Making Babies

The benefits and harms of genetically modifying humans

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By 2030, “designer babies” will be common, hypothesized Paul Knoepfler, PhD, a stem cell and genetics researcher in the department of cell biology and human anatomy at the University of California, Davis, at a recent TED Talk.

These genetically modified infants would enjoy enhanced physiology that would make them more beautiful, stronger, smarter and healthier than their mothers and fathers.

In a few countries, the technology is being used to overcome genetic disorders and to address the infertility issues of couples unable to have children by conventional methods. But many voice ethical concerns about the process.

Recently, scientists in the United Kingdom and Mexico used the precise gene editing technique CRISPR to remove unhealthy mitochondrial DNA from women’s eggs and replace it with healthy genetic material from donor eggs, in essence combining the DNA from three different people. The strategy prevented babies from being born with congenital disorders. Additionally, in Ukraine, researchers used the same process to enable an infertile couple to give birth to a healthy child.

Clearly, the technique is a godsend for addressing these types of health issues. Nonetheless, controversy casts a shadow on the procedures because some believe gene editing will create as many problems as it solves. Knoepfler feels editing DNA will become a new version of eugenics—the science of improving a human population by controlling mating to increase desirable genetic characteristics in offspring—that can lead to a host of negative consequences. Knoepfler worries that some who support this outlook want to use CRISPR as a tool.

Others concerned about the innovative science stress that before these procedures are carried out on humans, more research should be conducted to confirm the safety and effectiveness of the gene editing process and to guard against unwanted mutations so people don’t get sicker.

But the argument also transcends treating diseases by simply adding and removing bits of DNA. Critics believe the process would stigmatize people with disabilities and divide social classes based on who could afford access to these therapies. In addition, some feel that a distinction must be made between using gene modification to address illnesses and applying the technique to enhance healthy human beings.

“When we are going about hacking the human code, I think all bets are off in terms of what might come of that,” Knoepfler says. “There would still be dangers. And we can look in the past to other elements of transformative science and see how they can basically go out of control and permeate society.”
