

# Assisted Reproductive Technologies

Textbook pages 224–231

## Before You Read

What do you think the phrase “test-tube baby” refers to? Write your ideas on the lines below.

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### Mark the Text

#### Check for Understanding

As you read this section, be sure to reread any parts you do not understand. Highlight any sentence that helps you develop your understanding.



### Reading Check

1. What does it mean if a man or a woman is infertile?

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#### What are assisted reproductive technologies?

In some cases, the male or female in a couple (or both) may be infertile—unable to have a child. Assisted reproductive technologies are methods that are used to help infertile couples have a child. Most of these methods include removing egg cells from a woman’s body, fertilizing them, and then placing one or more of the embryos in her uterus. ✓

#### What types of assisted reproductive technologies are there?

Some examples of assisted reproductive technologies are listed in the table on the next page.

Type of technology	How it works
artificial insemination (AI)	Sperm are collected from the male and then injected into the female.
in vitro fertilization (IVF)	A woman's egg cell is placed in a petri dish, and then sperm are injected into the dish so that one sperm cell may fertilize the egg.
gamete intrafallopian transfer (GIFT)	A woman's egg cell is mixed with sperm, and then the mixture is injected into the woman's fallopian tubes. This way, an egg may be fertilized inside the woman's body.
intracytoplasmic sperm injection (ICSI)	A single sperm cell is injected into an egg cell. The fertilized egg is then inserted into the woman's uterus. ✓

### How does society respond to these technologies?

Reproductive technologies have helped many couples have a child. However, these methods also raise questions. For instance:

- ◆ **What to do with unused embryos:** Not all the embryos that result from these methods are used. What should be done with the unused embryos? Some people want to use them for research purposes. For example, the embryos are a source of stem cells that could be used to help cure diseases or regrow impaired or lost organs. Other people think that it is wrong to use the embryos this way.
- ◆ **Unknown donors:** Sperm used in AI are often donated by strangers. Does a child of an AI method have the right to know the identity of his or her biological father?
- ◆ **Surrogate mothers:** Sometimes an infertile couple contracts another woman to carry a baby for them. Using AI or IVF, one or both gametes may be provided by the contracting couple. What if the surrogate mother decides she wants to break the contract and keep the baby?

Questions such as these do not have easy answers.

### ✓ Reading Check

2. In which reproductive technologies does fertilization occur outside the woman's body?

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Name \_\_\_\_\_

Date \_\_\_\_\_

Use with textbook pages 224–229.

## Types of assisted reproductive technologies

### Vocabulary

artificial insemination	infertility
assisted reproductive technologies	intracytoplasmic sperm injection
embryos	sperm
fallopian tubes	stem cells
gamete intrafallopian transfer	surrogate mother
gametes	uterus
in vitro fertilization	

Use the terms in the vocabulary box to fill in the blanks. You can use each term more than once. You will not need to use every term.

- \_\_\_\_\_ is the inability of a couple to have a baby.
- Most \_\_\_\_\_ include removing egg cells from a woman's body, fertilizing them, and placing one or more embryos in the uterus.
- The \_\_\_\_\_ is the organ in a female mammal, such as a human, in which an embryo develops and is nourished before birth.
- Techniques for collecting \_\_\_\_\_ from a male and injecting it into a female were first developed for animals more than 200 years ago.
- \_\_\_\_\_ is a very specialized procedure in which a single sperm cell is injected into an egg cell. The fertilized egg is then injected into the mother's \_\_\_\_\_.
- In \_\_\_\_\_, egg cells are removed from a woman's ovaries and combined with sperm cells. The mixture of eggs and sperm is then injected into the mother's \_\_\_\_\_ so an egg cell may be fertilized.
- Sometimes, one or both \_\_\_\_\_ may be provided so a \_\_\_\_\_ can become pregnant and give birth to a child for someone else to raise.
- In \_\_\_\_\_, a woman's egg cell is placed in a petri dish, and then sperm are injected into the dish.
- Embryos are a source of \_\_\_\_\_ that could be used to help cure diseases or regrow impaired or lost organs.

Use with textbook pages 224–228.

## Describing assisted reproductive technologies

Complete the following table, describing the different methods of assisted reproductive technologies.

Assisted reproductive technology	Description
1. artificial insemination (AI)	
2. in vitro fertilization (IVF)	
3. gamete intrafallopian transfer (GIFT)	
4. intracytoplasmic sperm injection (ICSI)	

Use with textbook page 229.

## Reproductive technologies and society

Find a partner with whom you can discuss the following concerns and questions related to reproductive technologies. Summarize your discussions in the boxes below.

1. Should we continue to use technology that increases the risk of birth defects?

2. In the IVF process, extra embryos are produced. What should be done with them?

3. In artificial insemination, the sperm donor is unknown. Should children know the identity of the donor?

4. What should happen when a surrogate mother changes her mind and wants to keep the child?

5. What is another question about assisted reproductive technologies that you think needs discussion? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Use with textbook pages 224–230.

## Assisted reproductive technologies

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.	
Term	Descriptor
1. _____ artificial insemination	<b>A.</b> specialized procedure in which a single sperm is injected into an egg cell
2. _____ assisted reproductive technologies	<b>B.</b> is the inability of a couple to have a baby
3. _____ gamete intrafallopian transfer	<b>C.</b> becomes pregnant and gives birth to a child for someone else to raise
4. _____ in vitro fertilization	<b>D.</b> technologies used to achieve fertilization and pregnancy
5. _____ infertility	<b>E.</b> involves collecting sperm from a male and injecting it into a female
6. _____ intracytoplasmic sperm injection	<b>F.</b> egg cell is mixed with sperm and injected into fallopian tubes
7. _____ surrogate mother	<b>G.</b> procedure to treat specific fertility problems by fertilizing an egg cell in a petri dish
	<b>H.</b> ability of a couple to have a baby

Circle the letter of the best answer.

8. The uterus is where
- A.** eggs are produced
  - B.** sperm are produced
  - C.** eggs travel along
  - D.** embryos develop

9. Gamete intrafallopian transfer (GIFT) differs from intracytoplasmic sperm injection (ICSI) because in GIFT an embryo is formed
- A.** before it is inserted in the woman's body
  - B.** naturally with no assisted reproductive technology methods
  - C.** from a mixture of egg and sperm injected into fallopian tubes
  - D.** from a mixture of egg and sperm put into a petri dish
10. Artificial insemination (AI) differs from in vitro fertilization (IVF) because in AI
- A.** sperm is injected into a female
  - B.** a mixture of egg and sperm are put in a petri dish
  - C.** a mixture of egg and sperm is injected into the woman's body
  - D.** a sperm and egg mixture is placed into the fallopian tubes
11. Questions have been raised about assisted reproductive technologies because

I.	they are naturally occurring
II.	they have helped many couples to have a baby
III.	not everyone agrees about what to do with the unused embryos
IV.	they may increase the risk of birth defects

- A.** I and II
- B.** I and III
- C.** II and III
- D.** III and IV