

# 10 Reasons Why This Test Is The Most Comprehensive We Know Of

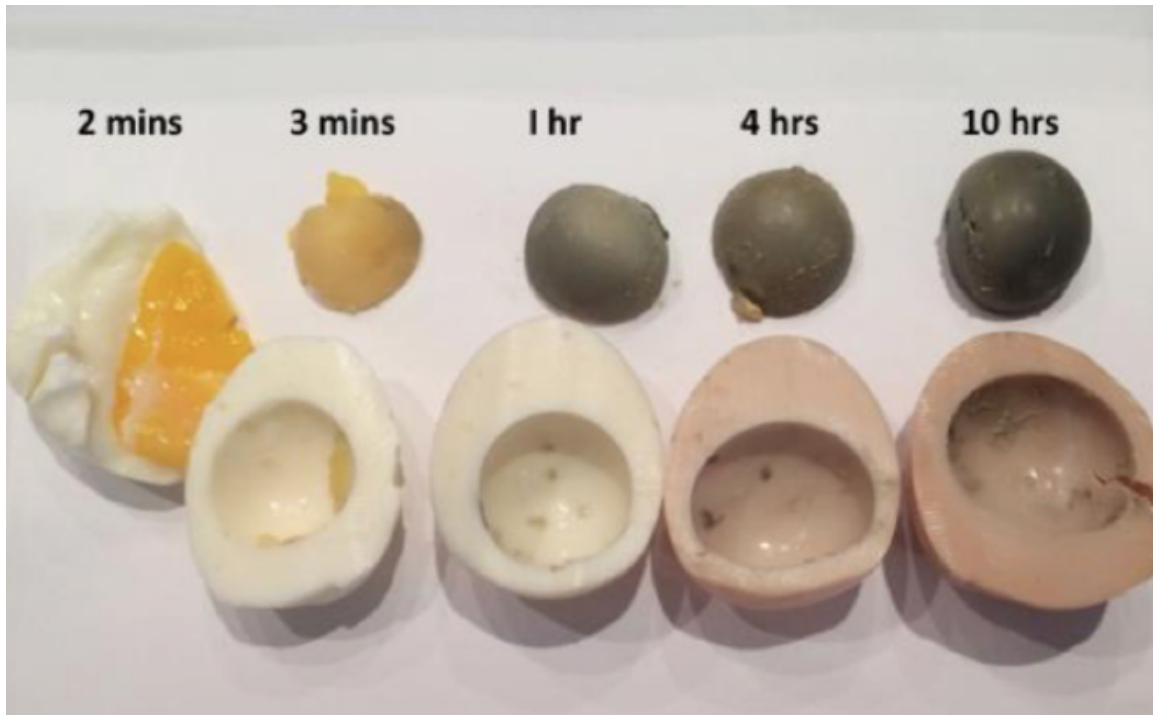


Array 10 – Multiple Food Immune Reactivity Screen™ features 10 unique characteristics that set Cyrex apart from other laboratories.

## 1. Heat Modified Protein Reactivity™

Heating food above 118°F changes its protein structure and therefore its antigenicity. Array 10 is testing for both raw and cooked forms of common foods on the same panel. This reflects how foods are most commonly eaten. This is necessary because when food is heated or cooked, its protein structure changes. The foods being assessed should best duplicate what patients eat. Cyrex is the only laboratory to test for both raw foods which are eaten raw and cooked foods that are eaten cooked.

An example of how heat changes the integrity of food proteins is shown in the picture below. Note the change in color of both the yolk and egg white in proportion to the length of cooking.



## 2. Cross-Reactive and Pan-Antigen Isolates™

Specific food antigens are known to cross-react with human tissues. If a person makes antibodies to these specific food antigens, and the person has barrier permeability, those antibodies to the specific food antigen can begin attacking human tissue.

This can result in tissue damage, autoimmune reactivity and eventually autoimmune disease. Some cross-reactive food antigens include, gliadin, casein, food aquaporin, shrimp tropomyosin, and fish parvalbumin. Pan-antigens are proteins that are common among multiple sources. Examples of pan-antigens include shrimp tropomyosin, fish parvalbumin and hevein found in latex and some fruits, nuts and vegetables. Tropomyosin is found in a variety of fish and crustaceans, which has been shown to cross-react with human tropomyosin. Fish parvalbumin is found in a variety of fish species and is known to cross-react with human parvalbumin.

## 3. Multiple Food Protein Interactions

When food proteins are combined during processing, the antigenicity of the individual food proteins can change. In other words, a patient may not react to fresh dill or raw cucumber, but when dill is processed with cucumbers for making pickles, the patient may react to the dill pickle. Real-world diets include combined foods; some are obvious like imitation crab, while some are hidden as in the case of meat glue. Imitation crab is made up of Alaska pollock (MSC-Certified), water, pea starch, sugar, sorbitol, modified tapioca starch, king crab meat, natural and

artificial flavor, extracts of crab, oyster, lobster, scallop, shrimp and fish (salmon, anchovy, and cutlass fish), refined fish oil (anchovy, sardine), sea salt, rice wine (rice water, koji, yeast, salt), hydrolyzed soy and whey proteins, autolyzed yeast extract, potassium chloride, sodium inosinate and guanylate sodium pyrophosphate, carmine, paprika, artificial color added. In Array 10, we assess combined food proteins including meat glue, imitation crab, pickled cucumbers, canned anchovies + sardines, and fried potatoes.

