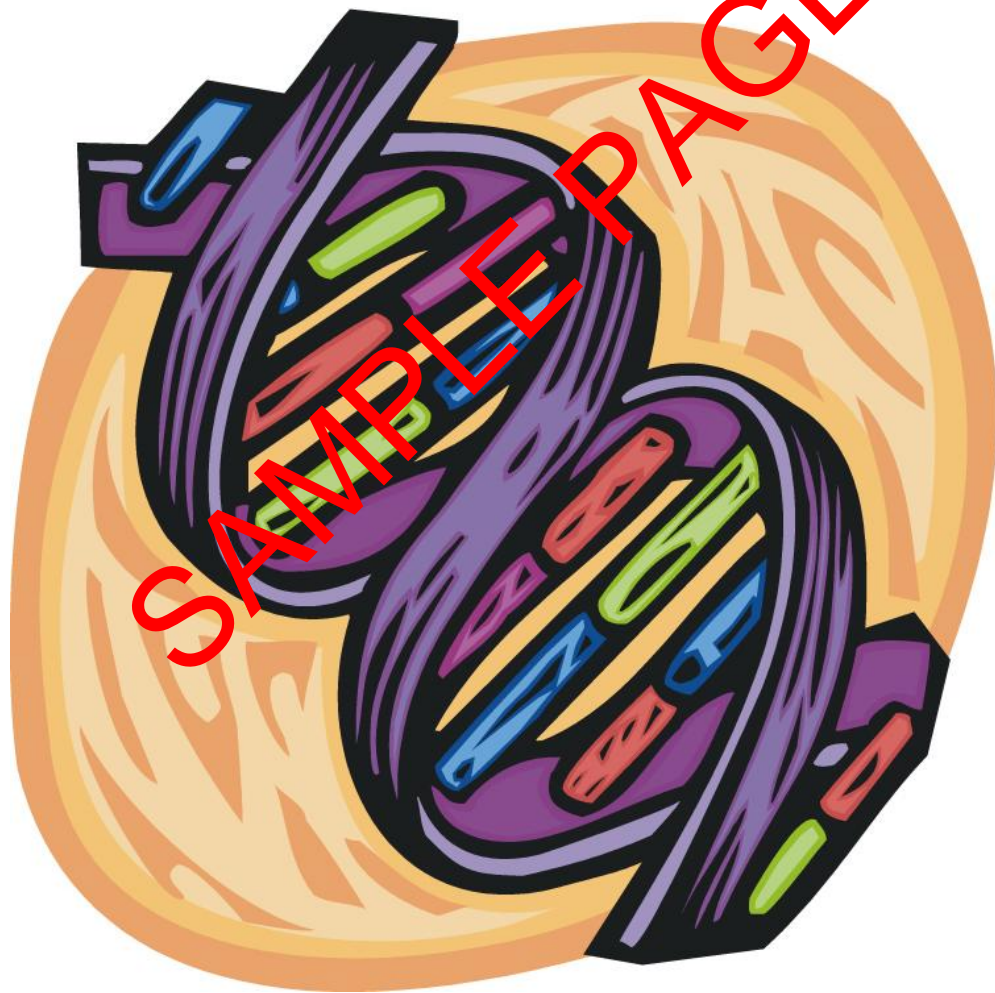




Grades 4-7

Genetics

Learning Lapbook with Study Guide



A Journey Through Learning
www.ajourneythroughlearning.com

Authors-Paula Winget and Nancy Fileccia
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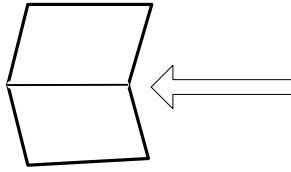
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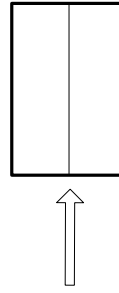
SAMPLE PAGE

Things to Know

Hamburger Fold-Fold horizontally



Hotdog Fold-Fold vertically



Dotted Lines-These are the cutting lines.

Accordion Fold-This fold is like making a paper fan. Fold on the first line so that title is on top. Turn over and fold on next line so that title is on top again. Turn over again and fold again on the next line so that title is on top. Continue until all folds are done.

