

New research shows how nutrition can help prevent certain diseases.

Can Food Change Your Genes?

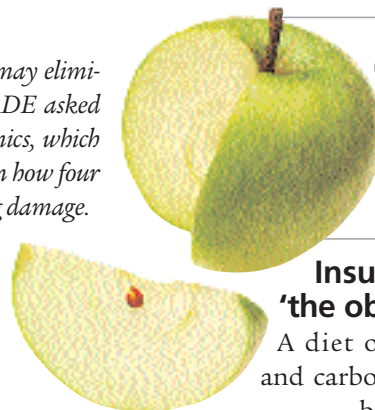
By Dr. Mark Hyman

A new field of medical science is showing that nutrition may eliminate disease by changing our very biochemistry. PARADE asked Dr. Mark Hyman—a leading practitioner in nutrigenomics, which studies the relationship between food and genes—to explain how four common conditions can be cured before they cause lasting damage.

IN THE FUTURE, A DROP OF YOUR blood placed on a special DNA chip will predict the diseases that lie dormant in your genes. Your doctor will then suggest a personalized set of lifestyle and dietary changes, as well as pharmaceutical recommendations. These changes will “turn off” the genetic trigger in your cells that begins the process of disease. Medicine will be able to deal with disease at the roots, rather than at the branches.

That future is not far away. Already, research in genetics is proving that it is possible to prevent as well as reverse chronic conditions that lead to disease and disability.

All of us are susceptible to certain illnesses because of our family histories—that is, our genes. But the field of nutrigenomics is demonstrating that, if we alter our diets and lifestyles early enough, our genes do not have to be our destiny. Take, for example, the following four conditions. Millions of Americans have a genetic predisposition eventually to develop one or more of them. But by changing our diets and lifestyle now, those genes will not be expressed. The conditions will be cured before they ever appear.



EAT WHOLE unprocessed foods and avoid refined sugars and carbs. That's the diet to which our bodies are best adapted biologically.

Insulin resistance: 'the obesity disease.'

A diet of refined sugars and carbohydrates—such as bread, white rice and flour products—leads to a rapid rise in blood sugar and a spike in insulin (a hormone that controls the metabolism of carbs). Over

Four common conditions can be reversed or prevented by what you eat.

time, you can become resistant to insulin's good effects and thus need more to do the same job. Insulin resistance is a major cause of weight gain, heart disease, cancer and dementia, and it often leads to diabetes. It also causes hidden inflammation throughout

"TURN OFF" the genes that promote insulin resistance—one of our nation's biggest health problems—by eating wild fish, whole grains and fresh produce.

LEAFY GREENS are a great source of folic acid and other nutrients that are important for optimal health.



the body, which, like a smoldering fire, damages our cells and organs and accelerates most of the diseases of aging.

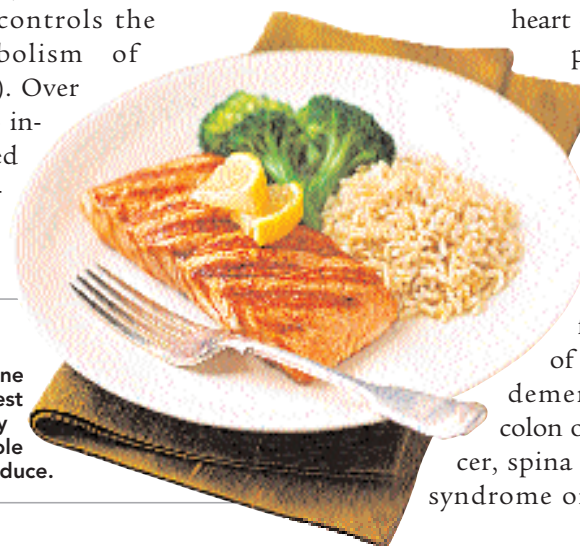
You may have insulin resistance if you have a family history of abdominal obesity, diabetes, gestational diabetes, early heart disease, high triglycerides or low HDL cholesterol. If you do, discuss with your doctor whether you should take a glucose-tolerance test, which measures both glucose *and* insulin levels.

