

DNA Testing Accuracies

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Shelton Chiropractic &
Wise Healings by Design

You've DONE a consumer DNA Test and are concerned about the results...

You have every right to be concerned, here are just some of the reasons why:

Although only one company is approved to share information about medical risk for some health conditions, nearly all companies share the raw data; research finds nearly 40% of medical data from these tests may be false positives. Your DNA contains deeply personal information about your health, personality and familial history. This information can potentially be used to discriminate against you in the workplace, affect your ability to acquire insurance policies and can even be sold, without your knowledge, to research companies.

The number of people requesting a direct-to-consumer DNA test during 2017 more than doubled from one year prior. According to Ancestry.com they claim the largest DNA database with more than 7 million people's DNA stored.¹ While tests like these are highly advertised and an incredibly popular way of determining your ancestry, these at-home tests may provide false health information and even place your privacy at risk.^{2,3}

Progression and advancements have occurred in science beginning all the way back in the 1920's when the method first used to identify people and determine relationships was with blood typing. In the 1970s technology had advanced to using tissue typing called

HLA, or human leukocyte antigen protein that was present on all tissues except within a red blood cell.

In the 1980's the RFLP, or Restriction Fragment Length Polymorphism analysis technique was developed which became the first genetic test using DNA. In our current decade (2010), researchers are using next-generation sequencing or massively parallel sequencing as the newest technique for genetic analysis.⁴

DNA may potentially be used to map out your family tree, determine the ancestry of your dog, solve crimes or help your physician identify any genetic component to a health condition, such as whether or not a woman carries the HER2 gene, knowledge of which could help provide a more focused and specific treatment.⁶ However, while solving crimes and identification of specific proteins to drive treatment protocols are completed in highly regulated labs set up to protect your privacy, direct-to-consumer DNA tests are not.

In a limited study completed by Ambry Genetics,⁷ a small medical lab in California, researchers discovered using at-home DNA tests to assess for risk of certain diseases or other non-phenotypic traits, such as eye color, resulted in a 40 percent false positive reading.⁸

What Ambry found was consumer labs test genotype DNA rather than sequencing it, and used just one method. Although this method is cheaper and quicker than clinical sequencing, it is also less effective and accurate than the clinical lab method of sequencing and using another test to confirm a positive variant.

A spokesperson from 23andMe, an at-home DNA test company, discussed the study with a reporter from Gizmodo, telling them 23andMe customers receive a warning that the raw data is not necessarily accurate or appropriate for medical use.⁹ Yet how many patients have brought these results into their physicians and had treatment recommendations given, based on potentially inaccurate results?

As 23andMe is the only company with FDA approval to market genetic health risk tests for certain conditions, many companies simply offer raw data without an explanation and post a general disclaimer that the results are not verified for accuracy.

The authors of the featured study noted false results about genetic disorders might lead people to better preventive care, but may also create needless anxiety over a nonexistent issue.¹⁰ For instance while you may have a genetic marker for a health condition, you may never develop it and vice versa. Genetics plays a role in disease development, but in many cases your lifestyle choices and environment play a larger role. Said differently, genetics loads the gun and environment pulls the trigger.

Your DNA is your most personal data. In a day and age where many large companies are unable to keep passwords and credit card numbers safe, is it realistic to believe they will be able to keep your DNA data safe?

If testing is what you are looking for then you have come to the right place, set up an appointment today to speak with one of our healthcare professionals. Testing is the key to finding answers and getting great results. We look forward to helping you achieve your health care goals.



References:

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- 10 Newsweek, April 2, 2018