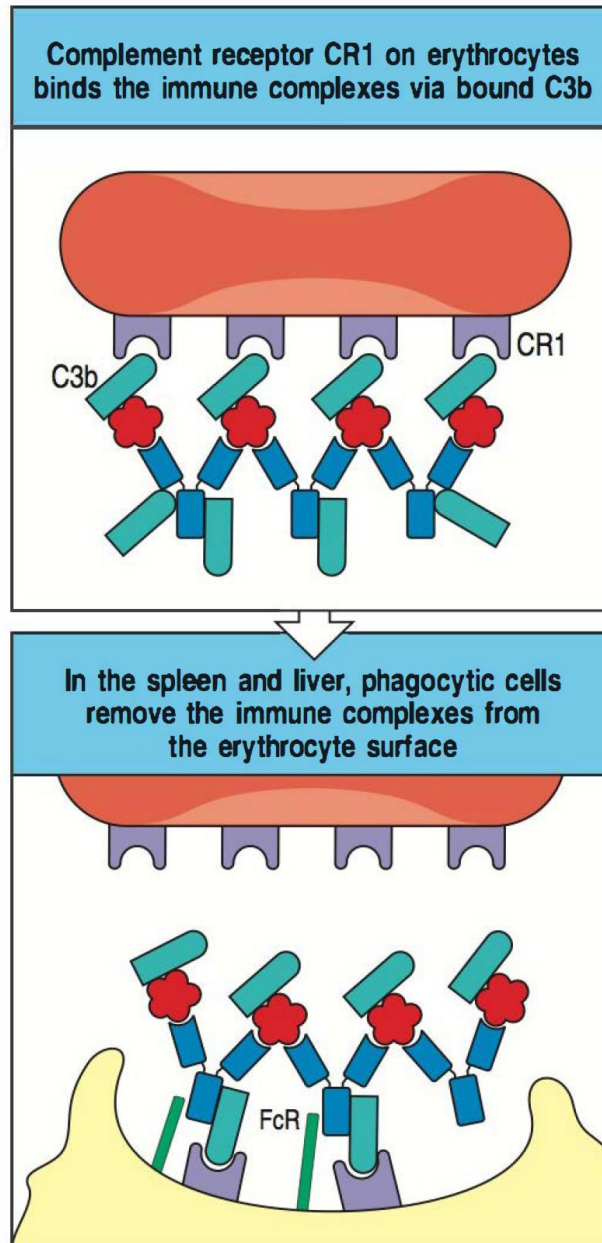
Accumulation of immune complexes trapped in small blood vessels and synovial tissue triggering complement activation and tissue damage.

Immune-complex Diseases

Immune-complex disease

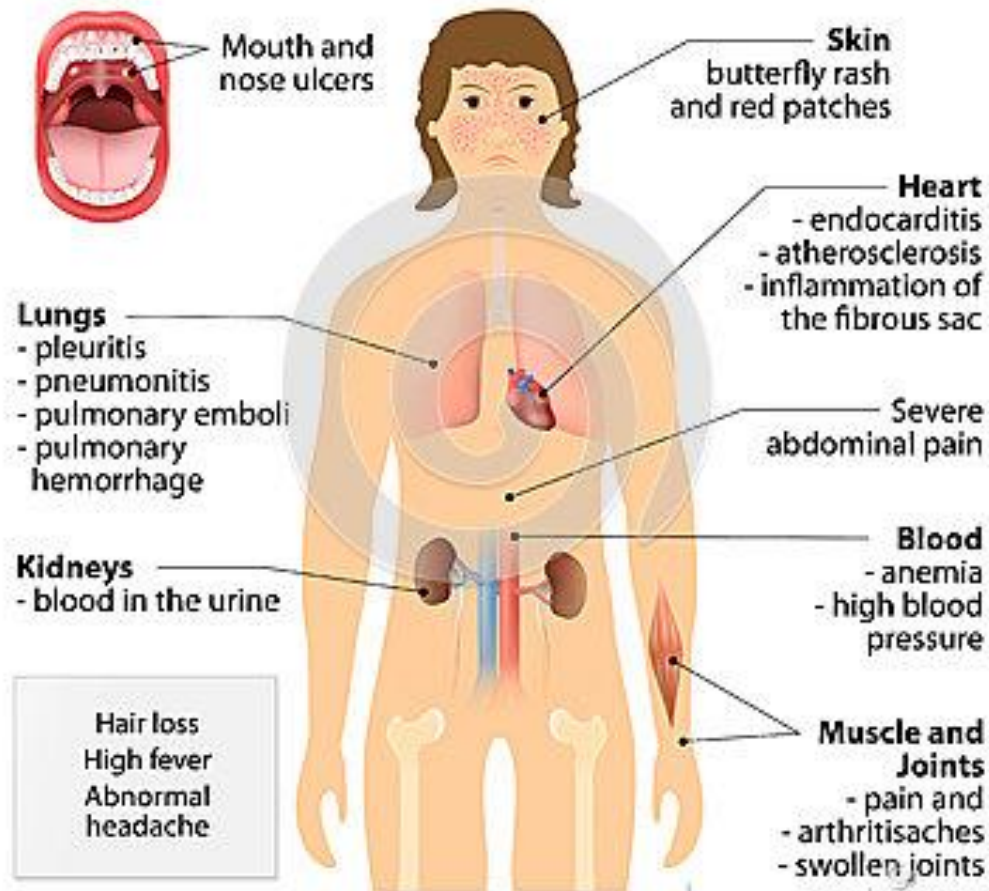
Syndrome	Autoantigen	Consequence
Subacute bacterial endocarditis	Bacterial antigen	Glomerulonephritis
Mixed essential cryoglobulinemia (see Case 38)	Rheumatoid factor IgG complexes (with or without hepatitis C antigens)	Systemic vasculitis
Systemic lupus erythematosus	DNA, histones, ribosomes, snRNP, scRNP	Glomerulonephritis, vasculitis, arthritis