What you can do. Reacquaint yourself with the diet to which our bodies are best adapted biologically. We can prevent or reverse insulin resistance by eating unprocessed food—fruits and vegetables, beans, nuts, seeds and whole grains. Include in your diet wild fish such as small salmon, sardines and herring. Avoid foods with added salt. Stay away from highly processed foods, particularly those containing high-fructose corn syrup and hydrogenated fats. This diet will “turn off” the genes that promote insulin resistance, obesity and inflammation and turn on the genes that restore weight and metabolism to normal for most people.

Folic acid deficiency: not just a problem for pregnant women.

The gene that increases the need for folate (or folic acid) affects up to half of Americans. Inadequate levels of folate can lead to dementia, many cancers, heart disease, osteoporosis, birth defects, autism and depression.

You may have folate deficiency if you have a family history of heart disease, dementia, breast, colon or cervical cancer, spina bifida, Down syndrome or depression.



Discuss with your doctor whether to take a blood test that measures homocysteine levels, which can identify folate deficiency. (When folate is low, levels of homocysteine rise.)

What you can do. Eat a diet rich in folic acid. Good sources include dark-green leafy vegetables—such as spinach, collards, kale and arugula—whole grains, asparagus and beans. Coffee, alcohol and smoking deplete folate and raise homocysteine levels.

About 800 mcg (micrograms) a day of folic acid is sufficient for most people. Vitamins B₆ and B₁₂ also are recommended to keep homocysteine at an ideal balance.

Low vitamin D: a result of lives spent indoors. It's well known that vitamin D is important for bone health, but that's just the beginning. Recent research has linked vitamin D deficiency to conditions as diverse as colon, prostate and breast cancers, multiple sclerosis, type 1 diabetes, heart disease, autoimmune diseases, Graves' disease, seasonal affective disorder (SAD) and osteoporosis.

While our ancestors were foraging and hunting, their skin produced the equivalent of nearly 10,000 IU (international units) of vitamin D a day. Now, when many of us spend most our days indoors, our bodies produce dramatically less: Even the average multivitamin contains only 400 IU—and many people don't even get that much. One recent study found that 40% of Americans were deficient in vitamin D. Plus, as we age, deficiency increases: 70-year-old skin produces only 25% of the vitamin D of 20-year-old skin.

Increased vigilance against overexposure to the sun's UV rays—which stimulate the skin to produce vitamin D—also has made it

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Can Food Change Genes?|continued

more difficult to get enough of this important nutrient. Sunblock prevents its production by the skin.

You may have vitamin D deficiency if you are dark-skinned. Your melanin may prevent absorption of ultraviolet radiation, which helps the body manufacture this vitamin. There is a blood test for vitamin D deficiency.

What you can do.

Dr. Michael Holick, professor of medicine and physiology at the Boston University School of Medicine and a pioneer in the study of vitamin D, recommends taking up to 2000 IU a day.

Dietary sources include oily fish such as wild salmon, mackerel and sardines, but supplements are essential.

Gluten sensitivity: the great masquerader. Most of us eat large quantities of gluten, which is the protein found in such grains as

wheat, barley, rye, spelt and oats. But 30% of Americans may develop some form of sensitivity to gluten. That's because they carry the genetic marker for celiac disease, which is an autoimmune disorder related to the consumption of gluten. (About 1% of our population has active celiac disease.)

This condition is dramatically underdiagnosed because it masquerades as many other diseases, including nearly all inflammatory and autoimmune diseases, arthritis, irritable bowel syndrome and other digestive disorders, anemia, osteoporosis, cancers, neurologic disease, depression, migraines, infertility, liver disease and more.

You may have gluten sensitivity if you have a family history of celiac disease, irritable bowel syndrome, autoimmune diseases or thyroid diseases. If you have any of the above conditions, ask your doctor for

We inherit from our parents not only genes but also many of our lifestyle choices.



Teach children good health habits early. What they eat now can affect their well-being in the years to come.

PHOTO BY HUTCHINGS/CORBIS; MODELS POSED FOR ILLUSTRATIVE PURPOSES ONLY

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a blood test for celiac disease and gluten sensitivity.

