

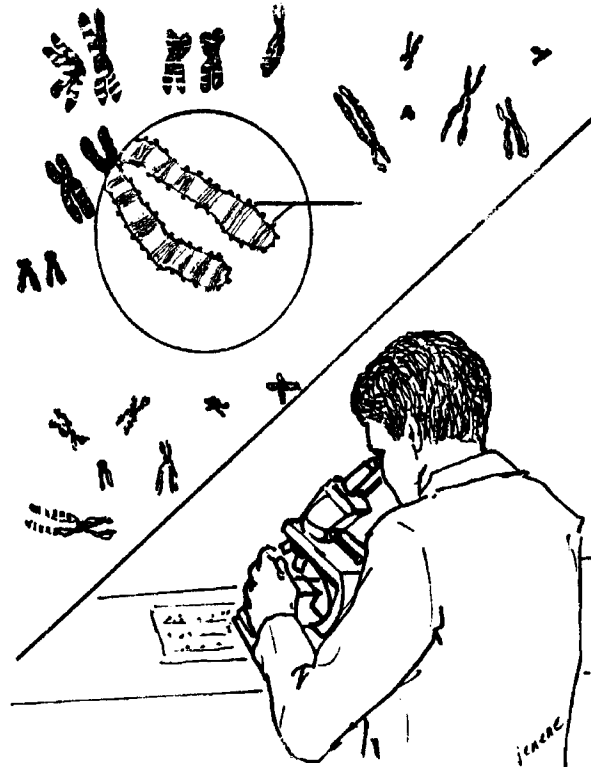
Children's Hospital
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CHROMOSOME ANALYSIS TEST

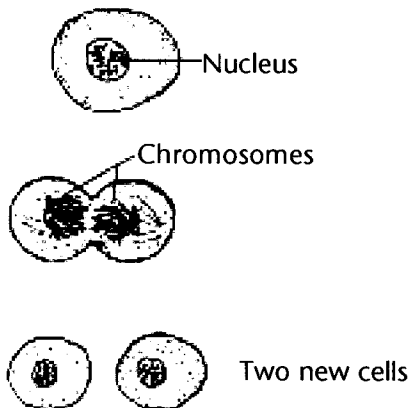
Your doctor has ordered a chromosome (CROW-ma-soam) analysis test because you, your child, or someone in your family may have an inherited condition. Some conditions may be caused by abnormal chromosomes.

THE HUMAN CELL AND HEREDITY

The human body contains millions of tiny cells. In the center of each cell is a nucleus (NEW-clee-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" needed for growth and development. We inherit our chromosomes and their genes from our parents and pass them on to our children (Picture 1). Genes determine how we look. Our hair color, eye color, size, and height are all inherited traits.



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



Picture 2 One cell divides to make two cells.

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 laboratory 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, and special chemicals are added to help them grow in number.

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 to make the chromosomes visible under a high-powered microscope. Before the chromosomes are looked at under the microscope, they are colored with a chemical that gives them a striped or banded appearance. It takes up to 4 weeks for the cells to grow, multiply, and be looked at under a microscope.

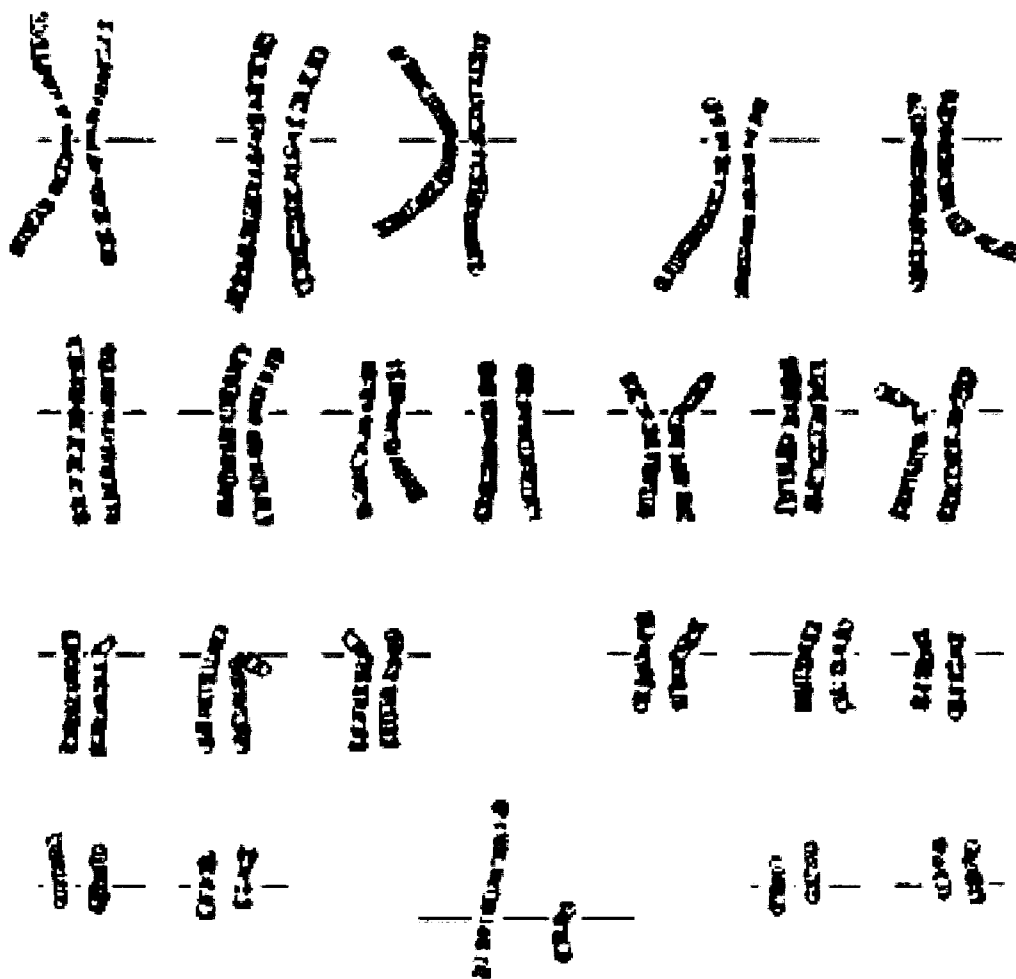
Specially-trained genetics technicians use a microscope and camera to carefully take a picture of all the chromosomes in one cell. The technicians use a computer to match the chromosome pairs and arrange them in order of size. This orderly arrangement of chromosomes is called a Karyotype (CARE-ee-o-type)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

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

AFTER THE TEST

- After the technician takes the blood sample, you may go home.
- A chromosome analysis test takes 3 to 4 weeks to complete because there are so many steps in the test. After the test is complete, your doctor will talk with you about the results.

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



Picture 3 Laboratory specialists put together a Karyotype.