

## CHROMOSOME ANALYSIS TEST

Your doctor has ordered a chromosome (CROW-ma-soam) analysis test because you, your child, or someone in your family may have an inherited condition. Some conditions may be caused by abnormal chromosomes.

### HUMAN CELLS AND HEREDITY

The human body contains millions of tiny cells. In the center of each cell is a nucleus (NEW-lee-us). Each nucleus contains 23 pairs of chromosomes (46 total). One of the two chromosomes in a pair comes from each parent. The chromosomes are long chains of molecules that carry human genes. Chromosomes can only be seen with a microscope when they tightly condense as the cells divide. Genes contain the directions or "blueprints" we need to grow and develop.

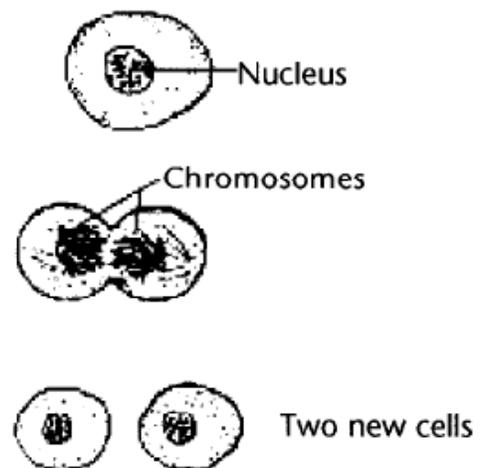
We inherit our chromosomes and their genes from our parents and pass them on to our children. Genes determine how we look. Our hair color, eye color, size, and height are all inherited traits.

### HOW THE TEST IS DONE

The chromosome analysis is a test in which a person's chromosomes are looked at under a high-powered microscope. The lab technician takes a small sample of your blood. There are several kinds of blood cells, but only white cells are used for the test. The white blood cells are separated from the rest of the blood. Then special chemicals are added to help them grow in number.



**Picture 1** Chromosomes can be seen only under a microscope. The genes make up the chromosomes.



**Picture 2** A cell divides to form 2 new cells.

## HOW THE TEST IS DONE (continued)

The cells grow in number by dividing (Picture 2, page 1). Just before the cells divide, they are treated so the chromosomes can be seen under a high-powered microscope. They are colored with a chemical that gives the chromosomes a striped or banded look. It takes up to 4 weeks for the cells to grow, multiply, and be looked at under a microscope.

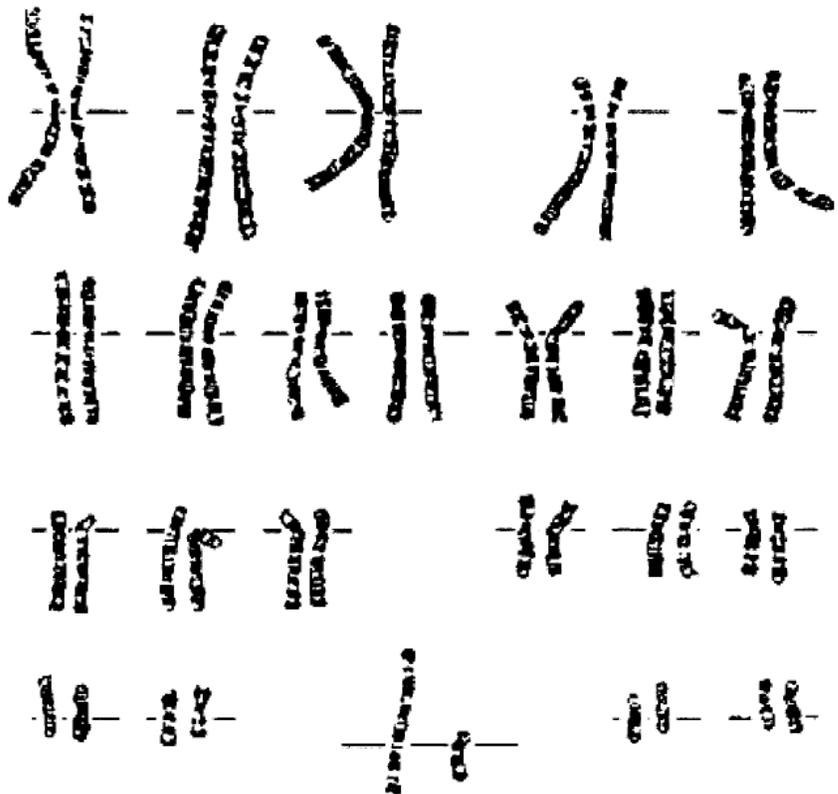
Specially-trained genetics technicians use a microscope and camera to carefully take a picture of all the chromosomes in one cell. They use a computer to match the chromosome pairs and arrange them in order of size. This orderly arrangement of chromosomes is called a karyotype (CARE-ee-o-type) (Picture 3).

The doctors examine the karyotype for correct number, size, shape, and band pattern of the chromosomes. If the number of chromosomes is wrong or if a chromosome has extra or missing parts, this may mean that a genetic condition is present.

## AFTER THE TEST

- After the blood sample has been taken, you may go home.
- This test takes 3 to 4 weeks to complete because there are so many steps. After the test is complete, your doctor will talk with you about the results.

If you have any questions, please call the Hospital's Genetics Section at (614) 722-3535.



Picture 3 Lab specialists put together a karyotype.