

Heredity and Environment

- $XX = \text{Girl}$
- $XY = \text{Boy}$
- Genotype – an organism's entire genetic inheritance, or genetic potential.
- Phenotype – the observable characteristics of a person, including appearance, personality, intelligence, and all other traits.

Karyotype

To create a karyotype, a cell is grown in a laboratory, magnified, and then photographed. The photo is cut into pieces and rearranged so that the matched pairs of chromosomes are lined up from largest to smallest.

Heredity and Environment

- Vast majority of each person's genes are identical to those of any unrelated person of the same sex
- Laws of probability show that approximately 8 million combinations of chromosomes are possible
- Any given mother and father can form over 64 trillion genetically different offspring!

Recent Research Findings

- According to a study done at The University of Texas About 70% of a person's intelligence can be explained by DNA – and those genetic influences get stronger with age. (*Psychological Science*, July 2013)
- A study conducted at Florida State U. suggests that genes may play a role in whether a person finishes high school and attends college. Based on study of subjects age 24 to 32, those who possessed certain alleles within three genes – DAT1, DRD2, and DRD4 – achieved the highest education levels (*Developmental Psychology*, July 2013)

Recent Research Findings

- A Univ. of Edinburgh study demonstrated that genes may play a > role in forming character traits (i.e., self-control and sociability) than a person's home environment and surroundings. Based on 800 sets of twins – most age 50 and over. Identical twins were twice as likely to share character traits compared with non-identical twins. Genetics were most influential on their sense of self-control and also affected their social and learning abilities and their sense of purpose. (*Journal of Personality*, March 2013)

Twins

Monozygotic

- 1/270 births
- Results of split of a single zygote
- Identical twins
- Share identical genetic instructions

Dizygotic

- 1/60 births
- Two or more eggs fertilized by separate sperm
- Fraternal twins
- No more genetically similar than siblings

Twins Day Festival Twinsburg, Ohio

- Held annually the first weekend in August
- Great place to do research on twins
- [Website](#)
- [Video clip](#)