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As some of you may have noticed over the years, I am personally inclined to the health sciences. Ever since the automatic mapping of the Human Genome via polymerase chain reactions (PCR), science and technology have become harder and harder to differentiate. The benefits of technology to medicine have been innumerable, from the development of the tools necessary to manipulate stem cells to the invention of the automatic implantable cardioverter-defibrillator (AICD) that can detect irregularities of the heart beat and restore them with an electric shock. Now, just past the turn of the century as we are poised to extend that partnership further, it is important to remember the ethical issues that accompany seemingly every advance in medicine: ethics.

It has long been noted by practitioners around the world that different people react to different doses and different treatments. From time to time this difference is attributable to age, gender, or race. However, there are differences even when all other elements seem to be the same. What exactly is it that defines our distinct dissimilarities when the usual suspects are ruled out? Our DNA.

With the advent of detailed chromosomal mapping, geneticists are able to track and identify the specific genes that, when malfunctioning, contribute to various disease conditions. Some of these genes know none of the previously mentioned discriminations, and some can be directly correlated to specific traits. As technology and medicine work side by side to make it possible to have affordable, accessible genetic testing that would warn practitioners in advance of the possible risks or complications to individuals coinciding with accepted treatments, it is important to look at both sides of the issue. Yes, it would be great to detect the likelihood of developing certain cancers so that you could fight them in advance, or to be able to personalize drugs to avoid over- or under-dosing those with adverse responses to normal drugs, but at what price to privacy? Who gets access to that knowledge, and what are they allowed to do with it? Several prominent issues come to mind: 1) will there be equal access to treatment for those with rare genetic responses or those who need tailored (read: expensive) procedures? It is already common for many pharmaceutical companies to have little to no money to spend on R&D for rare diseases. If they did, could everyone who needed the drug be able to pay the inflated price to offset the research costs? 2) Would those who have genetic anomalies that give them a tendency towards certain diseases be able to get health insurance? Private insurance agencies may use genetic fingerprinting to deny coverage to those who need rare or tailored drugs and 3) would the pharmaceutical companies be legally obligated to warn the public as to the "genetic risks" of their drugs? That would call for millions of large-scales tests, sky-rocketing R&D costs that are already considerable and possibly restricting the number of beneficial drugs that are able to get FDA approval.

As with most aspects of science, it is a case of look before you leap. Fortunately or unfortunately, depending on how you look at it, science and technology are racing for the ledge; the prior knowledge of where they are headed will hopefully give us a chance to fully evaluate the consequences of our actions/advances before it is too late.

Jen Idziorek, guest contributor