

Name: _____

TOC#

In-Vitro Fertilization and Designer Babies

Brainstorming:

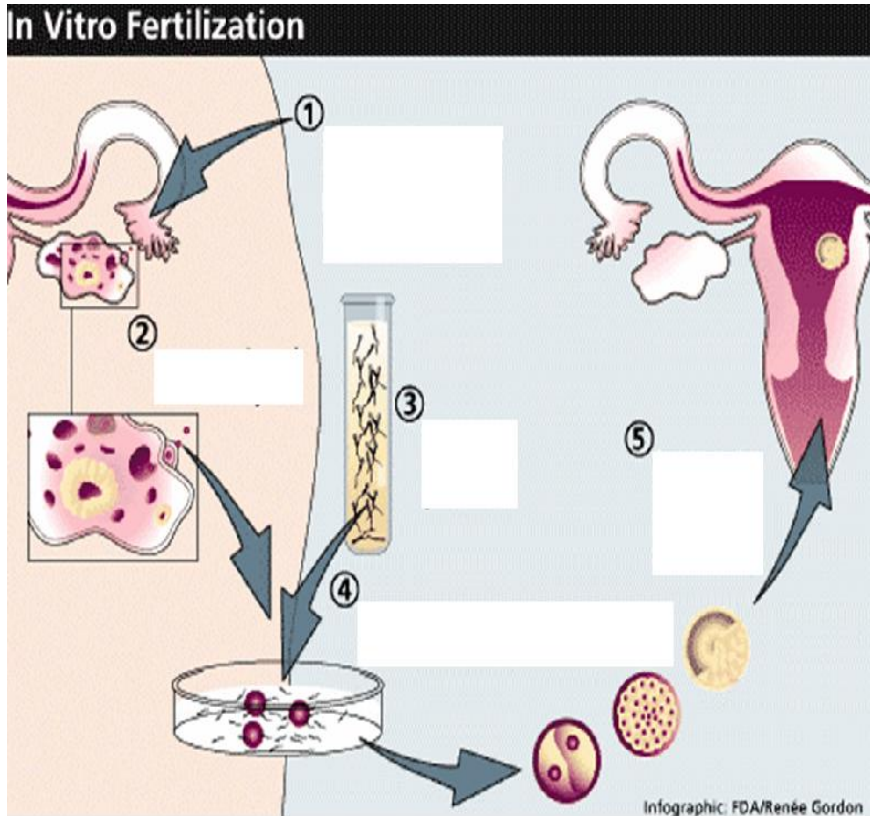
- a. With your group, identify where you have heard the term “In-virto fertilization” (often abbreviated IVF). Create a list of terms and connections in the space below. Based on your existing knowledge, how do you think this process is completed?

- b. What do you think a “designer baby” is? What sort of characteristics or traits might a designer baby have?

Group discussion: Use the space below to write down ideas or connections from other groups that you didn't know.

IVF Powerpoint Notes
(oooo aaaah, yes in class)

Label the actual steps used to create a baby using in-vitro fertilization on the diagram below and describe each step. Put a star next to the steps that would be used to create a “designer baby” using in-vitro fertilization.



- 1.
- 2.
- 3.
- 4.
- 5.

Infographic: FDA/Renée Gordon

<p>Explain what Sex Selection is:</p> 	<p>Explain what PGD is:</p>
--	--

How PGD/Sex Selection Works:

- Step 1. _____ to collect and fertilize your eggs.
- Step 2. Embryo is grown in the lab for two - three days until _____

- Step 3. A trained embryologist _____ from the embryo.
- Step 4. The cells are tested to see if the embryo _____
_____ in the family.
- _____
- _____
- _____
- Step 5. Embryos _____ are transferred to the womb to allow them to develop.

Actual Uses of PDG

Read the following two articles about PDG/Sex selection.

- Highlight any information you find interesting or shocking.
- Underline an information you think is an argument against PDG/Sex selection.
- Star any information you think is an argument for PDG/Sex selection.