Cover Labels-Most of the booklets that are folded look nicer with a label on top instead of just a blank space. They will be referred to as "cover label."

How Long Does it Take to Complete the Lapbook?

Doing a study guide page and mini-booklet a day, a 3-folder lapbook takes about one month to complete. However, you can expand the study portion and make it last as long as you like! That's the beauty of homeschooling! Do it YOUR way!

Lapbook Assembly Choices

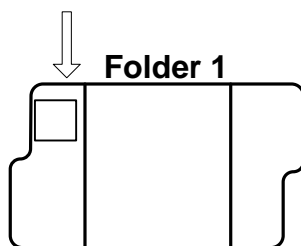
(see photos on how to fold and glue your folders together)

We recommend using Zip Dry Glue or Elmer's Extreme.

Choice #1 -Do not glue your folders together until you have completely finished all three folders. It is easier to work with one folder instead of two or three glued together.

Choice #2 -Glue all of your folders together before beginning. Some children like to see the entire project as they work on it. It helps with keeping up with which folder you are supposed to be working in. The choices are completely up to you and your child!

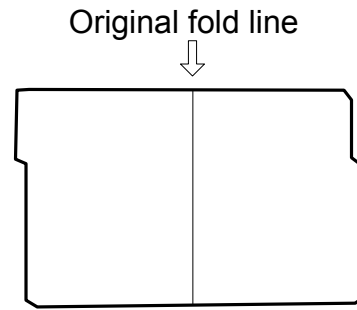
How do I know where to place each template in the folder?



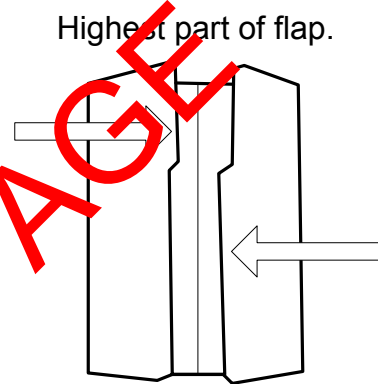
This placement key tells you the template goes in the first folder at the top of the left flap.

Folding a Lapbook Base

Gather the number of folders required for the project. Fold them flat as seen here.



For each folder, fold the left and right sides inward toward the original line to create two flaps. Crease so that the highest part of each flap is touching the original line. It is important not to let the two flaps overlap. *You may want to take a ruler and run it down each crease to make it sharper.*



Glue your folders together by putting glue (or you may staple) on the inside of the flaps. Then press the newly glued flaps together with your hands until they get a good strong hold to each other. Follow this step to add as many folders as you need for your project. Most of our lapbooks have either 2 or 3 folders.

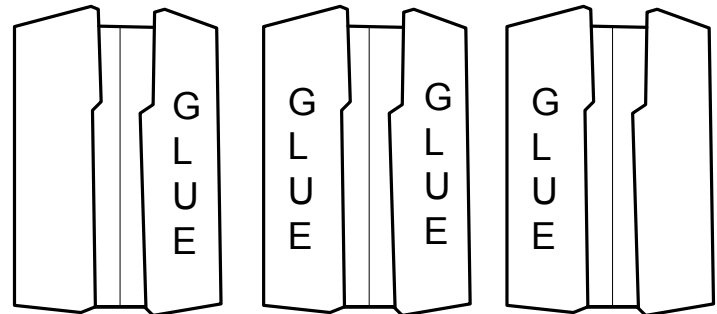
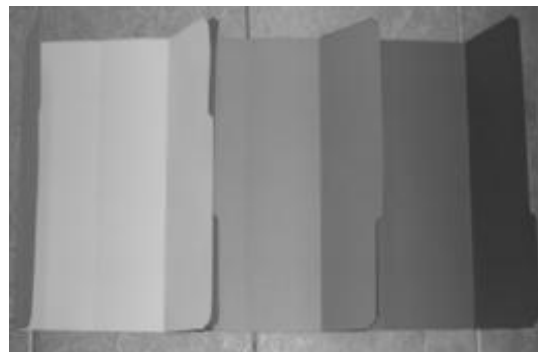
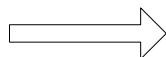


Photo of a completed lapbook base



Supplies and Storage

- *Lapbook Pages
- *3 Colored File Folders
- *Scissors
- *Glue
- *Stapler
- *Brads (not needed for every lapbook. If brads are not available, a stapler will do.)
- *Hole Puncher (again, not needed for every lapbook.)

