KRESSER INSTITUTE
FOR FUNCTIONAL AND EVOLUTIONARY MEDICINE

Gut Diagnosis Cyrex Array 10 Review

MULTIPLE IMMUNE REACTIVITY SCREEN.
LOOKS AT INTOLERANCE TO 180 REAL-WORLD ANTIGENS.

Who should get tested with Array 10?

1. Anyone **still experience symptoms after gluten-free diet** (whether they have CD or NCGS)
2. Anyone with **ongoing symptoms that have not resolved** after addressing gut pathologies (and other pathologies)

Test Preparation

1. Exposure to **particular foods** is what triggers antibody production
2. Patient must have consumed foods on Array 10 **within 25-30 days** of test for accurate results
3. Purpose of Array 10 is to **identify foods still causing sx.** in their typical/day-to-day diet
4. So, best option with Array 10 is to have patient consume **normal diet** and see what they react to
5. **If there's a food they're not eating, but want to test,** they can introduce as described above

RAW AND COOKED

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)

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

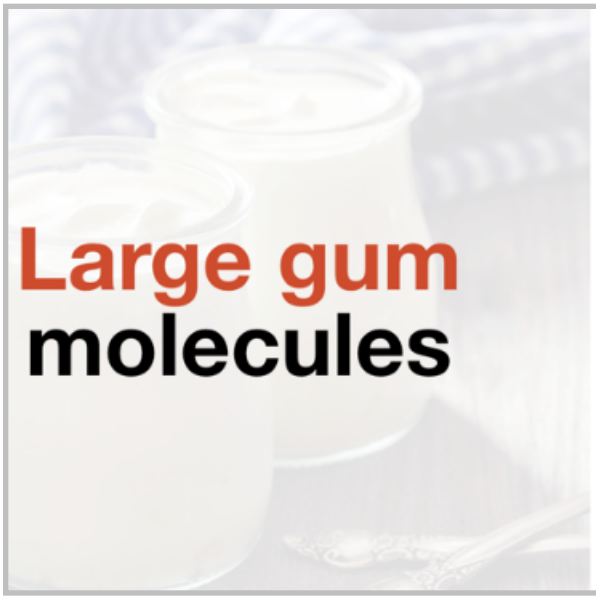
Multiple protein interactions

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

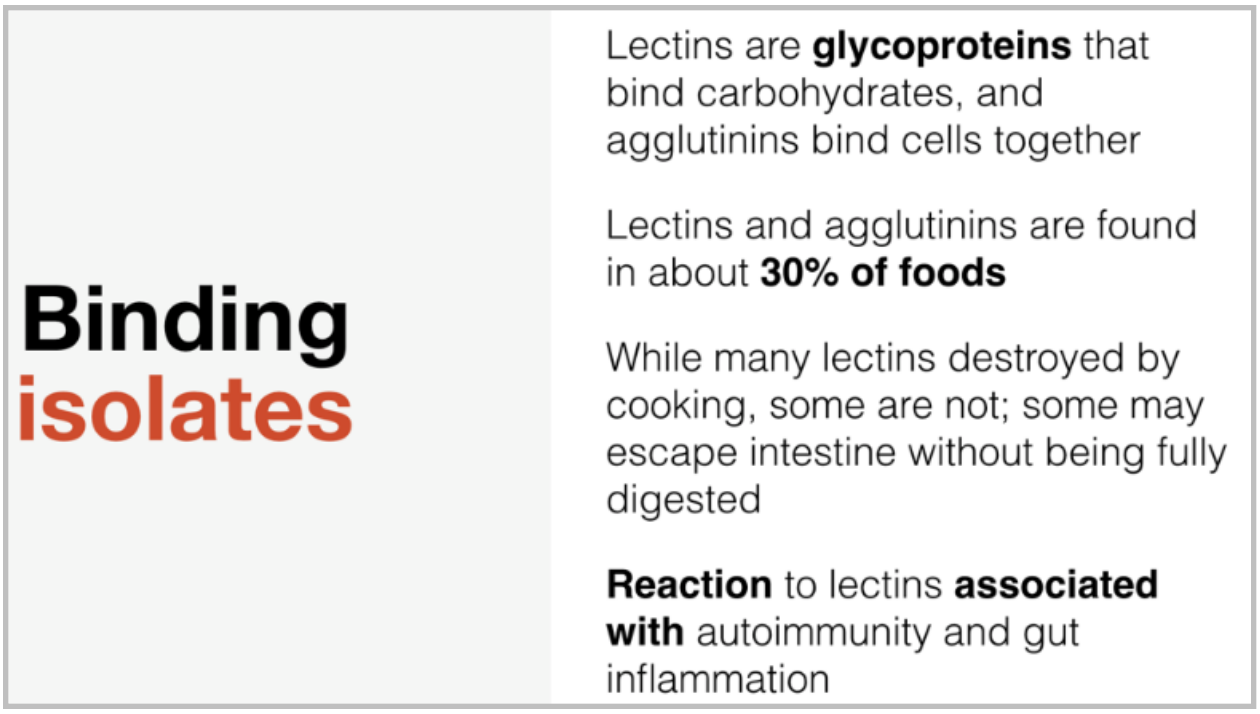


Large gum molecules

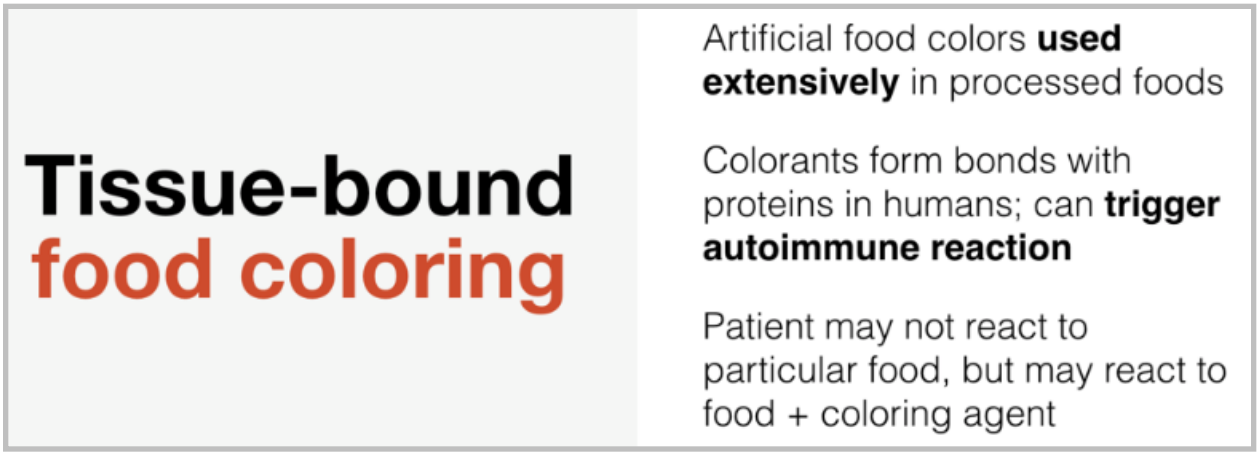
Gums are present in many processed foods, especially **gluten- and dairy-free** products

Found in soups, juices, jams, salad dressings, soy products, dairy products such as milk and yogurt, and dairy alternatives (nut/soy milk)

Gums can **cross-react** with other food proteins, causing an immune reaction in the patient



Lectins are **glycoproteins** that bind carbohydrates, and agglutinins bind cells together. Many lectins are destroyed by cooking, but some are not and may escape the intestine without being fully digested. Reaction to lectins are associated with autoimmunity and gut inflammation.



