Connecting the Dots and Drawing a Line
Dilemmas in 21st Century Reproduction

Rapidly advancing human biotechnologies can offer new options for family formation, medical treatments, and other potential benefits. But safety, effectiveness, and equitable access must be ensured. Some uses are controversial, such as embryo screening for sex selection. Others in the pipeline are widely considered unacceptable because of health and safety risks—especially to women and resulting children—and concerns related to social justice and human rights. What is the landscape of these technologies, the links between them, and the lines we should not cross?

Intended Parents
People who want to have a child. Assisted reproduction provides new opportunities for people who are experiencing infertility, or who are LGBTQ and/or single.

Adoption
In Vitro Fertilization (IVF)
Using own egg & sperm
Using donor egg & sperm

Egg Providers
Women who undergo hormonally induced surgical egg retrieval.

Traditional surrogacy
Gestational mother undergoes insemination using the sperm of intended parent or donor, using her own egg makes her genetically unrelated to the resulting child.

Demand Surrogacy
Gestational mother creates pregnancy and embryo transfer; using sperm/eggs of intended parents/donors makes her genetically unrelated to the resulting child.

Egg freezing for postponed pregnancy via IVF, for self or donation.

Genetic Testing
Pre-implantation genetic diagnosis (PGD) tests IVF embryos, permitting selection and “de-selection.” Developed to prevent transmission of serious inherited diseases; also now used for less serious conditions and to select desired traits (notably sex selection).

Prenatal testing of fetuses including amniocentesis and genetic testing of fetal cells found in pregnant women’s blood.

Egg freezing for postponed pregnancy via IVF, for self or donation.

Scientific Research
Egg freezing

Human egg retrieval
to develop gene therapies for patients by modifying DNA in their own cells and tissues (other than eggs or sperm)

Reproductive human cloning
To create a child genetically identical to an existing or deceased person.

Reproductive gene editing (human germline modification)
Modifying DNA in eggs, sperm, and/or embryos to create genetically modified children. Changes (intended and unintended) would be inherited by all future generations. Though proposed by some to prevent transmission of serious genetic diseases, this can already be done via PGD—without the extreme safety and social risks.

Designing Babies? A New Eugenics?

Human biotechnologies are social and political matters, not just scientific ones. Who has access and who does not, who can hire and who must provide, who will gain and who will not? Who decides what is “safe enough,” or whether to proceed when significant social harms loom? How might particular uses of these technologies reinforce existing racial inequalities or shape the way we value or stigmatize people with disabilities? Procedures that would engineer the traits of future children and generations are currently prohibited in dozens of countries. How do we respond to those promoting their use? Grappling with these questions is crucial: the decisions made now will affect all of humanity.

To learn more about 21st century reproduction and family formation, please visit surrogacy360.org.
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