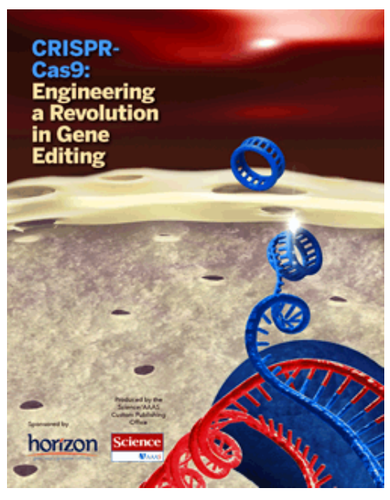
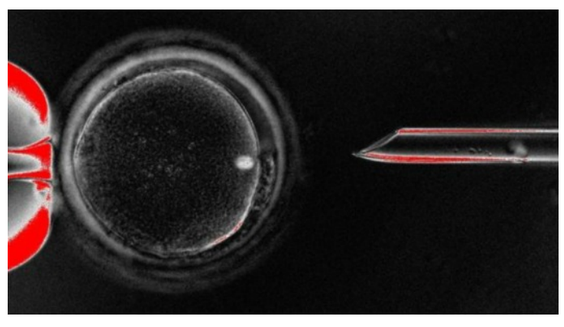
Human Gene Editing – The Unthinkable has Become Conceivable.

Completion of the human genome sequencing project (1990-2003) and dramatic advances in DNA sequencing technology have led to a wealth of new information on the genetic basis of human diseases. Nowadays, your full genome sequence can be determined in about 3 days (Veritas Genetics) and the results delivered to your SmartPhone at a cost of less than $1000 !
There are more than 4,000 known, inherited, single gene conditions and the use of genome editing in reproductive treatments could prevent the transmission of some of these conditions (e.g. thalassaemia or cystic fibrosis) to future generations, by making changes to the DNA of a very early stage embryo that will be replicated in all cells in the body as it grows.



Recently, a powerful gene-editing technology known as **CRISPR-Cas9** has raised a furious debate about whether and how gene editing might be used to modify genomes of human embryos. Changes that would be passed down to subsequent generations would breach an ethical line that has been considered un-crossable.

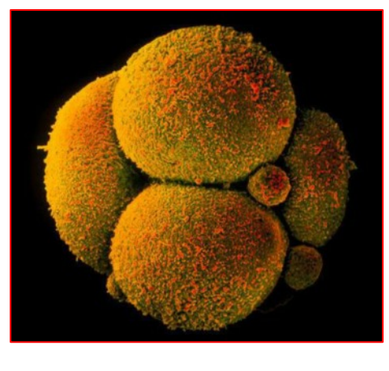
Emerging technologies are already testing the margins of what some people consider acceptable. Mitochondrial gene replacement therapy, a procedure which replaces faulty mitochondrial genes in the egg of an affected mother with those from a donor, was approved last year in the UK for people who are at risk of this genetic disorder. It is hoped that this will prevent the transmission of mitochondrial disease from one generation to the next.



Historic decision allows UK researchers to trial 'three person' babies (Nature, December 2016)

Gene editing therapy:
Layla became the first person in the world to receive a single vial of gene-edited cells from a stranger to attack her cancer.
Great Ormond Street Hospital November 2015

International Summit on Human Gene Editing Recommends Against Human Germline Alterations At This Time, Calls For Further Research – December 2015



U.S. panel gives yellow light to human embryo editing
The US National Academy of Sciences and National Academy of Medicine have said that **gene editing of the human "germline" - inherited DNA - should not be seen as a red line in medical research (Science February 15th 2017)**

"Human genome editing holds tremendous promise for understanding, treating or preventing many devastating genetic diseases, and for improving treatment of many other illnesses"……Alta Charo (U.Wisconsin)