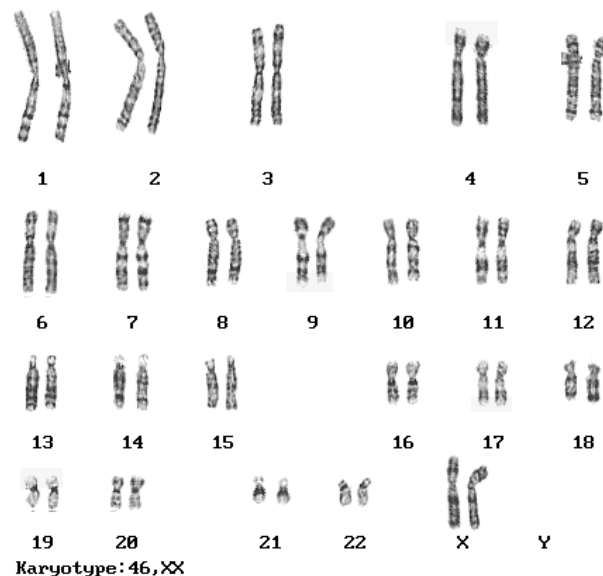


Karyotyping

- A karyotype is a picture of all _____ in a cell.
- During the _____ step of mitosis, the chromosomes of a cell become visible. At this time, a scientist photographs these chromosomes in their _____ order.
- Next, the photograph is uploaded onto a computer where they are _____ for easy matching. Once colored, the computer matches the _____, arranges them in _____ size, and creates a karyotype.
- The dye used in karyotypes makes the _____ on each chromosome visible. These bands can be used to determine the origin of each chromosome (whether they come from the _____ or _____).
- Scientists can determine if _____ chromosomes are present within a person's cells. An extra chromosome indicates that the person has a genetic disorder.
- For example, if a karyotype shows an extra chromosome _____ that person has Down's Syndrome.



Reproductive Technologies

Cloning

- Way to produce a _____ organism through _____ means
 - Used to produce plants for many years (using cuttings)
 - Public notice: 1997 with birth of first cloned mammal, _____
- Since Dolly, scientists have cloned goats, cows, mice, pigs, cats, and rabbits
 - Problems
 - 1) Many embryos _____
 - 2) Clones can have serious _____ problems
- Cloning uses the technique: _____
 - To mass produce organisms with _____. Example: sheep have been engineered to produce human insulin
 - To _____ lost or deceased family pets
 - To repopulate endangered or even _____ species
- Controversy
 - After Dolly, controversy arose surrounding social, moral and ethical use of cloning
 - People for cloning think it could be used to replace deceased relatives or harvest organs from a clone to remove the chance of rejection.
 - To create Dolly, scientists performed the experiment 276 times, many failures.
 - Cloning could be used to add more people to a certain race, political party, religion, background, sex, physical appearance, special talents.
 - People could select traits for their children.
 - To harvest organs, would have to kill the clone.

In-Vitro Fertilization

- Approximately 10% of couples are affected by _____.
- More than _____ babies have been born since then as a result of using the in vitro fertilization technique.
- _____ baby was used to describe babies born by IVF.
- Used for women with _____ problems or males with mild sperm problems.
- Costs approximately \$15, 000-\$20,000, only covered in Quebec.
- Women take _____ to prepare their eggs and uterus for pregnancy.
- A man's sperm and woman's egg are combined in a _____ in a lab.
- The resulting embryo is transferred to the woman's uterus to implant and develop.
- Usually _____ embryos are implanted at a time.

Artificial Insemination

- Sperm is artificially placed into a woman's cervix or uterus.
- Semen to be implanted is " _____ " in a laboratory, concentrating the semen and removing any harmful chemicals.
- The semen is inserted into the woman, and if the procedure is successful, she conceives.