

# Living with Scleroderma

Education forum for those affected by scleroderma

## Lab Tests in Scleroderma

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# Goals of This Talk:

- Help understand blood tests for:
  - Diagnosis
  - Infection
  - Bleeding risk
  - Kidney function
  - Liver function
  - Muscle inflammation

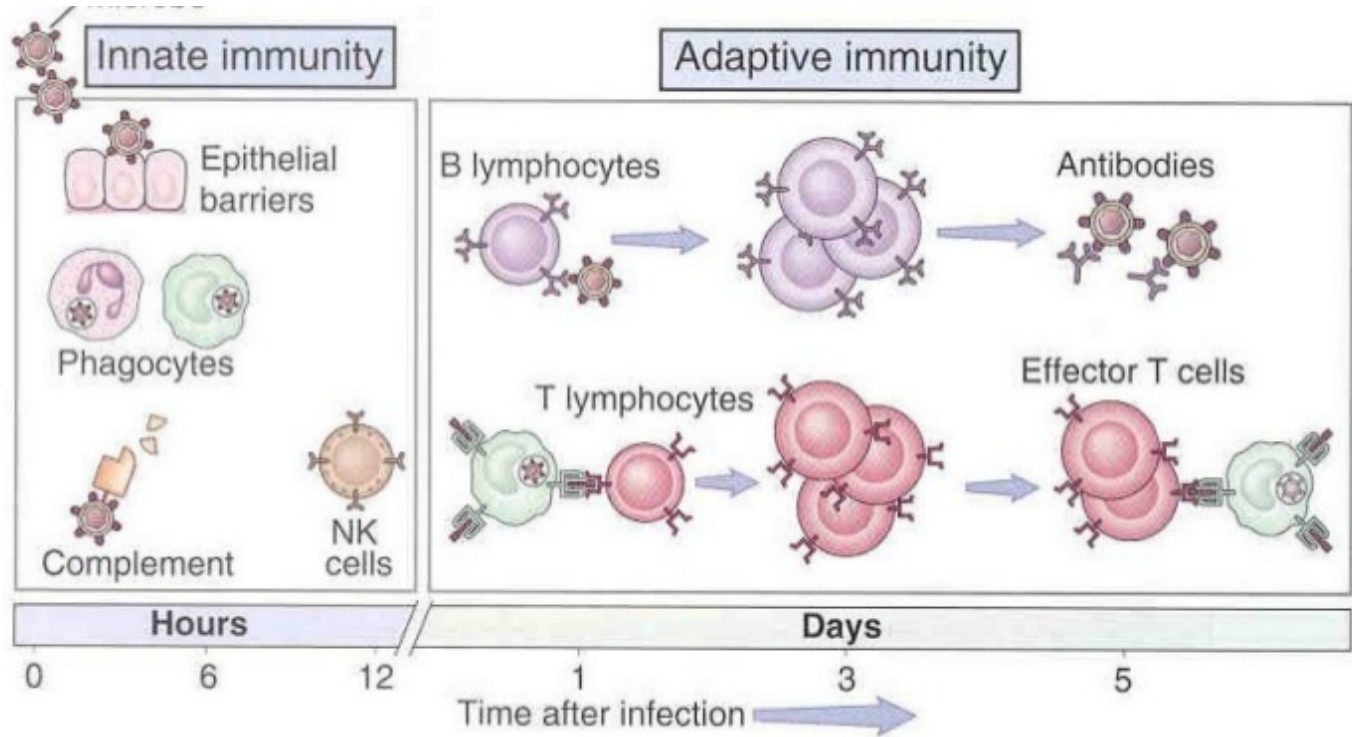
# Our Immune System



# Our Immune System

**INNATE (think: infantry)**  
“Hard-wired immune system”  
Fast acting

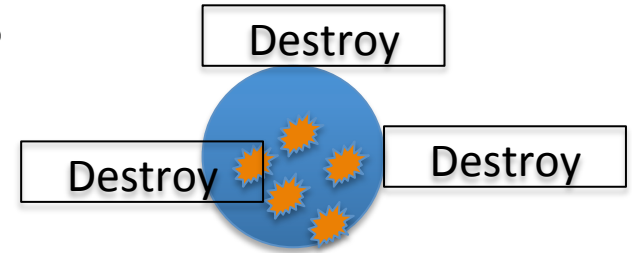
**ADAPTIVE (think special ops)**  
“Able to learn and remember”  
Slower



Courtesy: Abbas and Litchman; Basic Immunology

# Antibodies

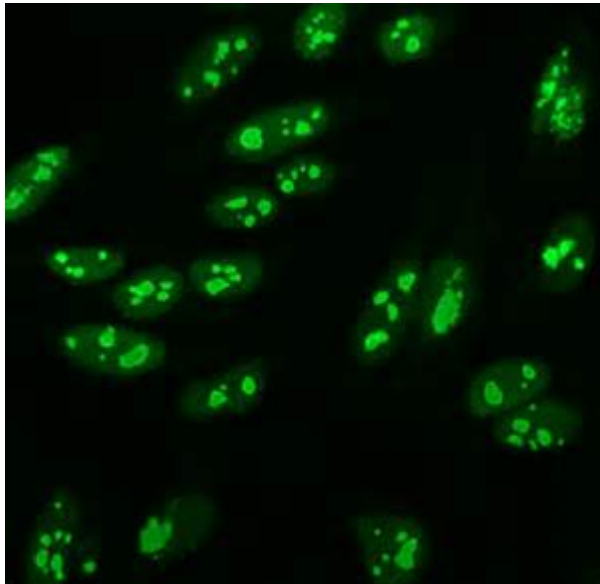
- Adaptive immune system (special ops) uses antibodies to “label” infected cells to be destroyed
- Sometimes... it makes destruction “labels” for our own healthy cells:  
**AUTOANTIBODIES**



