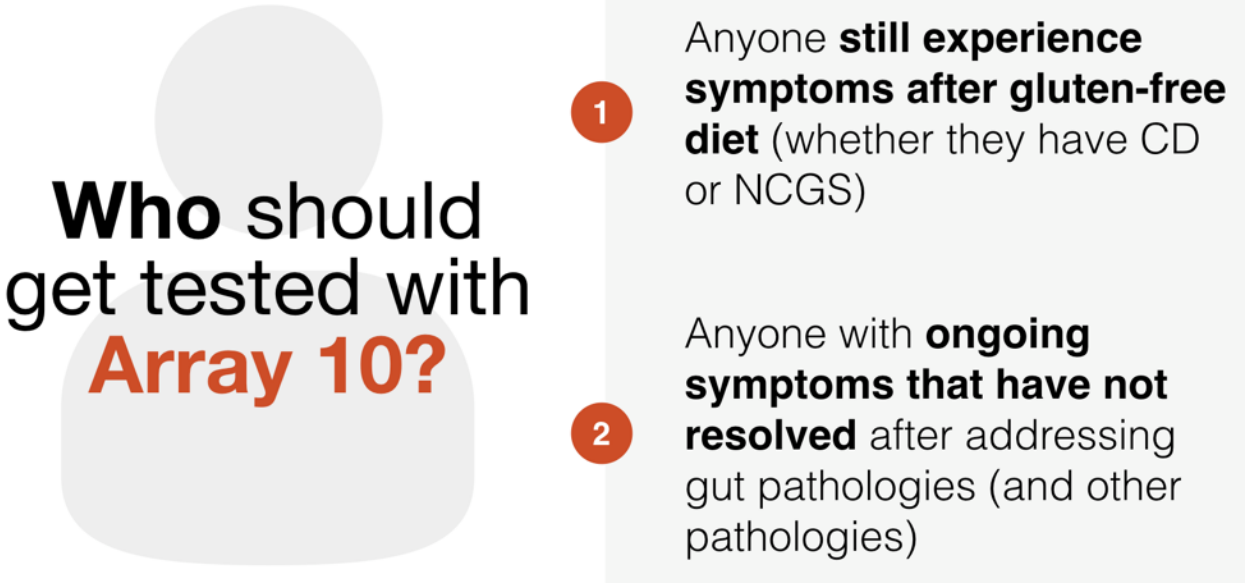
KRESSER INSTITUTE
FOR FUNCTIONAL AND EVOLUTIONARY MEDICINE

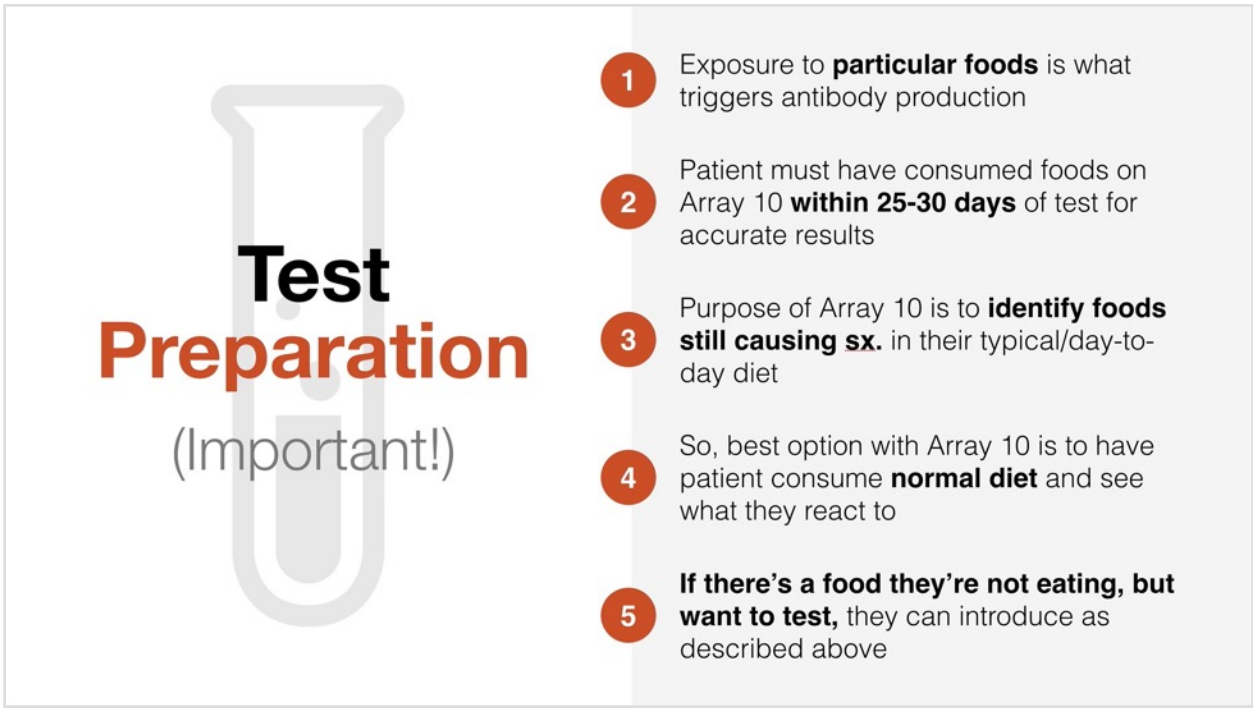
Cyrex Array 10 – Part 1

Okay, so we're going to talk about Cyrex Array 10, which is a multiple food immune reactivity screen, looks at intolerance to 180 different real-world food antigens. It's their newest test. So to review, Cyrex Array 3 is their wheat, gluten, proteanome analysis; Array 4 is for cross-reactive proteins and other food proteins; and then Array 10 is basically everything else. Array 10 is unique among food intolerance tests for several reasons. I'm going to give a brief overview here, but for much more detail, you can listen to my podcast where I covered this; we're going to put it in the supplemental materials section. You can also read the Cyrex materials, which we'll provide links to in the resources section. They have a lot of really good literature, and you can listen to my bonus interview with Dr. Aristo Vojdani, which we're going to include in the supplemental materials page as well.



So who should get tested with Array 10? Anyone who is still experiencing symptoms after a gluten-free diet, whether they have celiac disease or non-celiac gluten sensitivity, or anyone with ongoing symptoms that have not resolved after addressing gut pathologies and other pathologies.

Just like with Array 3 and Array 4, test preparation is really important for Array 10.



Exposure to particular foods is what triggers the antibody production, and a patient must have consumed the food on Array 10 within 25 to 30 days of the test to get an accurate result for that particular food. In my opinion, the purpose of Array 10 is to identify foods that are still causing symptoms in patients' typical day-to-day diet. So the best option with Array 10 is to have the patient consume their normal diet and just see what they react to. There's 180 antigens on it, like I said, so if the patient tried to include every single one of those in their diet, it would be almost impossible. So the best way to use this test is just to have them eat what they're normally eating, unless