

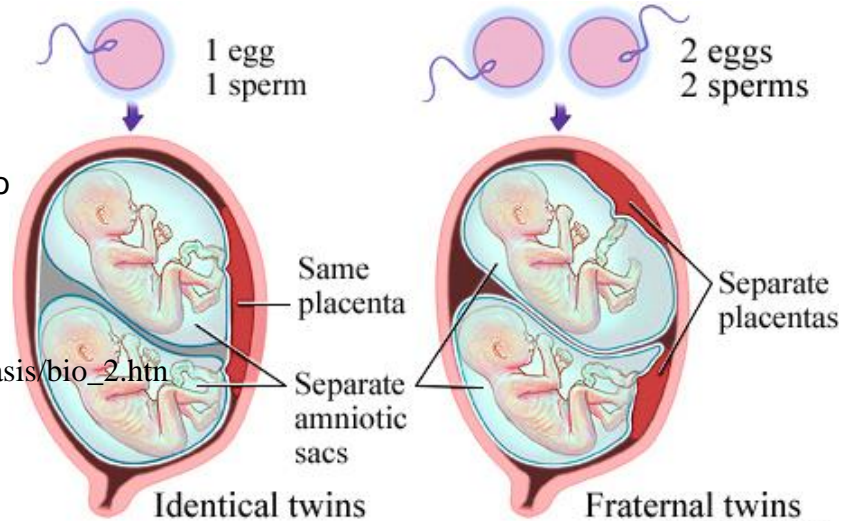
Why Twins?

- Multiple births at the same time are rare for humans and most other primate species.
- Having fraternal, but not identical, twins apparently runs in family lines.

Fraternal Twins

- Fraternal twins may look similar but are not genetically identical. In fact they are not.
- They share their mother's uterus during gestation but come from two different eggs fertilized with different sperm.
- They are called **dizygotic twins**.

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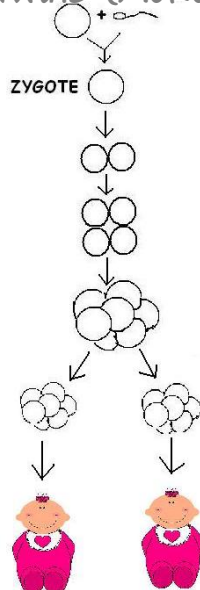


Identical Twins

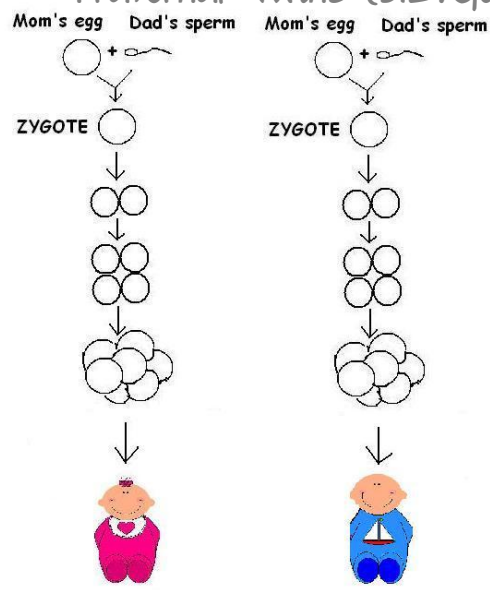
- Identical twins are mostly identical genetically because they result from one zygote splitting into two or more separate ones within a few days after conception.
- They are called **monozygotic twins**.
- If the division of the original zygote does not occur until the 9th to the 12th day after conception, the monozygotic twins are likely to be **mirror twins**. That is, they will have small mirror image differences internally and externally. For instance, one may be left handed and the other right handed. Likewise, the cowlick in their hair at the back of the head will be on opposite sides.
- If the division of the zygote occurs after day 13, the monozygotic twins are likely to be born **conjoined twins**.
- Any differences between monozygotic twins later in life are mostly the result of environmental influences rather than genetic inheritance. However, monozygotic twins may not share all of the same sequences of mitochondrial DNA. This is due to the fact that the mitochondria in a cell may have somewhat different versions of DNA, and the mitochondria can be dispersed unequally when a zygote fissions. Female monozygotic twins can also differ because of differences between them in X-chromosome inactivation.

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Identical Twins (MONOZYGOTIC)



Fraternal Twins (DIZYGOTIC)



Why Twins Questions

Name_____Period____

TRUE/FALSE: + = true 0 = false

- _____ 1. Fraternal twins are genetically identical.
- _____ 2. Dizygotic twins are also known as identical twins.
- _____ 3. It is possible for fraternal twins to be of a different sex (one boy & one girl)?
- _____ 4. Conjoined twins are a type of fraternal twin.
- _____ 5. Fraternal twins share one placenta.
- _____ 6. Dizygotic twins share the same placenta.
- _____ 7. Fraternal twins are the result of the splitting of the pre-embryo early in cleavage.
- _____ 8. All conjoined twins can be separated with surgery.
- _____ 9. Identical twins will have identical fingerprints.
- _____ 10. It is possible for fraternal twins to be "fathered" by different men (the eggs are fertilized from sperm from two different males).

SHORT ANSWER:

- 11. Why are fraternal twins called dizygotic twins? (Hint: look at the diagrams at the bottom of the page.)

- 12. Why are identical twins called monozygotic twins? (Hint: look at the diagrams at the bottom of the page.)