When you are finished, answer the reflection/opinion questions

Article 1:



'Designer baby' born to UK couple

A boy has been born to a British couple who want to use stem cells from his umbilical cord to treat an older brother with a life threatening blood disorder.

Michelle and Jayson Whitaker's baby, Jamie, was genetically selected while he was still an embryo to be a near perfect match to four-year-old Charlie. The couple went to an American clinic for test tube baby treatment because the selection procedure is not allowed in the UK. It is not the first UK baby selected to help cure a sibling - a couple whose child was suffering from leukaemia and needed a bone marrow transplant took the same route in 2001.

Other babies "designed" to help their siblings have been born in the US. The UK doctor treating the Whitakers, Mohammed Taranissi, says he is aware of dozens of other couples who want to undergo the same procedure. "I just hope this will bring hope to everybody else in the same situation. Maybe in a year or two down the line we will be looking at a standard procedure rather than something that we have challenge and go to court to try to make it happen," he told the BBC.

Jamie was born by Caesarean section at the Jessop Wing of Sheffield's Royal Hallamshire Hospital on Monday and his arrival will re-ignite the debate about so-called designer babies.

Dr Lana Rechitsky from the Reproductive Genetics Institute in Chicago, who matched the Whitaker tissues, told the BBC Jamie was the second baby born in Britain as a tissue match. But the condition of the sibling of the first child has gone into remission and treatment had not been necessary so far. Jamie's brother suffers from a rare and potentially fatal form of anaemia, which requires a regular, painful treatment. It can only be cured by a transplant of stem cells from a sibling with a perfect tissue match.

Mr. Whitaker, a 33-year-old business manager who recently moved to Derbyshire from Bicester in Oxfordshire, said that he and his wife had made the right decision.

He told the Daily Mail newspaper: "All we did was change the odds from a one-in-four chance of a tissue match to a 98% chance. "There was no selection on the basis of colour of eyes or hair or sex."

Mr Whitaker added: "There are blood tests being carried out now to see if Jamie is a perfect tissue match and we will know in a few days, but at the moment we don't want to think about the stem cell blood." The stem cells have already been collected from Jamie's umbilical cord and tests will also be carried out to see whether he has the same condition as his brother.

Dr Rechitsky said the technique had worked previously for a family in the US. "We performed exactly the same IVF procedure and we found matched embryo and we transferred these embryo and the famous Adam Nash was born," she said. "His stem cells from his umbilical cord were used for his sister Molly and Molly right now is completely cured."

The Whitakers applied for permission in 2002 to allow IVF doctors in the UK to select an embryo that provided a perfect match for Charlie. However, regulators refused permission on technical grounds. The Human Fertilisation and Embryology Authority said it was acceptable to test and select embryos to prevent the birth of a baby with a genetic disease, but not to select them in order to help another child.

But John Smeaton, national director of the Society for the Protection of Unborn Children, said: "While our hearts go out to everybody involved, and we welcome Jamie Whitaker's birth, there are profound issues of concern here. Human beings who were not the perfect match were simply discarded and a child has been created with the primary purpose of benefiting his elder brother. This does not conform to Jamie's human dignity."

Since the Whitakers flew to the US for treatment, another British couple have won the right to have a "designer baby".

Raj and Shahana Hashmi hope their child will provide a donor for their sick son, four-year-old Zain. The couple, who live in Leeds, won a Court of Appeal case which gave them the go-ahead to allow doctors to screen embryos to find a perfect match. The family will know by the end of June whether the IVF treatment has been successful.

The difference between the Hashmis' case and that of the Whitakers is that Zain's condition is hereditary so the couple can screen future embryos to check that they do not have the disease - and at the same time find out if there is a tissue match.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/3002610.stm>

Published: 2003/06/19 17:27:40 GMT

© BBC 2013

Article Two

The Need to Regulate "Designer Babies"

More oversight is needed to prevent misuse of new reproductive technologies

On March 3 the cover story of the New York Daily News trumpeted a simple imperative to "Design Your Baby." The screaming headline related to a service that would try to allow parents to choose their baby's hair, eye and skin color. A day later the Fertility Institutes reconsidered. The organization made an "internal, self regulatory decision" to scrap the project because of "public perception" and the "apparent negative societal impacts involved," it noted in a statement.