there's a food that they only eat sporadically that they want to test and see if it's right for them, or a food that they removed from their diet, for example, and have been avoiding because they suspected that they're intolerant of it. Then they can reintroduce that as I described, eating maybe a serving of it once a day for seven days and then waiting about 25 to 30 days to do the test.

Here we're going to briefly summarize some of the advantages of Cyrex Array 10 compared to other tests. I just want to say again I have no financial relationship with Cyrex or any of the other labs we're discussing. These are the labs I use in my practice, and through my own research believe that they're the best option, so I don't get any financial compensation or remuneration of any kind by recommending Cyrex or any of these labs.

Most food intolerance tests only include **raw antigens**

Disadvantage because we eat both raw and cooked foods

Cooking has been shown to **alter protein structure and antigenicity**

Cyrex tests some foods cooked only (e.g. meat, eggs), others raw only (e.g. cucumbers, lettuce), and others both raw and cooked (e.g. carrot, onion)

Array 10 is the only panel that I know of—food intolerance panel—that includes raw and cooked antigens. Most food intolerance tests only include raw antigens and that's a disadvantage because we eat both raw and cooked foods. For example, nobody that I know eats raw pork, and not too many people eat cooked lettuce, so if you see antigens for pork and lettuce on a food intolerance test, it's not separating raw and cooked foods, that's going to be somewhat problematic. We know that cooking alters protein structure and thus changes the antigenicity of a substance. So it's possible that someone would not produce antibodies to raw almonds but would produce antibodies to cooked almonds. And Cyrex tests for some of the foods that are cooked only, like meat and eggs, most people don't eat those raw, other foods that are typically only eaten raw, like lettuce and cucumbers, and then in some cases they test for both raw and cooked versions of a food, like carrots and onion.