Clearance of Immune complexes from circulation



SLE-affected Organs

Systemic lupus erythematosus



American College of Rheumatology 1997

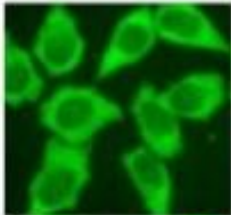
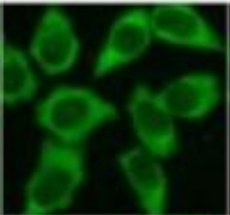
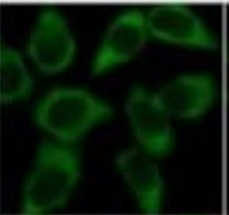
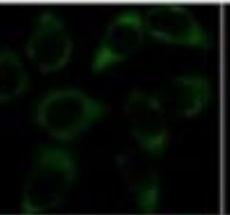

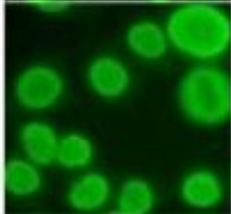
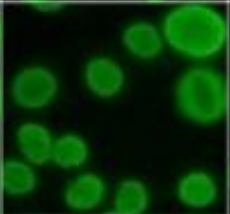
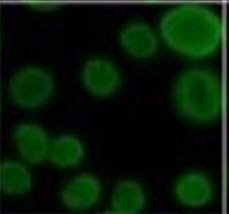
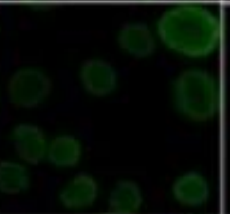

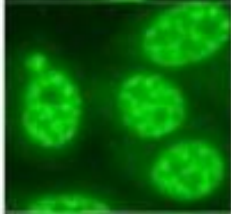
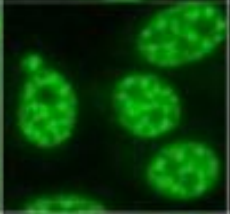
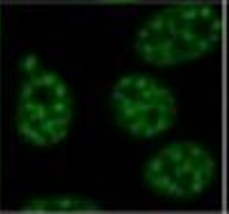
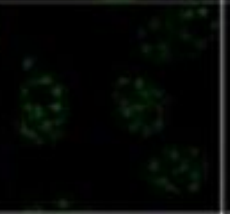

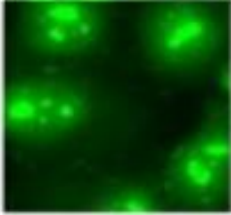
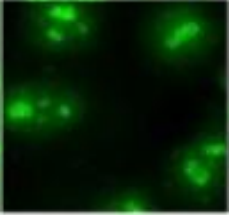
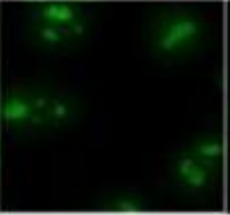
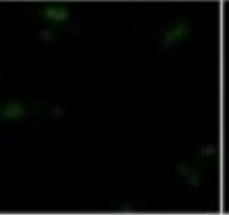

SLE Diagnostic Criteria

11 Diagnostic Criteria (4 need to be met!):

- 1- Malar rash
- 2- Discoid rash
- 3- Photosensitivity
- 4- Oral ulcers
- 5- Non-erosive arthritis involving >2 peripheral joints
- 6- Pleuritis or Pericarditis
- 7- Renal disorder: persistent proteinuria or cellular casts
- 8- Neurological disorder: Seizures or psychosis in the absence of drugs or known metabolic disorders
- 9- Hematological disorder: Hemolytic anemia or leukopenia or lymphopenia or thrombocytopenia
- 10- Immunological disorder: Antibodies to dsDNA, Sm, or anti-phospholipid antibodies
- 11- Positive ANA test

Anti-Nuclear Antibodies (ANA)

Staining Signal Guidelines for Multiple Staining Patterns

	+4	+3	+2	+1	0	
Cytoplasmic Homogeneous						
Nuclear Homogeneous						dsDNA, histones
Nuclear Speckles						U1RNP, Sm
Nucleolus						

Case of Nicole Chawner

16 year-old female (Female bias 9x more than men)

Butterfly rash after excessive exposure to sunlight.