To make the storage system (optional)

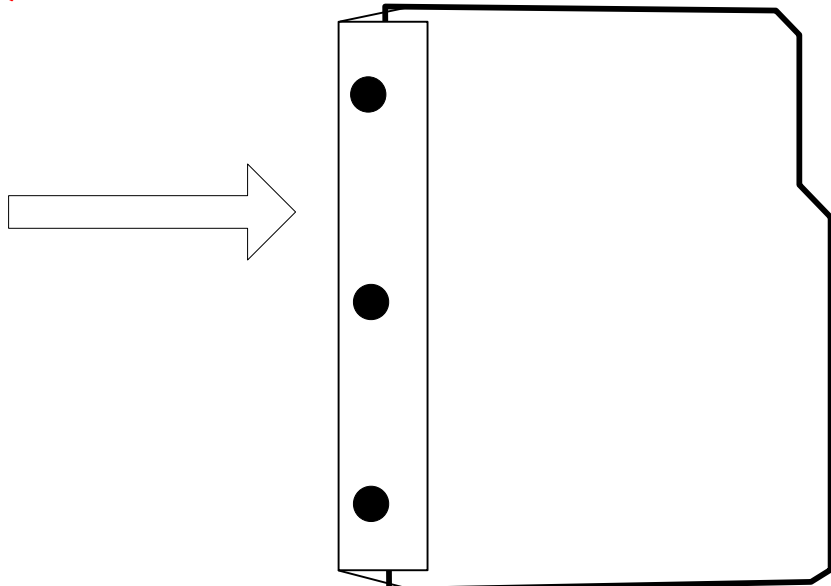
See details below about the use of a storage system.

- *Duct tape (any color)
- *One 3-ring binder
- *Hole Puncher

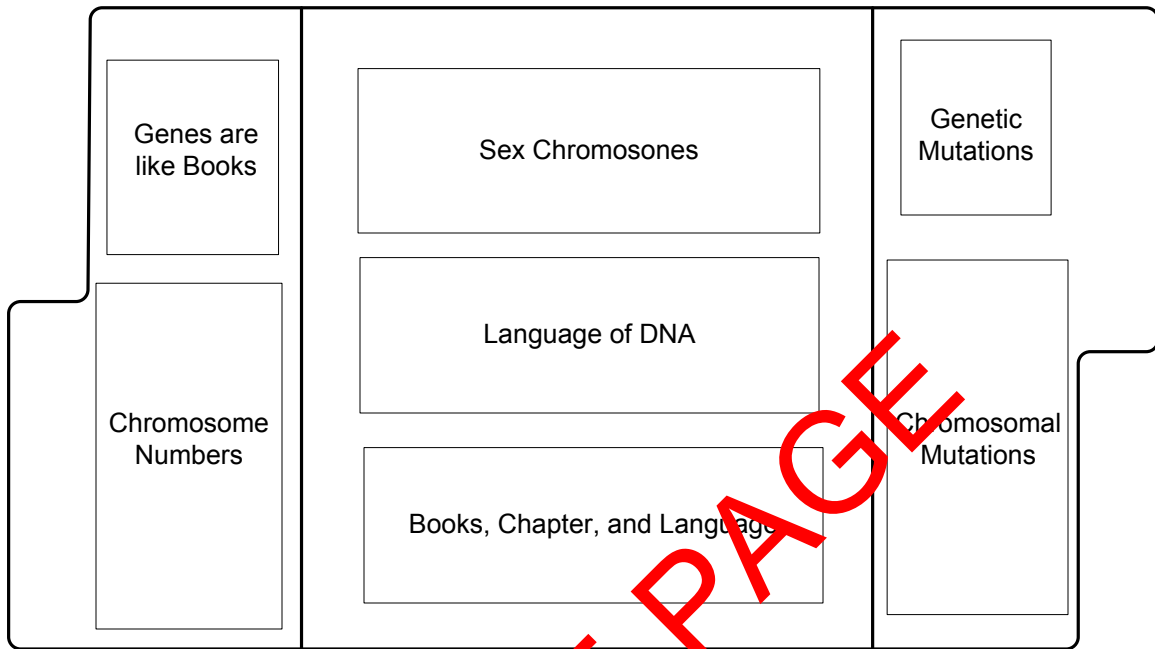
My child has made several lapbooks. Can I store all of the lapbooks together in one place?