#### 4. Gum Large Molecule Reactivity™

Gums (xanthan gum, gum arabic, guar gum) are in many foods, especially gluten-free and dairy-free processed products. They can also be found in soups, juices, jams, salad dressings, soy products, dairy products such as milk and yogurt, and others. Gums are large molecules (200,000-5,000,000 Daltons) and parts of their molecules have the same molecule sequences as other food proteins; this is known as molecular mimicry. These can cross-react with other food proteins, causing an immune reaction in the patient.



#### 5. Oil Protein Isolation™

Cyrex tests for oleosins, which are the oil proteins found in seeds and nuts. Some patients may not have a reaction to the proteins in seeds or nuts such as sesame, peanuts, and others; however, they may react to the protein oil in a seed or nut. This is why a patient may react to both peanut and peanut oleosins, or may have a reaction only to peanut oleosins. In the latter case testing only for peanut and not peanut oleosins would give a false negative.

## 6. Lectins and Agglutinins Isolation Technology™

Lectins are glycoproteins that bind carbohydrates, and agglutinins bind cells together. Lectins and agglutinins are found in about 30% of foods. Lectin is only one among hundreds of proteins found in beans, so it is normally not possible to accurately measure the lectin antibody when it is mixed with many other proteins. However, by using purified lectins, the most antigenic protein in beans, peanuts, etc., the testing becomes the most accurate and specific method to detect antibodies to these inflammatory food antigens. Array 10 includes lentil and pea lectins, as well as, beans, soybean and peanut agglutinins.

## 7. Hidden Meat Glue

Meat glue, also known as transglutaminase or thrombin, is a powder used in the food manufacturing industry to adhere smaller pieces of meat to make one large fillet, or to turn flakes of white fish into imitation crab meat, or form chicken scraps into nuggets. It is also used to thicken some milks, yogurts and egg whites. According to the packaging label on meat glue, there is also maltodextrin and sodium caseinate with transglutaminase.

## 8. Dual Antibody Detection System

Because both IgG and IgA isotypes are involved in the immune response, Array 10 measures IgG and IgA antibodies for each food item. Clinically, IgA is an indication of the mucosal immune response, and IgG is an indication of the circulatory immune response. By measuring both, this insures and enhances the detection of food immune reactivity.

## 9. Amplified Antigenic Proteins and Peptides

Array 10 includes specific proteins and peptides that are within the entire food proteins. Examples include shrimp tropomyosin and shrimp protein, cashew vicilin and cashew proteins, pineapple bromelain and pineapple proteins, and rice endochitinase and rice proteins. These antigens are highly purified recombinant proteins (proteins made via biomolecular engineering) and synthetic peptides (short chains of amino acids). By targeting specific antigens within the entire food proteins, Array 10 increases the sensitivity and specificity for food immune reactivity.

## 10. Tissue Bound Artificial Food Coloring Reactivity™

Artificial food colors are small-molecule chemicals. Cyrex measures patients' reactivity by assessing levels of antibodies to such chemicals bound to human tissue. Several other food substances such as food colourings, meat glues and gums are tested.

# What is the link between chemicals in foods and autoimmune diseases?

Most foods we consume contain chemicals, even when they are labeled organic. Food production uses chemicals as preservatives, additives, dyes, flavorings, colorings, and for texturing. Food contact materials, such as packaging materials, conveyer belts and tubing materials at factories and plants, and even the tubes of the espresso machine through which the coffee passes all leach chemicals into foods. Agriculture today uses chemicals in the form of artificial fertilizers and herbicides, insecticides, fungicides and other pesticides.



Take a food, wheat for example, which the immune system recognized as a “friendly protein” early in a person’s life when they first ate bread, thereby developing oral tolerance. Oral tolerance is the immune system not reacting or being unresponsive to the oral ingestion of an innocuous antigen such as a food protein. So why now, suddenly, does this person, as well as almost 25% of the population, react to wheat protein, which is found in bread, pasta, and many other foods? Because there is a new chemical attached to the wheat: it could be a pesticide, or a fungicide, or an insecticide, each having the potential to form a new antigen after being attached to wheat. Also, due to hybridization, new peptides have been introduced into wheat that were not there previously.

For these reasons, the immune system won’t recognize this wheat as “friendly” when these other chemicals are attached to it. Instead, it detects the new antigens, made up of the wheat and the chemical/s, and attacks the ingested wheat. As the molecular makeup of these food antigens sometimes resemble the molecular sequence of a tissue, the body’s immune system now begins to attack the self-tissue antigens, launching an autoimmune reaction, later potentially developing into an autoimmune disease unless preventive measures are taken under the direction of a clinician.

#### **In a Nutshell**



In the gastrointestinal tract, the immune system’s first line of defense is the mucosal immune layer. If this layer becomes dysfunctional it puts the intestinal barrier at risk for breach by food antigens. This could result in loss of immune tolerance to these food antigens.

## **What Can The Clinician Do To Help These Patients Once These Foods Have Been Identified?**

The clinician can detect the possible triggers of their patients’ symptoms at the earliest possible stage, remove the offending agent, and repair the damage that these immune reactions may have caused. The current best clinical approach is to implement an individualized diet and lifestyle plan, along with other treatment modalities depending on each patient’s health status.

Implementation of these modalities gives the gut barriers time to repair themselves. Once this is accomplished, oral tolerance against the offending food is successfully re-established, and an excellent prognosis follows. Leaving food immune reactivities undetected in a patient may result in an autoimmune reaction, and then potentially develop into an autoimmune disease.

