



Some couples are unable to bear children. There is a wide variety of possible reasons for infertility, including:

- males with low sperm counts
- males with impotence (failure to achieve or maintain an erection)
- females who cannot ovulate normally
- females with blocked Fallopian tubes.

Reproductive technologies have been developed to help overcome these situations. One of the most common of these new technologies is *in vitro* fertilization (IVF).

### Hormone therapy

As part of the IVF procedure, a woman must have eggs 'harvested' from her ovaries. In order to ensure the proper timing for this, and to maximize the number of available ova, the woman undergoes about a month of hormone therapy. During the first 2 weeks she injects a drug (or uses a nasal spray of the drug) that suspends her own natural hormones associated with her menstrual cycle. Then for the next 12 days or so she takes hormone injections that include FSH. This ensures that she will produce many Graafian follicles in each ovary and provide many potential ova (oocytes) for harvesting. The production of many more eggs than is typical of a normal menstrual cycle is called superovulation.

When the time is right, several eggs (oocytes) are then harvested surgically. To obtain the sperm cells that are needed for fertilization, the man ejaculates into a container. Harvested eggs are mixed with the sperm cells in separate culture dishes. Microscopic observation reveals which ova are fertilized, and whether the early development appears normal and healthy. Between one and three healthy embryos are later introduced into the woman's uterus for implantation. Any healthy embryos from the culturing phase that are not implanted can be frozen and used later if another implantation procedure is needed.

**TOK**

Screening the embryos used in IVF for certain genetic conditions is becoming a common practice. Screening for desirable traits is possible, and may soon become a routine part of the IVF procedures offered by medical clinics. How much will the course of human evolution be effected by such screening practices?

### NATURE OF SCIENCE

Always consider the source! If you do a web search for IVF, many of the sites you will encounter will be from private clinics that offer IVF as a paid service. This doesn't mean the information on those sites is incorrect, but it does mean you need to consider the possible bias behind the information.



### Exercises

- 17 If possible, without looking back though this chapter, give a very brief description of the function of each of these hormones: insulin, glucagon, thyroxin, leptin, and melatonin.
- 18 What is an example of a positive feedback loop in the menstrual cycle?
- 19 What is an example of a negative feedback loop in the menstrual cycle?



To learn more about this chapter, go to the hotlinks site, search for the title or ISBN and click on Chapter 6.