Destroy

Sci-70

Destroy



Source: [pstoattern.org](http://pstoattern.org)

# ANA

- “Anti-nuclear antigen”
- Screen to see if you have AUTOANTIBODIES
- Doesn’t tell you which ones you have
- More than 90% of people with scleroderma have a positive test

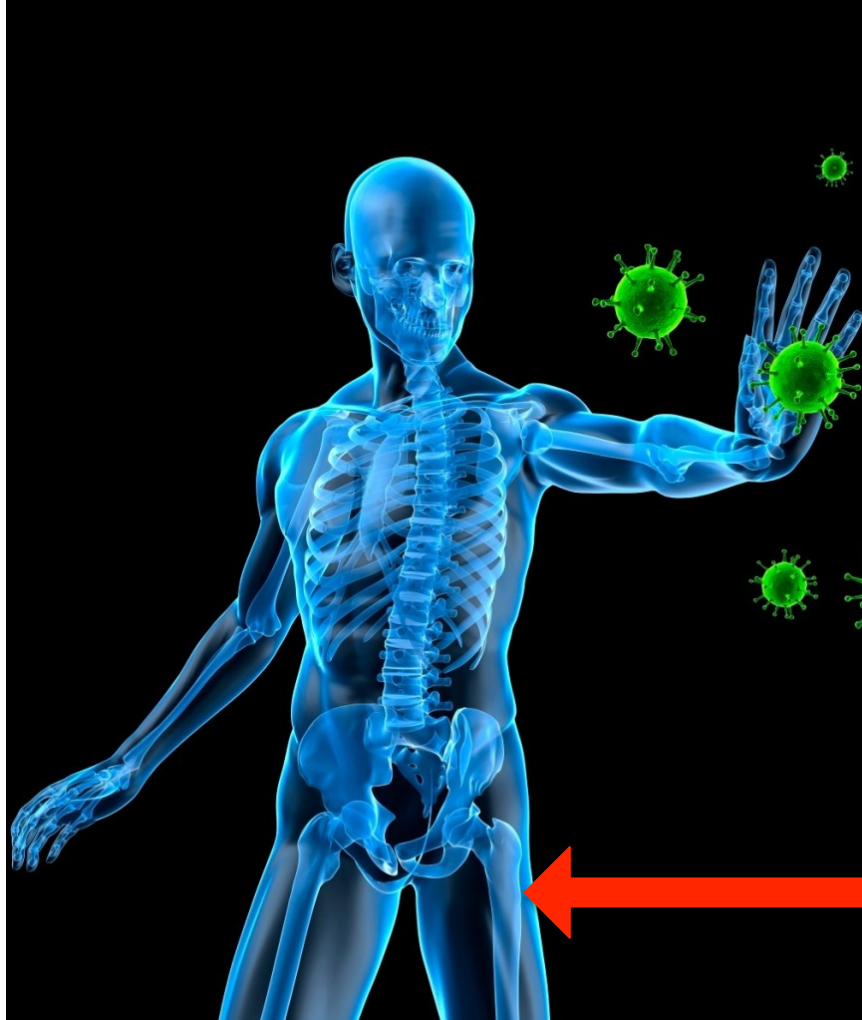
# ENA

- “Extractable-nuclear antigen”
- If ANA showed you have autoantibodies, we do the ENA to see which ones you have

| AUTOANTIBODY    | Type of Scleroderma | Special screening                    |
|-----------------|---------------------|--------------------------------------|
| Anti-Scl70      | Diffuse             | Breathing test,<br>Blood work, urine |
| Anti-Centromere | Limited             | ECHO of heart                        |
| Anti-RNA Pol 3  | Diffuse             | Blood work, urine                    |

# CBC: “Complete blood count”

Source: bankofbiology



Bone marrow makes:

1. White blood cells
2. Red blood cells
3. Platelets



# White Blood Cells

- Immune system cells are white blood cells
- High or low numbers can mean infection
- Their numbers can also be affected by medications

# Red blood cells (Hemoglobin)

- These cells carry our oxygen in our body
- If they are low, it can mean your disease is active in the background
- Low numbers can also mean bleeding or low iron

# Platelets

- These cells help make up blood clots to stop bleeding
- If they are too low, you have a higher risk of bleeding
- If they are high, it can be a sign of inflammation in the body

# Kidney Tests

- Make urine; remove waste products in the body, manage our salt and fluid levels, and help control our blood pressure
- If the kidneys are damaged, creatinine will build up in the blood
- Higher creatinine usually means worse kidney function
- Urea will also increase in kidney damage

# Kidney Part 2: Urine Tests

- The kidneys act as a filtration system
  - Part of their job is to keep protein and blood in the body
- With some kinds of kidney damage, protein and blood can leak out into the urine
- Scleroderma renal crisis can cause some protein to leak out into the urine

# Liver Tests

- The liver is important for detoxification, making clotting factors, and playing a big role in energy storage and breaking down of sugars, fats, and proteins
- AST and ALT test for inflammation in the liver
- High levels of bilirubin mean the liver is not functioning properly

# Muscle Inflammation

- Muscle inflammation can happen in scleroderma causing pain or weakness
- When the muscle is inflamed, it will release creatine kinase (CK)

# Lab Tests Summary

- Positive ANA says you make autoantibodies, but it doesn't tell you which one
- ENA tells you which autoantibody you have (like Scl70, centromere); this helps your doctor diagnose scleroderma and monitor for complications
- Blood work including CBC, liver enzymes, and kidney function can help us figure out if your disease is active, or warn us if there are other things going on (like infection)