Some food antigens cross-react with **human tissue**

This **results** in autoimmunity, tissue damage, inflammation

Cross-reactive antigens **include** gliadin, casein, food aquaporin, shrimp tropomyosin, and fish parvalbumin

Pan-antigen isolates are **proteins** found in multiple foods

They **include** shrimp tropomyosin, fish parvalbumin and hevein, found in latex and some fruits, nuts and vegetables

Shrimp tropomyosin **cross-reacts** with human tropomyosin; fish parvalbumin cross-reacts with human parvalbumin

Cyrex uses cross-reactive pan-antigen isolates for Array 10. Some food antigens cross-react with human tissue, and this can result in autoimmunity tissue damage and inflammation. Cross-reactive antigens include gliadin, casein, some of the things we just talked about on Cyrex Array 4, so food aquaporin, shrimp tropomyosin and fish parvalbumin. Pan-antigen isolates are proteins found in multiple foods, and they include shrimp tropomyosin, fish parvalbumin and hevein, which is found in latex and some fruits, nuts and vegetables. Shrimp tropomyosin cross-reacts with human tropomyosin; fish parvalbumin cross-reacts with human parvalbumin.

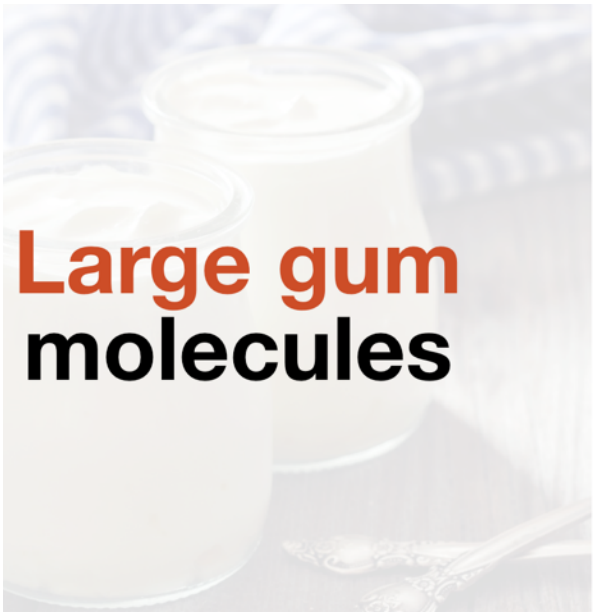
When food proteins combine, they form a **different compound**

Example: patient may not react to fresh cucumber, but when dill processed to make pickles, they react to pickle

Real-world diets include combinations of foods (e.g. imitation crab) while some are hidden (like meat glue)

Array 10 assesses common combined proteins: meat glue, imitation crab, pickled cucumbers, canned anchovies + sardines, and fried potatoes

Array 10 looks at multiple protein interactions. When food proteins combine, they form a different compound. So for example, a patient might not react to fresh cucumber, but when dill is processed with it to make pickles, they react to the pickle. Real-world diets include combinations of foods; imitation crab in California rolls would be a good example. Other foods or antigens can be hidden in foods, like meat glue. So, Array 10 assesses common combined proteins like meat glue, imitation crab, pickled cucumbers, canned anchovies and sardines, and fried potatoes.



Array 10 looks at large gum molecules. Gums are present in many processed foods, especially gluten- and dairy-free products, found in soups, juices, jams, salad dressings, soy products, dairy products such as milk and yogurts, and dairy alternatives. Gums can cross-react with other food proteins, causing an immune reaction in the patient.

