



Our genetic make-up helps to determine how our body will respond to and process (metabolize) medications and drugs. By evaluating an individual's genetic variation in specific genes we can determine if a medication will be effective or cause serious toxic side effects. This is a relatively new branch of precision medicine called pharmacogenomics or pharmacogenetics.

Several organizations ([CPIC](#) and [PharmGKB](#)) have been working to develop guidelines for when to do genetic testing and how to modify medication dosage when an individual carries a variant gene. However, there are many drug/gene pairs that do not yet have recommended guidelines so selecting a reliable laboratory is critical to getting useful information.

Also keep in mind that there are many factors that affect our response to medications. Some of these are intrinsic, meaning that they are factors that are inherently part of us or controlled by our body. Examples of these are age, gender, race, and genetics. Some factors that affect our response to drugs are extrinsic, meaning that they come from outside of our body. Examples of these are diet, nicotine or alcohol use, and other drugs that we take. So it is important to remember that a genetic test may still not give you the whole story.

## Related Articles

- [Tumor Testing](#)

We often like to say cancer is always genetic but not always hereditary. What we mean is that cancer develops as a result of accumulated DNA damage, also called variants. Most of the time those variants are acquired from a variety of different sources over the course of a lifetime...

- [Predictive Testing](#)

Predictive tests can provide information about how a patient may respond (or be resistant) to treatment. Some DNA variants that lead to cancer also make the cancer cells susceptible to the effects of certain drugs. These drugs are called targeted therapies, because they target the genetic changes as a way...

- [DTC Testing](#)

Direct-to-consumer (DTC) testing is a fairly new category of testing in which genetic tests are made available to the general public without requiring an ordering healthcare provider or insurance coverage. Saliva specimen collection kits are mailed to a consumer who sends it back to a laboratory, and then receives a...

- [Carrier Testing](#)

This type of testing involves looking for DNA changes in very specific genes which are

associated with autosomal recessive conditions. In these recessive conditions a carrier does not have any symptoms, but if a couple decides to have children and they are carriers of the same genetic condition there is...

- [Ancestry Testing](#)

There are three different types of technology used for ancestry testing: Y-DNA, mitochondrial (mt) DNA, and autosomal DNA. Males carry an X and a Y chromosome, whereas females carry two X chromosomes. Males will give their sons the Y chromosome and their daughters the X chromosome which means a Y...