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Scientists Look To DNA For Nutrition Advice

As a registered dietitian, Ruth DeBusk has eaten a healthy diet for a long time. As a geneticist, she wondered if she could do better.

So earlier this year, she had her DNA tested by a company that gives personalized nutrition advice based on genetics. The results indicated she needed more folate.

So DeBusk doubled her minimum amount of folate, a B vitamin found in leafy greens and citrus.

"I'm more diligent about being sure that I get it every day if possible, because it really matters," said DeBusk, who has written a book on nutrition and genetics.

"I'll actually make an effort to drink a glass of orange juice or eat an extra big salad in the evening, being aware it hasn't been one of my better folate days."

That's the way it's supposed to work in a field called nutritional genomics or nutrigenomics. The basic idea is this: There are genes that affect the risk of getting illnesses like heart disease, cancer, osteoporosis and diabetes, and the impact of those genes can be modified by what you eat. Everybody carries one version or another of each of those genes. So why not find out what gene versions you have and base dietary advice on that?

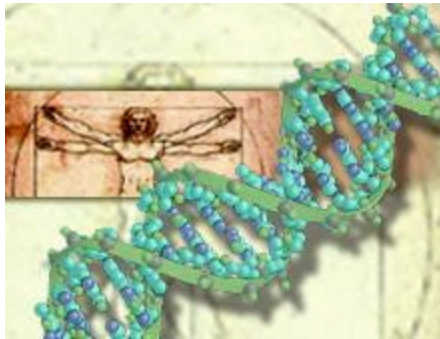
"Every time we go to the supermarket we're using educated guesses about what we should eat and what we shouldn't eat," says Raymond Rodriguez, director of the National Center of Excellence for Nutritional Genomics at the University of California, Davis.

In the future, more of that guesswork may be replaced with accurate, personal DNA-based dietary advice, which Rodriguez says is "rapidly emerging on the horizon."

But that time isn't here yet, most experts say. Nutrigenomics is still in its infancy, with plenty to be

learned, and it's not yet clear what role it may play in standard medical practice.

Most of the research targets heart disease and cancer, and scientists may be ready to deliver personalized diet recommendations in those areas within five years, said Jose Ordovas, director of the nutrition and genomics laboratory at the U.S. Department of Agriculture Nutrition Research Center at Tufts University in Boston.



"We have scientific evidence that the concept is right, that we can provide something along those lines in the future," Ordovas said. "We are not there yet."

No? You can walk into some pharmacies or grocery stores right now and pay \$99 for a DNA test kit that will get you personalized diet advice for heart health, bone health, or any of three other areas. It's from Sciona Inc., a small company based in Boulder, Colorado, that started offering DNA-based diet advice in 2001. Such tests are also available by mail order and on the Internet.

Sciona customers collect their DNA with a cheek swab, complete a diet and lifestyle questionnaire and send it in for analysis. Sciona encourages customers to review its advice with a doctor.

The company acknowledges that some scientists say it's too soon to offer such a service, but says its testing is based on solid research. Current testing focuses on 19 genes and the company is studying others, said Rosalynn Gill-Garrison, chief scientific officer and a company founder.

Sciona's approach basically starts with standard healthy-eating recommendations and modifies them when genetic analysis indicates a need for something more, Gill-Garrison said.

After a DNA test, Sciona may recommend steps like eating more broccoli or omega-3 fatty acids, *(Continued on page 2)*

Harvest Blend Regular

- Carrots
- Celery
- Broccoli
- Spinach
- Yellow Onions
- Green Leaf Lettuce
- Tomatoes
- Zucchini
- Watercress
- Gala Apples
- Bartlett Pears
- Bananas
- Kiwi
- Valencia Oranges

See the web site for details on our other options. Produce bag contents are subject to change based on availability.

You Don't Say

"The primary requisite for writing well about food is a good appetite." - A. J. Liebling

"The best number for a dinner-party is two: myself and a damn good head waiter." - Nubar Gulbenkian

"The age of your children is a key factor in how quickly you are served in a restaurant. We once had a waiter in Canada who said, 'Could I get you your check?' and we answered, 'How about the menu first?'" - Erma Bombeck

"In America, a parent puts food in front of a child and says, 'Eat it, it's good for you.' In Europe, the parent says, 'Eat it. It's good!'" - John Bainbridge

"It's bizarre that the produce manager is more important to my children's health than the pediatrician." - Meryl Streep

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she said, or limiting caffeine to protect against bone loss.

Gill-Garrison said studies show that people with a certain version of a gene called MTHFR tend to have high blood levels of a substance called homocysteine, which has been linked to a higher risk of heart disease and stroke. Studies also show that people with this gene version can reduce their homocysteine levels by taking in more folate, she said. So that's the advice Sciona customers with that gene version get.