Stiff joints and hips.

Positive ANA (1:1280 titer)

Anti-ds DNA antibodies positive (60% of SLE patients)

Low serum C3 level (Low C4 too), elevated IgG in serum.

Normal platelet count, Negative direct and indirect Coombs test. Negative anti-phospholipid antibodies, urine test normal.

Took anti-malarial agent (Hydroxychloroquine) and asked to avoid direct sunlight.

Fever and chills every evening., enlarged lymph nodes, weight loss (unintended)

Ds-DNA titer increased, C3 went further down, placed on steroids and NSAIDs, stable.

SLE Rash



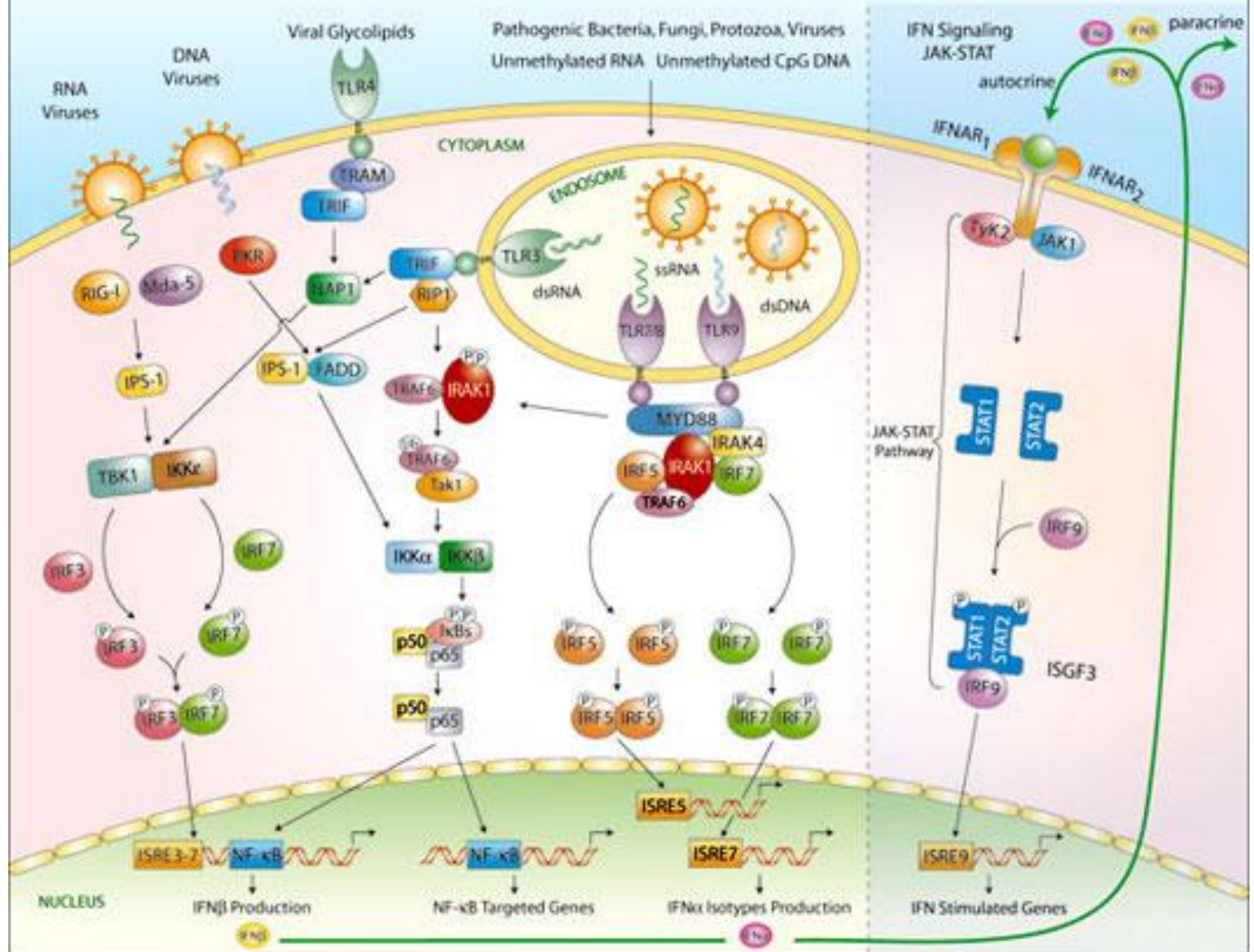
SLE Naming



SLE could be drug-induced. Example: IFN- α treatment

IRF-5 TF haplotypes as a genetic predisposing factor to SLE.

Type I IFN Production and Signaling



What was C3 low, what is significance of multiple measurement?

C3 and C4 are low due to their binding and cleavage to immune complexes. The rise of their level is a sign of successful immunosuppressive therapy.

Nicole's Urine test was normal, significance?

No glomerulonephritis, otherwise, proteinuria and RBCs in urine

Why elevated serum IgG?

Constant stimulation of their B cells by autoantigens.

SLE usually involves complex antigens, and autoantibodies are usually produced against each of these different components, how?