Binding isolates

Lectins are **glycoproteins** that bind carbohydrates, and agglutinins bind cells together

Lectins and agglutinins are found in about **30% of foods**

While many lectins destroyed by cooking, some are not; some may escape intestine without being fully digested

Reaction to lectins **associated with** autoimmunity and gut inflammation

Array 10 looks at binding isolates, like lectins, which are glycoproteins that bind carbohydrates and agglutinins, which bind cells together. Lectins and agglutinins are found in about 30 percent of foods, so they're very common. While many lectins are destroyed by cooking, most I would say, some are not, and some can escape the intestine without being fully digested. Reaction to lectins is associated with autoimmunity and gut inflammation in the literature.

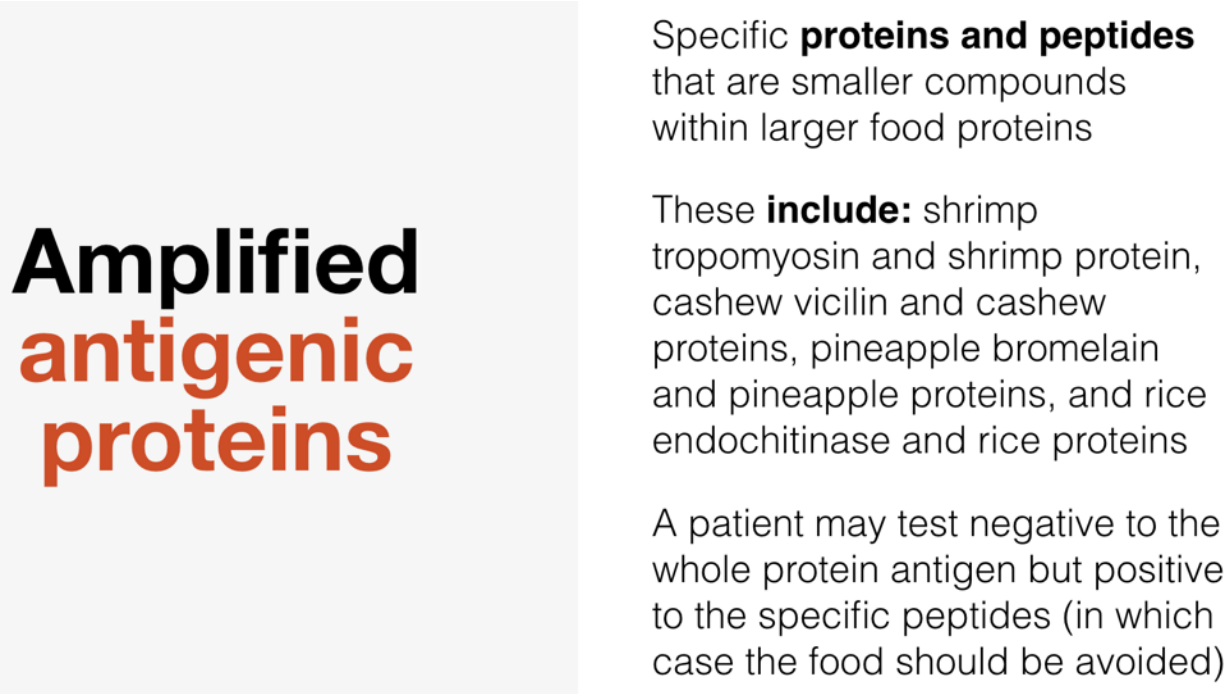
Tissue-bound food coloring

Artificial food colors **used extensively** in processed foods

Colorants form bonds with proteins in humans; can **trigger autoimmune reaction**

Patient may not react to particular food, but may react to food + coloring agent

Array 10 looks at tissue-bound food coloring, so this would be artificial food colors used extensively in processed foods. Colorants form bonds with proteins in humans and trigger autoimmune reaction. The patient may not react to the particular food itself but may react to the food plus the coloring agent, so that's again a situation where a combination causes a problem where the two elements alone may not.



Specific proteins and peptides that are smaller compounds within larger food proteins are called amplified antigenic proteins, and Cyrex Array 10 looks at these. I've mentioned them already; they include shrimp tropomyosin and shrimp protein, cashew vicilin and cashew proteins, pineapple bromelain and pineapple proteins, and rice endochitinase and rice proteins. So a patient may test negative to the entire protein antigen, like rice for example, but they might test positive to the specific peptides, like rice endochitinase, and in that case, rice should still be avoided.