High levels of homocysteine also can be spotted with a standard blood test at a doctor's office.

Ordovas said the trouble with anybody providing gene-based dietary advice now is that scientists don't yet have the whole picture of what genes should be considered. With current tests, it's like trying to size up a landscape by looking through a keyhole, he said. You can't tell what you're not seeing.

"At least in that very narrow region of our genome that they are looking, they have potential that they may provide some valuable information, and

it could benefit some people," he said. But advice based on current tests "can also be misleading because you are ignoring pieces that are very important," he said.

Rodriguez said he doubts anybody will be harmed by the current tests, and that they're beneficial because they get people to think about diet and lifestyle. But he said they remind him of the first VCRs or CD players to hit the market. "It is an expensive new technology ... and it will probably, in my estimation, become more efficient, more accurate and more affordable with time."

DeBusk, who said she has no financial ties to any of the companies, figures the time for DNA-based diet advice has come.

"The scientist in me says we shouldn't do this now, we need to wait another 20 years until many studies have been done," she said. But her clients want to know what the best science is right now, and "it's difficult to say, 'Come back in 20 years.' You can't do that. Do we know everything we'd like to know? No... Do we know enough to start introducing this type of technology and start the long process of educating people? I would say yes."

Recipes

Marinated Zucchini & Watercress Sandwiches

- 1 pound zucchini, trimmed and sliced paper-thin
- 2 red bell peppers, stemmed, seeded, and sliced paper-thin
- 1 bunch watercress, rinsed, patted dry, and stemmed
- 1/4 cup extra virgin olive oil
- 2 tbsp balsamic vinegar
- 1 tsp kosher salt
- 1 loaf of French bread, cut into quarters and split
- 2 oz Parmigiana-Reggiano, shaved paper-thin

The day before: Put the sliced vegetables and watercress in a large bowl. Whisk together the balsamic vinegar and the olive oil to make a dressing. Season to taste, but be generous with the salt and hot red pepper. Toss the contents of the bowl with this, making sure that none of the zucchini rounds have clumped together. Cover with plastic wrap and refrigerate overnight.

The following day: Remove the marinating vegetables from the refrigerator about an hour before making the sandwiches. Then, re-toss the salad and divide it among the sandwiches, including all the juices. Layer each with a fair share of the shaved cheese. Serve open-face.

Raymond's Okra Supreme

- 1/2 pound okra, cut into 1/2-inch rounds
- 1 small onion, chopped
- 1 medium tomato, chopped
- 2 to 3 Ritz crackers, crushed
- 1 egg
- bacon drippings
- 1/2 cup shredded Cheddar cheese

Using medium heat, sauté okra and onion in small amount of bacon drippings until crisp-tender. Add chopped tomato; stir, cooking, about 5 minutes. Sprinkle on crushed crackers. Blend lightly. Cook about 5 minutes. Reduce heat. Break egg onto the mixture. Blend lightly until egg begins to congeal. Shape into a flat mound. Sprinkle grated cheese on top and slip under broiler until cheese melts.

Tomatoes Rockefeller

- 3 large tomatoes, cut in half
- 2 tbsp finely chopped onion
- 2 tbsp minced parsley
- 1 tbsp butter, room temperature
- 2 cups fresh spinach, cooked, well drained
- salt and pepper to taste
- 1/4 tsp paprika
- 2 tbsp Italian seasoned bread crumbs

Place tomatoes cut side up in a lightly greased baking dish. Combine onion, parsley, butter, spinach, salt and pepper, and paprika; spread evenly over tomatoes. Top with the bread crumbs and bake at 375° for 15 minutes.

Stir Fry Minced Beef With Watercress

- 1/2 pound ground beef, minced
- 1 bunch watercress
- 2 tbsp ginger, mashed
- 1/2 tbsp shallots, mashed
- 4 tbsp soy sauce or tamari
- 1/2 tbsp sugar
- 1 1/2 tbsp corn flour
- sesame oil
- water
- salt and pepper

Mix up the marinade by combining 2 tbsp of soy sauce, 1/2 tbsp of sugar, 1 tbsp of corn flour, and 1 tbsp of sesame oil. Marinate the beef in the sauce for 10 minutes. Wash and trim watercress, drain dry and chop into tiny pieces. Heat wok with 2 tbsp of oil and stir fry chopped watercress.

Remove the watercress and rinse the wok. Add 2 tbsp of oil and add the ginger and shallots. Add in beef, stir fry again, then pour in fried watercress, stir fry for 2 minutes. Add sauce, stir fry for 1 minute, dish up and serve.