

# HEALTH

## A Better Diet Through DNA Testing?

*Nutrigenomics Marketers Offer Personalized Kits; Some Question Effectiveness*

By RHONDA L. RUNDLE

**T**HE FIELD of nutrigenomics, which examines the relationship between genes and food, promises to explain why some people who gobble up cheeseburgers and french fries stay trim while others battle the bulge. But the unraveling of such mysteries is still many years away.

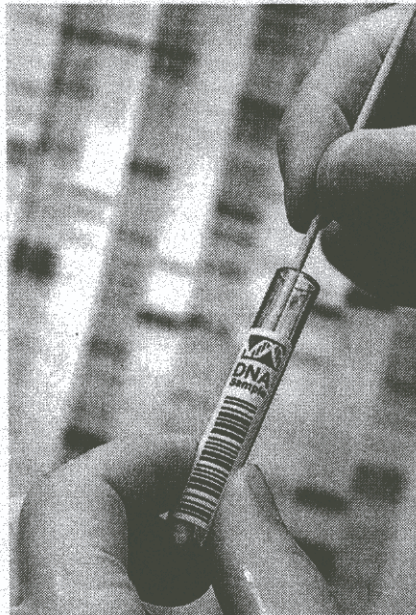
That hasn't stopped some laboratories, dietitians and Internet marketers from selling genetic tests as a scientific tool to promote better health. Consumers who spend hundreds of dollars on home-test kits receive a recommended diet that is personally tailored to them. The advice, including common-sense tips such as to eat more green leafy vegetables, tends to echo that of any sensible diet.

Market America, an Internet marketing company in Greensboro, N.C., sells a DNA screening analysis kit for \$249.95. "By using this cutting-edge technology, our customers will be able to use their own DNA to create a customized supplement and lifestyle program," the company claims. Dietitian Carolyn Katzin offers a trademarked "DNA Diet" through her Web site as well as the Center for Health Enhancement in Santa Monica, Calif. Prices range from \$420 online to \$595 at the clinic, which includes counseling.

Some scientists say entrepreneurs are misleading consumers about the power of such tests. The kits, usually distributed through the mail, collect information about only a small number of individual genetic variations, not nearly enough to be meaningful, the critics say. Scientists don't yet understand enough about how genes interact to translate test findings into valid dietary advice, they maintain.

"People will spend money for this, but in terms of science-based nutritional advice it's just too early," says Jim Kaput, president and chief scientific officer at NutraGenomics Inc., a fledgling company in Chicago. At this point, he says, the tests are "for rich people with an extra \$1,000 who want to say, 'I did my genotype.'"

People who follow the dietary recommendations that are already out there "will probably get the same benefit" at



DNA samples are analyzed in order to create individualized diets.

much lower cost, says Jose M. Ordovas, professor at Tufts University's Friedman School of Nutrition Science and Policy. He worries that precious funding for his nascent field could be jeopardized by premature and misguided efforts to commercialize the science.

Nutrigenomics, short for nutritional genomics, is the study of how genes affect an individual's response to food. These interactions may increase an individual's risk for diseases such as diabetes and obesity. Nutrigenomics is building on information that emerged from the international Human Genome Project, which identified about 20,000-25,000 genes. A related field is pharmacogenomics, which could revolutionize human medicine through personalized drugs and other treatments.

Dr. Ordovas likens the current state of nutrigenomics to our understanding of cholesterol 30 years ago. At that time, there was a recognized correlation between high cholesterol and cardiovascular disease. But human tests were conducted over the ensuing years to prove the value of anticholesterol drugs. Studies in large human populations will also be needed to show a benefit from putting someone on a diet based on their genes, he says. He's optimistic that international scientific collaboration will eventually achieve such goals.

Entrepreneurs counter that the evidence of links between some dietary defi-

ciencies and individual genetic variations is already compelling enough to justify proactive advice. Ivory-tower academics are overly cautious, they say.

"As time goes on, we will be able to tell a more complete story, but what we know isn't as likely to be overturned so much as just fine-tuned," says Howard Coleman, chairman of Seattle-based Genelex, a DNA testing company. Ms. Katzin, the dietitian, says that the tests are already benefiting consumers who are much more likely to comply with a recommended diet when it is personalized for them.

Genelex and Market America, the Internet marketer, distribute consumer test kits from Sciona Inc., a closely held company that recently relocated to Boulder, Colo., from the United Kingdom. Ms. Katzin uses the Genelex test. Market America and others sell tests under the Cellf name. Consumers are sent a test kit, which includes a cotton swab to rub on the inside of the cheek. They also are asked to complete a questionnaire about their diet and lifestyle.

After submitting the DNA sample and questionnaire, consumers receive a personal report. "Comprised of select nutrients that feature the highest quality ingredients, these supplements are based on what your genetic profile reveals as areas in your body that need special support," according to Market America's "MallTalk" product catalog. The pitch includes a footnote that "these statements have not been evaluated by the Food and Drug Administration."

Jim Bruce, Sciona's chief executive, says the company has sold about 10,000 kits in the U.S. and Europe over the past couple of years. They provide information about seven areas, including B-vitamin use and antioxidants, in which there is a scientific link between genetic variations and lifestyle, the company claims. "We think this is an enormous business opportunity because it's information that people need and deserve to get," Mr. Bruce says. Some distributors also sell nutritional supplements.

Critics worry that a little bit of knowledge can be a dangerous thing. "We might be putting people at risk" by increasing their intake of folic acid or some other nutrient without a good understanding of the interplay of genes, warns Alan M. Diamond, head of the University of Illinois at Chicago's department of human nutrition. Antibiotic resistance has emerged as a serious medical problem, he notes, because physicians have overused antibiotics before fully appreciating the risks.