The change of heart will do nothing to stymie the dawning era of what the article called "Build-A-Bear" babies. The use (and abuse) of advanced fertility technology that evokes fears of Gattaca, Brave New World and, of course, the Nazis' quest for a blonde, blue-eyed race of Aryans continues apace. A recent survey found that about 10 percent of a group who went for genetic counseling in New York City expressed interest in screening for tall stature and that some 13 percent said they would be willing to test for superior intelligence. The Fertility

Institutes is still building the foundation for a nascent dial-a-trait catalogue: it routinely accepts clients who wish to select the sex of their child.

The decision to scrap the designer baby service came just a few weeks after Nadya Suleman, a single, unemployed California mother living on food stamps, gained notoriety after giving birth to octuplets through in vitro fertilization. The Suleman brouhaha showed that even routine uses of reproductive technologies can be fraught with issues that bear on ethics and patient safety.

The preimplantation genetic diagnosis (PGD) technique used by the Fertility Institutes to test embryos before implantation in the womb has enabled thousands of parents to avoid passing on serious genetic diseases to their offspring. Yet fertility specialists are doing more than tiptoeing into a new era in which medical necessity is not the only impetus for seeking help. In the U.S., no binding rules deter a private clinic from offering a menu of traits or from implanting a woman with a collection of embryos. Physicians who may receive more than \$10,000 for a procedure serve as the sole arbiters of a series of thorny ethical, safety and social welfare questions. The 33-year-old Suleman already had six children, and her physician implanted her with six embryos, two of which split into twins. American Society for Reproductive Medicine (ASRM) voluntary guidelines suggest that, under normal circumstances, no more than two embryos be transferred to a woman younger than 35 because of the risk of complications.

Of course, any office consultation with a fertility doctor will likely neglect the nuances of more encompassing ethical dilemmas. Should parents be allowed to pick embryos for specific tissue types so that their new baby can serve as a donor for an ailing sibling? For that matter, should a deaf parent who embraces his or her condition be permitted to select an embryo apt to produce a child unable to hear? Finally, will selection of traits perceived to be desirable end up diminishing variability within the gene pool, the raw material of natural selection?

In the wake of the octuplets' birth, some legislators made hasty bids to enact regulation at the state level—and one bill was drafted with the help of antiabortion advocates. The intricacies of regulating fertility technology requires more careful consideration that can only come with a measure of federal guidance. As part of the push toward health care reform, the Obama administration should carefully inspect the British model.

Since 1991 the U.K.'s Human Fertilization and Embryology Authority (HFEA) has made rules for in vitro fertilization and any type of embryo manipulation. The HFEA licenses clinics and regulates research: it limits the number of embryos implanted and prohibits sex selection for nonmedical reasons, but it is not always overly restrictive. It did not object to using PGD to pick an embryo that led to the birth of a girl in January who lacked the genes that would have predisposed her to breast cancer later in life.

HFEA may not serve as a precise template for a U.S. regulatory body. But a close look at nearly two decades of licensing a set of reproductive technologies by the country that brought us the first test-tube baby may build a better framework than reliance on the good faith of physicians who confront an inherent conflict of interest.

The Need to Regulate "Designer Babies," Scientific American. Scientific American, a division of Nature America, Inc. May 4, 2009. Copyright © 2009, Scientific American, Inc.

Continue to reflection/opinion

Reflection:

Do you think that this technology should be available to couples? Identify 3 at least situations in which this technology would be beneficial. Identify 3 at least situations in which this technology could be harmful or abused.

Helpful/beneficial	Harmful/abused

Opinion

Using the information you learned, write a one paragraph opinion for or against IVF/PDG/Sex Selection