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The Next Generation's Perception of Genetic Testing

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Don't miss it! An [active discussion](#) of the good and evil sides of genetic testing is now taking place over at [this Eye on DNA post](#) (with further discussion at [Gene Sherpas](#)). Many of the commenters are American college students who have some interesting viewpoints. Some are at one extreme advocating total [clamp down and ban](#) on direct-to-consumer genetic testing. And others are on the other extreme with [little to no faith in government regulation](#).

Ashton raised some [interesting points](#) about [children and genetic testing](#):

Another reason why DTC raises my suspicions is not knowing who has access to DTC? Is there an age requirement, and if so, what is it and how do you determine the age at which you can have a genetic test? If genetic tests are not available to peoples under eighteen, can parents sign for their children to have the tests? What if parents decide to force their children to take the genetic tests without their consent? On the other hand, let's say you can get a DTC at any age. Does a child, anyone under the age of eighteen, have the ability to decide what to do with the information gained from the test?

VT also issued [a list of "shoulds"](#) to both companies and the government.



In the pre-college crowd, the American Society of Human Genetics (ASHG) studied 500 essays submitted by high school students to the National DNA Day Essay Contest in 2006 and 2007 ([pdf of study](#)). They found that a significant number of of essays demonstrated "obvious" misconceptions about genetics. (More from [The Genetic Genealogist](#).)

Many high school students who submitted essays to the contest appeared to be unaware of polygenic inheritance and believed that "one gene is always responsible for one trait or one gene with one mutation always causes one disease." This misunderstanding is particularly worrying if these students are future (or perhaps even current) consumers of genetic testing.

Due to advances in genetic screening, genetic technology, the promise of individual genome sequencing, and other progress in the field of genetic research, it is more important than ever for the public to have a critical understanding of basic genetic information. This understanding will be vital for individuals to be informed advocates for their own health care when it comes to providing consent for testing and treatment as well as for being able to understand and interpret test results accurately. This will become an even greater need as private companies begin to provide genetic tests through mail order such that individuals can test themselves at home without the consultation of a physician (Advisory Committee on Genetic

Testing 1998). For patients to understand the tests and results, and their own risk, they must be able to understand the biological underpinning of the tests themselves. Furthermore, as genetic research becomes more firmly embedded in medical practice and care, the public must be able to make informed decisions regarding specific pieces of legislation. Multiple studies, including this one, demonstrate that the current classroom methods for genetics instruction are not developing a citizenry with accurate mental models of inheritance and the genetic basis of disease (Henderson and Maguire 2000).

Rather than being dismayed at the current state of understanding among the next generation, I am encouraged that genetics is being taught and discussed. The level of understanding expected of students today is nothing like what I taught myself 25 years ago for my grade school science fair project.

Back in 1983, the Human Genome Project hadn't been launched yet and it was the year Kary Mullis invented PCR (according to the [Genome News Network](#), although other sources point to 1980). My elementary school didn't have much of a science education curriculum let alone labs where we could try to extract DNA or practice RFLP DNA fingerprinting. So I was left to my own devices without even the Internet to help me do research! *GASP*

My genetics science fair project had a three part display board. On one section, I had diagrammed [Mendel's pea experiment](#) and on another section, I created a family tree showing pictures of my mother and father plus baby pictures of my sister and me. The most difficult part of the project was [creating the DNA helices out of pipe cleaners](#) for the sides and rungs of the "ladder" and construction paper for the bases. Later on in eighth grade, our science teacher allowed my lab partner and I to experiment with *Drosophila melanogaster* crosses (sadly, we drowned most of the fruit flies with ether).



The contrast between my early genetics education and [genome science fair project ideas](#), such as those listed at [Science Buddies](#), is so huge as to be embarrassing.

What was your first educational experience with genetics?

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