Yes! A three-ring binder serves as a great place to keep your lapbooks. This method of storage not only keeps your lapbooks from getting lost but also keeps them neat and readily available to share with dad, grandparents, friends, etc. When you are through sharing your lapbooks, just place the three-ring binder back on your bookshelf. Below are step-by-step directions of how to prepare each lapbook to be placed in a three-ring binder.

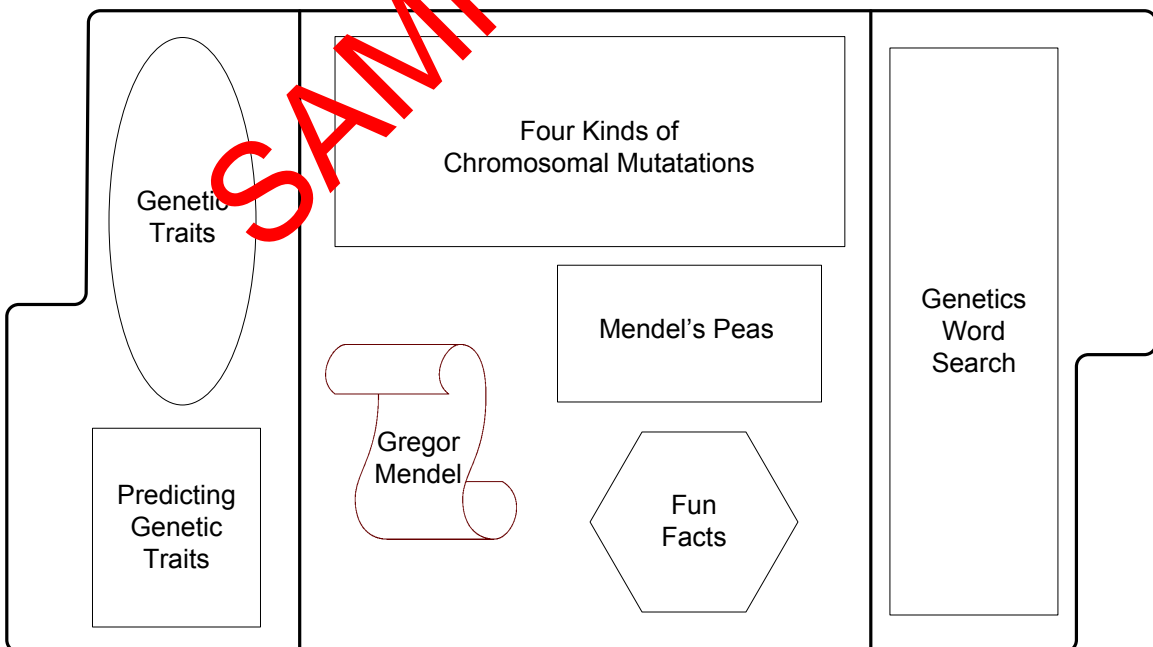
Close the lapbook. Measure a piece of duct tape that is as long as the lapbook. Place the edge of the duct tape on the top edge of the lapbook. Then fold the duct tape over so that it can be placed on the bottom edge. Make sure to leave enough duct tape sticking out from the edges to punch three holes. Be careful when punching the holes that you do not punch the holes in the folder. If you do, that's okay. Then place in three-ring binder. Depending on the size of your three-ring binder, you can store many lapbooks in it.



