

## Investigations of Autoantibodies

**Autoantibodies** group of antibodies produced by a person's immune system when it fails to adequately distinguish between "self" and "nonself." These antibodies, known as autoantibodies, attack the body's own healthy cells and cause signs and symptoms such as tissue and organ inflammation, joint and muscle pain, and fatigue.

- A) **Rheumatoid factors:** a group of Antibodies directed against (Fc) region of IgG. These Abs are found in a number of Rheumatoid disorder such as Rheumatoid arthritis, [systemic lupus erythematosus \(SLE\)](#) as well as in non rheumatic conditions.

**Procedure (Qualitative method):**

- 1- place 50µl of the sample and one drop of each positive and negative control into separated circles on the slide test.
- 2- Add on drop (50µl) of RF reagent to each circle.
- 3- Mix the drop with stirrer, spreading them over the entire surface of the circle. Use different stirrer for each sample.
- 4- Rotate the slide within two minutes, false result could appear after 2 minutes.

- B) **Anti-CCP antibody (Cyclic Citrullinated peptide antibody):** are [autoantibodies](#) produced by the [immune system](#) that are directed against cyclic citrullinated peptides (CCP).

**Citrulline** is naturally produced in the body as part of the metabolism of the amino acid arginine, in some proteins, the conversion of arginine to citrulline leads to production of structures that form a ring called **cyclic citrullinated peptide**. This alteration and the production of CCP antibodies often occur in people who have [rheumatoid arthritis \(RA\)](#). The formation of CCP may play a role in the autoimmune inflammatory process seen in the [joints](#) of those with RA. The CCP antibody test detects and measures CCP antibodies in the blood to help diagnose RA.

## Why use Anti-CCP Test?

To help diagnose [rheumatoid\\_arthritis \(RA\)](#) and differentiate it from other types of [arthritis](#); it is more specific test for Rf arthritis than Rf factor.

## When is Anti-CCP Test use?

CCP antibody test is primarily ordered along with an [RF test](#) when someone has [signs](#) and [symptoms](#) that may be due to inflammatory arthritis It may be ordered as a follow-up test to a negative RF test when clinical signs and symptoms lead the doctor to suspect [RA](#).

## Signs and symptoms may include:

- Painful, warm, swollen joints of the hands and wrists most commonly
- Pain sometimes affecting neck, shoulders, hips, knees, and/or feet
- Fatigue
- Fever

**C) Antinuclear antibodies (ANA):** are Ab that bind to components of nucleus.

## What is ANA?

The antinuclear antibody (ANA) test is used as a primary test to help evaluate a person for [autoimmune disorders](#) that affect many tissues and organs throughout the body ([systemic](#)) and is most often used as one of the tests to help diagnose [systemic lupus erythematosus \(SLE\)](#).

**When is the ANA test used?**

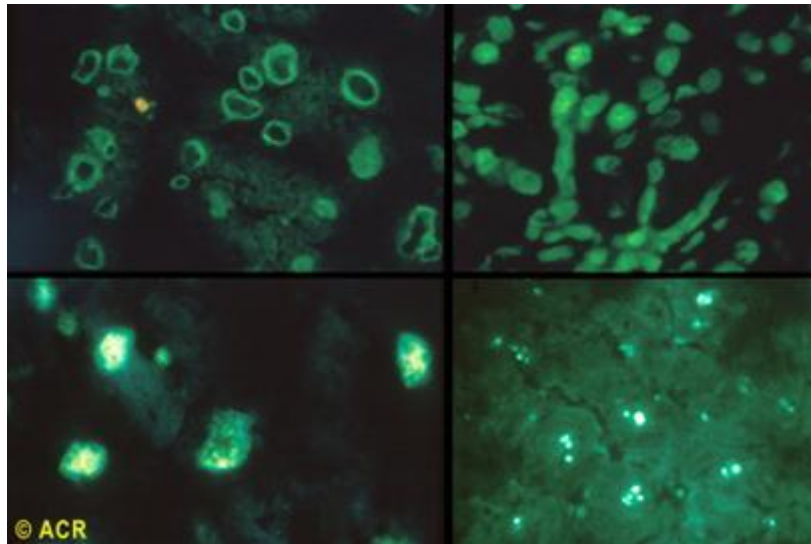
Depending on a person's [signs](#) and [symptoms](#) and the suspected disorder, ANA testing may be used along with or followed by other [autoantibody tests](#) detect the presence of autoantibodies that target specific substances within cell nuclei, including [anti-dsDNA](#), [anti-centromere](#), anti-nucleolar, [anti-histone](#) and anti-RNA antibodies. An [ENA panel](#) may also be used in follow up to an ANA.

**[signs](#) and [symptoms](#)**

- Low-grade fever
- Persistent fatigue, weakness
- Arthritis-like pain in one or more [joints](#)
- Red rash (for [lupus](#), one resembling a butterfly across the nose and cheeks)
- Skin sensitivity to light
- Hair loss
- Muscle pain
- Inflammation and damage to organs and tissues, including the kidneys, lungs, heart, lining of the heart, central nervous system, and blood vessels

**How do you test for antinuclear antibodies?**

There are several methods used to test for ANAs. One method is a blood test called the Fluorescent Antinuclear Antibody Test or FANA. This test involves viewing fluorescent-labeled antibodies on a glass slide under the microscope and determining the pattern and intensity of the fluorescence.



(The figure explain **Immunofluorescence** of ANA test)

### **What does the result reading mean?**

A negative ANA reading means no autoantibodies are present in the body. However, a positive ANA reading alone does not indicate an autoimmune disease. Why?

- The prevalence of ANAs in healthy individuals is about 3-15%. The production of these autoantibodies is strongly age-dependent, and increases to 10-37% in healthy persons over the age of 65. Even healthy people with viral infections can have a positive ANA.
- Some medications can cause a positive ANA.
- Other conditions, such as cancer, can cause a positive ANA.