

# WHAT'S IN A GENE?

CANDY JONES

We all know our DNA is comprised of 26 chromosomes and a whole lot of so-called “junk DNA” harkening back to our ancient past. However, how does our DNA influence our future? This question seems to be on the lips of more and more people in the wake of the Human Genome Project, some of which was conducted here in New Mexico. More genetic work is being done in Santa Fe by a firm spearheaded by two former Duke University professors, husband and wife team Larry and Elizabeth Corder, who bring their expertise and PhD.'s in the fields of demographics and epidemiology to their venture: Matrix Genomics. I was to learn that the two fields are quite closely related.

Matrix Genomics is one amongst many in a field of companies offer-

ing DNA testing to assign risk for a variety of diseases. The company prides itself in providing a wide (50 fold) range of risk looking at a large number of genes in determining individuals' genetic risk for Alzheimer's, Breast Cancer (Brac I, and Brac II type excluded, due to intellectual property\*), and Acute Myocardial Infarction (heart attack). In layman's terms, an individual wishing to be proactive with their health can contact Matrix Genomics on their website (matrixgenomics.com) and order a test or tests, which will be sent to them via mail. The home tests are simple; your test kit includes a swab, which you rub repeatedly along the inside of your mouth along the inner cheek. You then send off your kit to their lab. Within a few weeks, your DNA results are reviewed by Matrix Genomics and a genetic risk

score will be assigned indicating the likelihood of developing any one of the three conditions. The cost of the tests varies from roughly \$679.00 for all three tests, \$569 for two, and \$349.00 for just one.

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criteria that often serve to make a risk a reality. There is evidence that our genes can be “turned on” by “promoters,” chemicals that can be influenced by environmental causes such as exposure to pesticides leading to Parkinson's disease, or exposure to ionizing radiation leading to cancer. That is to say the promoter cells once activated turn on our genes, which increase our likelihood of developing a disease to which we are predisposed.

But what of issues of privacy and civil rights as it pertains to DNA testing? Well breathe a sigh of relief. Congress actually put your tax dollars to work and passed the Genetic Information Nondiscrimination Act (2008) also known as GINA. Under that act, an individual's DNA data is protected as a civil right in respect to employment and health insurance. We should expect some interesting developments, however, in case law as pertains to this new legislation. What is not covered is the civil rights of the individual as pertains to DNA and life insurance.

What does Matrix Genomics see as its future? Larry Corder says that with developing technologies his firm hopes to make available more tests for more diseases. Scientific advances are needed before Matrix is willing to take on more, but the science in the field is developing quickly. Corder went on to say, “Some diseases run together causally, like heart and diabetes and Alzheimer's with the inflammation of the brain.” In the future, he predicts we can expect to see genetic testing as one of the procedures personalized medicine will be consulting regularly.

\* In addition to having a higher risk of developing breast and ovarian cancer, women with mutations in either BRCA1 or BRCA2 tend to develop the disease at a much earlier age than women in the general population

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What are you getting for your money? This is a reasonable question in a field that is currently unregulated by the F.D.A., so, “Buyer Beware”. Whomever you choose to have test your D.N.A., Larry Corder suggests considering these three questions:

1. Check on how many genes are being looked at in the testing. Matrix Genomics looks at upwards of 10 genes for Alzheimer's, 12 genes for Breast Cancer, and upwards of 14 genes for Acute Myocardial Infarction.
2. Determine if the reaction amongst the genes is being reviewed. Many firms do not do this; Matrix does.
3. Find out the range of risk that the provider offers. Matrix offers a risk range of 50 degrees.

Many might ask, why test at all?

Being aware that a disease might be just around the corner leads to vigilance. Vigilance often leads to proactivity. With a high-risk score on the table for any of the above-stated diseases, individuals can work with their doctors and other health care providers to take steps, in some cases, to lessen the environmental

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