

# Positive and negative sides of the use of genome sequencing

[Science](#), [Genetics](#)



One of the ethical issues raised during this unit was based around knowing your genome. Many people believe that new DNA based companies such as 23andMe and FamilyTreeDNA, the availability of a person's DNA will be easily available for everyone to see. This raises concerns among people as to if DNA will take over our lives and begin to make our decisions for us.

One point that is raised is that tests conducted by companies such as 23andMe will cause unnecessary worry to the people whose tests come back as a high risk for a disease that they may not be able to prevent. One example of a situation like this is if someone gets their test results back and it turns out that they have a high risk of Parkinson's disease. There is nothing the person could do to change their lifestyle to make it a lower risk, there is nothing the person could possibly do except live with the knowledge that one day they will develop the disease and most likely die because of it or lead a harder life. This is a point that is raised often when talking about knowing what is inside of our DNA, if a disease like this is already in your genes then why waste your time worrying about the inevitable. Serious physiological problems can arise when people not equipped to handle the information see what they have coming. On the other hand, on the site 23andme has a special tab for when you are about to open your Alzheimers and Parkinsons disease results that is separated from the rest of the results. People can choose to either open it and see if any variants were detected or keep it closed if they are not ready to know about the more serious medical conditions that they tested for (23andme). The site also recommends to consult with a genetic counselor for more information about the diseases they tested for and if they may need support on what to do next.

One more point that has arisen since the use of genome sequencing is that soon we will also be able to alter our children to have the characteristics we like. This concern mainly arises from the movie *Gattaca* where choosing the characteristics of children was normal and discrimination against people with bad genes was a regular occurrence. The elite children in *Gattaca* were bred to succeed and had their intelligence determined before birth. This movie came out in 1997, right in the middle of the Human Genome Project and sparked much controversy whether if the movie was going to become our reality. Characteristics such as height, skin color, hair color, and obesity could be changed however the parents liked. This would become a sort of design system, where parents would be able to design their babies, breaking away from the natural randomness that genes create. However, these concerns are valid but we are not that close to achieving that level of the human genome. In fact people might think that only one gene makes up height but the U. S National Library of Medicine states that, " More than 700 such gene variants have been discovered and many more are expected to be identified". This means that more genes play a part in height and it is not something that scientists have an influence on. So modifying height of obesity is more difficult than previously imagined. Scientists would have to dig to find all of the genes that make up only one of your various traits.

Another argument that is made when it comes to genome sequencing is that anyone would be able to see your genetic information. If everyone is able to take a look at your genetics then maybe when you're applying for a job they see that you have an increased risk of a disease and decide to not even look

at your application because of it. If you are going out on a date instead of looking at your personality your date checks to see if you have good genes or high risks to certain diseases. It can also apply to insurance companies. If an insurance company was able to get your genetic information and they see that you have a increased risk for cancer they will not want to insure you because of the potential money loss you might bring to them. But, if your information was widely available doctors would be able to diagnose and help patients easier and quicker than before. It would help in the process of picking out the best medicine for the patient and the best course of treatment. It would also allow doctors to give better recommendations in terms of a person's health. Such as informing them of possible diseases the patient may have and if they are actionable genes then set the patient on the best course so that they can start living healthier and more cautiously.

One last argument that may be brought up is that companies that you test with can sell your genetic information to other companies. Your information could be useful for someone else and just by spitting in a tube the company now has your health, family history, and much more. One example of this would be the AncestryDNA terms and conditions. In the terms and conditions it states that, " By submitting DNA to AncestryDNA, you grant AncestryDNA a royalty-free, worldwide, sublicensable, transferable license to host, transfer, process, analyze, distribute, and communicate your Genetic Information...". What they try to say here is that your DNA sample is now owned by them and they can use it however they want. Even so, the CEO of 23andMe, Anne Wojcicki, stated herself in a interview on Too Embarrassed to Ask that " At

any point in time, you call 23andMe, or you email in, and say, ' I want to delete all my data,' we'll delete all your data". She also said in the same interview that they never give any of your information out unless you give consent.

I agree with the side that states that genome information will prove highly beneficial and it has more positives than negatives. I believe that if improved information on our DNA starts being able to be widely available to everyone then new laws and regulations will also come with these improvements. Like for example if genetic information on people does become available for everyone to see like in the movie Gattaca the United States will make up new anti-discrimination laws for genetics. This would make it so that companies can not throw your application away because you have a high risk for a disease or another condition. I think that genome sequencing is highly valuable to not only just the person it belongs to but it can also be helpful in the medical field. Scientists can use genetic information for good and of course with consent from the person that the DNA belongs to. The CEO of 23andme said that they do not sell any genetic information or do anything to it without your consent. You can also ask for your information to be deleted and this I believe is really giving the consumer control of their own DNA. This can encourage more people to take genetic tests and figure out if their future child may be affected by a gene that one of the parents carry. For example, if a couple takes a genetic test and they see that they are both carriers for a specific disease that would mean that their child has a high probability of getting this disease. This way they can figure out what the

best options are for them in terms of having children. I agree with genome sequencing because the most important part of knowing your genetic information is to help better your life. For example, if someone took a 23andme test and it came back with the result that you were highly likely to get Type 2 Diabetes you could then change your lifestyle to make sure that you did every possible thing to make sure that you lowered your chance of getting that disease. If we could continue helping people in that way then I think genetic information could be more valuable than people might think and will help us more in the long run.