Folder 1

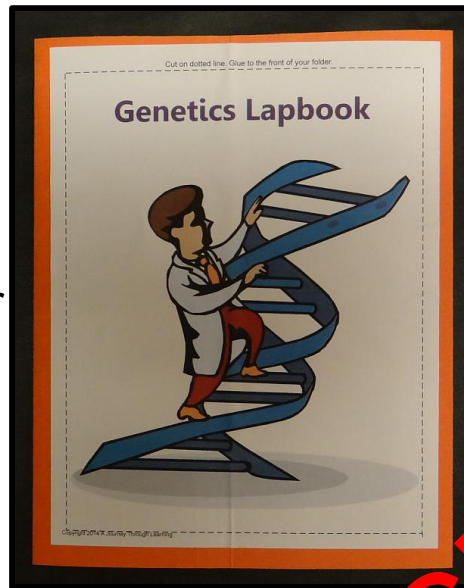


Folder 2



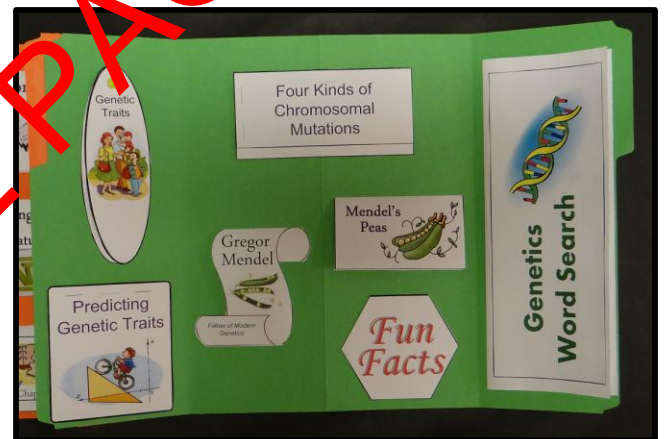
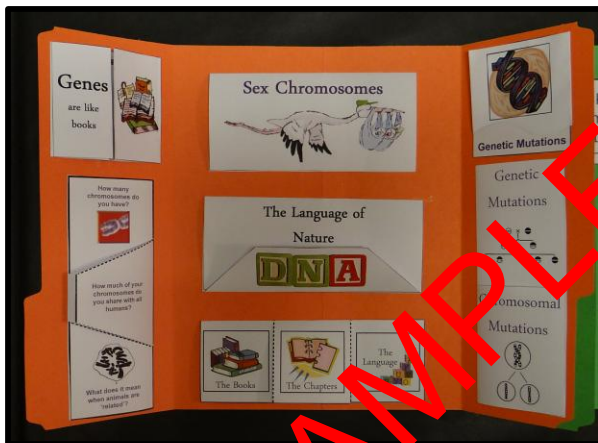
Photos of Lapbook after Assembly

