## How can we best consider the consequences of altering a human genome?

The advent of CRISPR/Cas9 again sees a biomedical technology challenging norms and raising concerns. CRISPR/Cas9 makes it comparatively easy to modify germ-line inheritance by inserting, deleting or altering bits of DNA. It may be possible to make these alterations quite precise, with no undesired changes in the genome. Nevertheless, such changes would be inherited not only by the next generation but by all subsequent generations. Thus the decision to alter a germ-line cell may be valuable to offspring, but as norms change and the altered inheritance is carried into new genetic combinations, uncertain and possibly undesirable consequences may ensue.

It is important to put this new capability and its potential applications into context. There are two types of germ-line modification to think about. One aims to eliminate a defect responsible for a serious disease, an outcome most would view as an unalloyed good.

If we could assure that a child of afflicted parents did not inherit Huntington's Disease, for example, that would be a blessing to the child, to the parents and to society. At present, there are several conceivable paths to achieving this end. One scenario might be to make the necessary genome modifications in cells that can be converted to eggs or sperm, where the desired changes can be verified before they are used to create embryos by conventional in vitro fertilization and implantation.

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