What you can do. If you test positive for gluten sensitivity or celiac disease, a gluten-free diet usually will completely relieve the symptoms. Many gluten-free products can be found in health-food and specialty stores.

What I've offered here is only a taste of the potential for nutrient therapy to prevent disease and create good health. Remember, more important than the genes

Follow the basic laws of nature and nurture your body, mind and spirit.

you inherit from your parents are the habits of theirs that you repeat. What you eat, how you live and how you handle stress all have an impact on your risk of disease, because these lifestyle habits influence

how your genes function. Follow the basic laws of biology and nature by nourishing your body, mind and spirit with the right ingredients (food, vitamins, minerals, water, air, light, love, sleep and exercise), and you will thrive. 

Note: The dosages I've recommended are higher than the current recommended daily allowances (RDA), which are based on the minimal amount needed to prevent deficiency diseases. However, research in nutrigenomics indicates that our needs may be much higher to prevent and reverse the diseases and to promote optimal health. Discuss with your doctor any questions you have about these conditions.



Dr. Mark Hyman is the editor of "Alternative Therapies in Health" and co-author of "Ultraprevention." His new book, "Ultrametabolism: The Simple Plan for Automatic Weight Loss," (Scribners) is out this month.

PHOTO BY JOHN FITZPATRICK

Taking Our Pulse

The PARADE/Research!America Health Poll

What Americans Say About Preventive Health

Have you taken any action to stay healthy as you grow older?

Yes: 82%
No: 17%

What are you now doing to stay healthy as you grow older?

Physical activity: 55%
Watch diet: 30%
Good medical care: 4%
More men say they're exercising, while more women say they're watching their weight.

How does your health compare with your parents' health at the same age?

Better: 48%
Same: 38%
Worse: 9%

What's most important in determining health?

Personal habits: 70%
Genes and inherited traits: 23%

Why do you think more people don't make health a priority?

Too busy: 43%
People enjoy unhealthy behaviors: 28%
Just too difficult: 13%

What do you think people would do if guaranteed five more "good quality" years of life?

See a physician regularly: 85%	Practice safe sex: 77%
Drive safely: 82%	Lose weight: 75%
See a dentist regularly: 82%	Manage stress: 72%
Eat a balanced diet: 79%	Exercise daily: 70%
	Moderate alcohol: 68%
	Quit smoking: 66%

Would you want to be genetically tested to determine which medications are most effective for you?

Yes: 62%
No: 35%

Would you want to know what your chances are of developing a disease?

Yes: 49%
No: 48%

Is it more valuable to conduct research to treat and cure disease or to prevent it?

Prevent: 51%
Treat and cure: 34%
(But 13% tell us they are equally important.)

Have you recently had a screening test for cholesterol, diabetes or cancer?

Yes: 75%
No: 25%
Just over half (53%) say they've made changes based on the result of these or other tests.

Have you tried alternate approaches to health?

Taken vitamins/supplements: 84%
Prayed: 74%
Meditated: 42%
Taken herbal remedies: 40%
Seen a chiropractor: 37%
Tried homeopathic remedies: 26%
Used acupuncture: 9%

PARADE and Research!America, the nonprofit organization that advocates for medical research, polled a cross-section of 1000 Americans. To see more complete results, visit researchamerica.org on the Web.

Check Your Heart Health

Cardiovascular disease produces few symptoms that can be felt. Here are some important ways you can protect yourself.



For more heart-healthy tips and to take the American Heart Association's interactive Learn and Live Quiz to get a "snapshot" of your risk, visit parade.com/livelonger and americanheart.org on the Web.

● CALCULATE YOUR RISK OF A HEART ATTACK

Ask your physician to use the Framingham risk score, which evaluates your blood pressure, cholesterol level and other factors critical to heart health.

● CHANGE YOUR LIFESTYLE

Spend at least 30 minutes every day being physically active. Put yourself on a diet that emphasizes fruits, vegetables, whole grains, low-fat dairy products, lean meats, poultry and two servings of fish per week.

American Heart Association 
Learn and Live™