Amplified antigenic proteins

Specific **proteins and peptides** that are smaller compounds within larger food proteins

These **include:** shrimp tropomyosin and shrimp protein, cashew vicilin and cashew proteins, pineapple bromelain and pineapple proteins, and rice endochitinase and rice proteins

A patient may test negative to the whole protein antigen but positive to the specific peptides (in which case the food should be avoided)

Oleosins

Oil proteins found in seeds and nuts

Some patients may not react to proteins in nuts and seeds, but may react to oleosins

Example: if patient only reacts to peanut oleosin, but not peanut protein, they will test false negative on other assays

Meat glue

Meat glue (aka transglutaminase or thrombian) is a **powder** used in food processing to "glue" smaller pieces of meat together into one larger piece

Also used to turn flakes of white fish into imitation crab meat or form chicken scraps into nuggets, and to thicken some milks, yogurts, and egg whites

Patients may react to the meat glue in these foods, without reacting to the foods themselves

Dual antibody detection

Both **IgG and IgA isotypes** are involved in immune response

Array 10 measures both

IgA is an indication of mucosal immune response, and IgG is indication of circulatory immune response

Measuring both gives more accurate results

Positive antigen	Notes	Action
Lectins/agglutinins *(bean, peanut, soybean, lentil, pea)*	Can bind human tissue and provoke autoimmunity	Abstain from all lectins/agglutinins in legumes/beans; consider Cyrex Array 5
Aquaporins *(corn, spinach, soy, tomato)*	Similar to human aquaporin; can trigger autoimmunity to nervous system tissue	Abstain from all aquaporins; consider Cyrex Arrays 7/7x & 20
Beta-glucan	May cross-react with human tissue; associated with rheumatoid arthritis	Abstain from beta-glucan; check for pathogenic bacterial and fungal infection; consider Cyrex Array 8
Cashew vicillin	Specific cashew antigen more specific than cashew proteins	Abstain from cashews

Adapted from: Cyrex Array 10 Clinical Applications Guide (http://cyrexlabs.com)

Positive antigen	Notes	Action
Cucumber *(pickled)*	Cucumbers pickled with other food proteins	Check ingredients on jar; patient may be reacting to them rather than cucumber
Artificial food coloring	Measures immune reactivity to food coloring bound to proteins and/or human tissue	Abstain from foods containing food colorings; consider Cyrex Arrays 5 & 20
Imitation crab	Represents greater antigenicity of combined food proteins	Check ingredients; patient may be reacting to any of the included substances
Latex hevein	Reactivity is associated with many fruit, nut and vegetable immune reactivities	Avoid latex; don't consume cross-reactive foods: banana, avocado, chestnut, kiwi, eggplant, custard apple

Adapted from: Cyrex Array 10 Clinical Applications Guide (http://cyrexlabs.com)

Positive antigen	Notes	Action
Meat glue	Primarily found in processed meat products; Cyrex combined commercial meat glue with ground beef	Patient may be reacting to meat glue, cooked beef, or one of the individual ingredients in meat glue
Parvalbumin	Specific fish antigen that is more sensitive than fish proteins	Abstain from all forms of fish; consider Cyrex Array 5
Shrimp tropomyosin	Specific shrimp antigen that is more sensitive than shrimp proteins	Abstain from all forms of shellfish; consider Cyrex Array 5
Pineapple bromelain	Specific pineapple antigen; more sensitive than measuring antibodies to pineapple proteins	Abstain from pineapple including digestive enzymes containing bromelain

Adapted from: Cyrex Array 10 Clinical Applications Guide (http://cyrexlabs.com)

Positive antigen	Notes	Action
Potato, white, cooked *(fried)*	Combination of potato and oil; Cyrex's potato was fried in canola oil	Patient may be reacting to potato or oil; cross-reference canola oil for reaction
Sardine + anchovy	Commercially canned fish packed in olive oil	Patient may be reacting to fish or the oil; cross-reference olive oil for reaction

Adapted from: Cyrex Array 10 Clinical Applications Guide (http://cyrexlabs.com)