

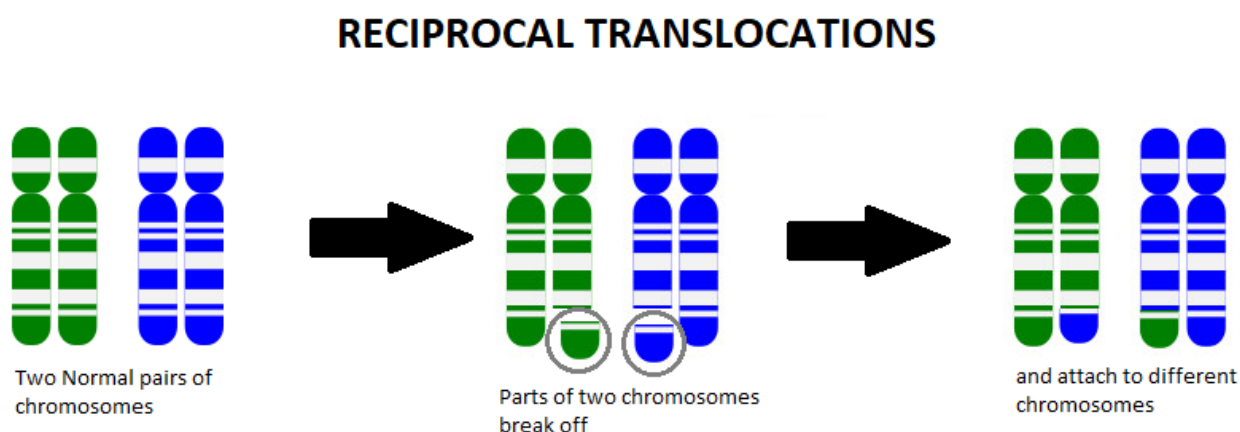


A chromosome translocation, also called a chromosome rearrangement, is when pieces from two separate chromosomes break off and switch spots. We know from [Genetics 101](#) that each cell of our body contains chromosomes that act as an instruction manual, telling our body how to grow, develop, and function. We usually have 23 pairs of chromosomes (one set coming from mom and the other set from dad), which gives us a total of 46 chromosomes. The body is very particular in the amount of this information that we have, and too many or too few of these instructions can change how things work in the body.

Chromosome translocations can run in families (inherited from a parent), or a person can be the first one in their family found to have it (new to that person, called *de novo*). If someone is the first one in their family to have it, that means that the chromosome translocation likely happened early in their development. We do not yet know what causes chromosome translocations to happen.

Most of the time when a person is found to have a chromosome translocation, it is classified as a balanced translocation. A balanced translocation means that all of the instructions are still in that person's cells, they're just in a different order. Most often, balanced translocations do not cause any significant health issues. However, if someone has a balanced translocation, they are at an increased risk to pass on too much or too little chromosome material to any children they may have.

For example, let's say someone has the balanced translocation between the blue chromosome (B) and the green chromosome (G), shown below:



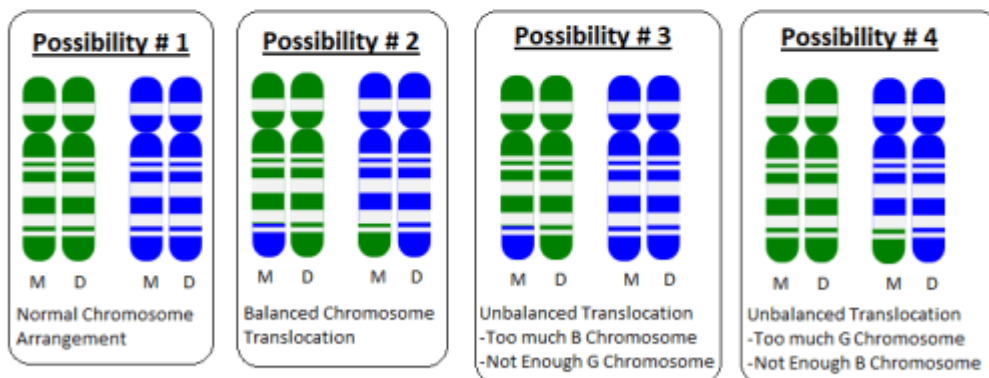
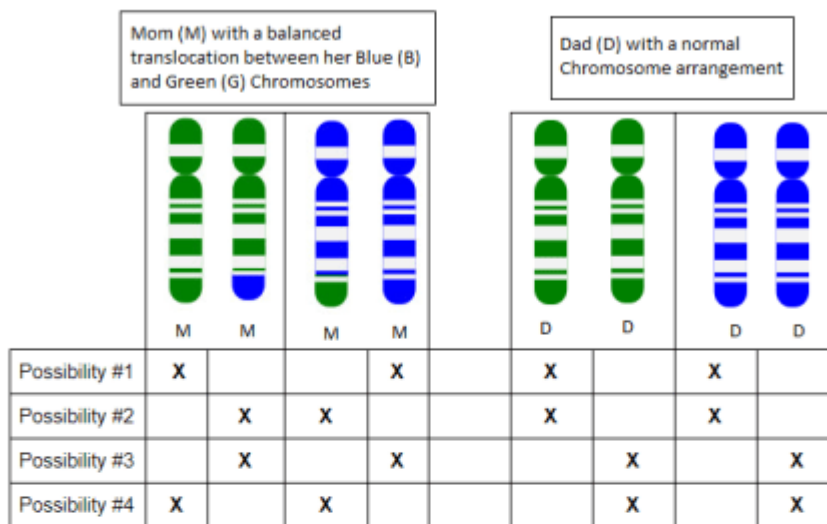
Someone who has this balanced translocation has one whole G chromosome, one whole B chromosome, one mostly G chromosome with a small amount of B on it (G+B), and one



mostly B chromosome with a small amount of G on it (B+G).

Because parents pass on one copy of each of their chromosomes to each child they have, each pregnancy has a 50% chance to inherit the whole G chromosome, and a 50% chance to inherit the G+B chromosome. Each pregnancy would also have a 50% chance to inherit the whole B chromosome, and a 50% chance to inherit the B+G chromosome.

Chromosome Translocation Combination



If a child inherits a whole G chromosome and a whole B chromosome from one parent, but the G+B chromosome and a whole B chromosome from the other parent, they will have too



much B chromosome material and not enough G chromosome material.

The specific extra B instructions and missing G instructions will determine what sort of health problems can result. For example, if someone is missing part of a chromosome that had instructions for how to form connections in the brain, they may have a higher risk for health problems related to their brain function, such as seizures or learning delays.