Front Cover



Folder 1

Folder 2



Entire Lapbook

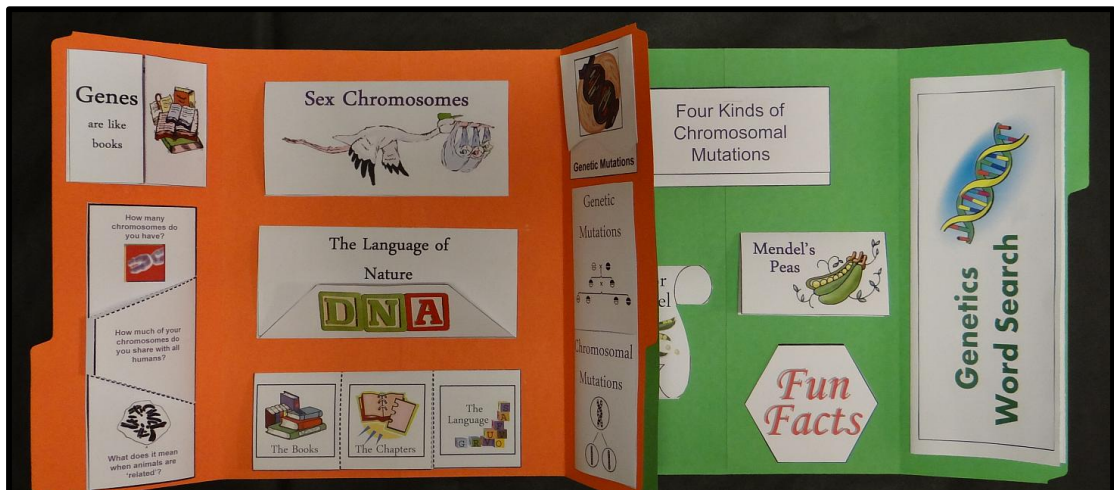


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Chromosomal Mutations

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Cut on dotted line. Glue to the front of your folder.

Genetics Lapbook



Genes

The first place to stop on our quest to learn about “why you are like you are”, is at the study of genes. What are genes? Well, they are certainly not those denim pants you like to wear, although what jeans you like best may be determined by what genes you have!

Your genes are very, very tiny. So tiny, in fact, that they are inside all the cells of your body! Your body has around 10 trillion cells, and each one contains genes. These genes are like chapters of a book filled with instructions. The instructions your body has in it's genes are kind of like the assembly instructions you might get with a new toy. They tell your cells where to go and what to do. Another way of looking at it is like a recipe book. Each gene has a recipe for your body, and put all together we get YOU!

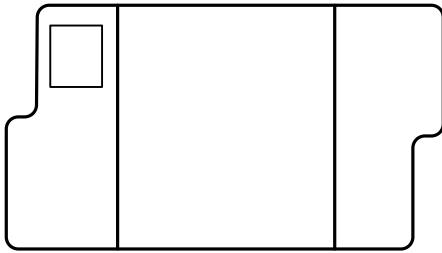
As you might guess, it takes a lot of recipes to build a living thing. You need instructions for building eye cells, bones and muscles, skin, hair, and a heart and brain, and for telling them all what to do. (Unless you happen to be a plant!) All these instructions are found in the different sections of your book of genes. You have a section for fingernail recipes, a section for eyelash instructions, and the building plans for your lungs.

You might think that all this information is split up, so that only the nose cells have nose genes, and only the heart cells get information on heart-building. But you would be wrong. Every cell in your body has the entire set of instructions! This is why those genes are so tiny. They have all that information and still fit inside a cell!

Although your cells each contain all the information in your gene-book, your cells don't each need to read it all. When your mother wants to make a chocolate cake, she doesn't read the whole cook book, just the one recipe she needs. In the same way, your cells only 'read' the part of the book that they need. In fact, the very first thing these instructions do is to tell the cell what kind of cell it should be. They also tell your cells a lot of other information, like where to go, what to do, and what color to be.

Remember, although most of the time when we think about genetics we are thinking of human genes, all living things have these instruction books. Dandelions in your yard, enormous redwoods, tiny plankton in the sea, and the dust mites in your carpet all have genes. Genes are the way living creatures pass on information about what to be and what to do.

Folder 1



Read Genes

Cut out the booklet. Hotdog fold the flaps inward on the lines. Glue cover label on top of closed booklet and then cut across the middle of the cover page so that booklet will open. Glue into lapbook.

Directions: Write about genes in the middle, and how genes are like instruction manuals and recipe books on the sides.

Hotdog fold

Hotdog fold

Instruction
Books

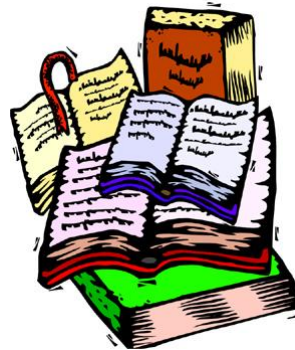
Genes are...

Recipe
Books

SAMPLE PAGE

Cover label

Genes
are like
books



Chromosomes

If your genes are the chapters in your book of instructions, then the chromosomes are the books themselves. Each person normally has 23 pairs of chromosomes. You get one of each chromosome from your mother and one from your father, 46 chromosomes in all. All of the instructions for your body are held in these 23 pairs of chromosomes.

All together, these 46 books contain everything that makes you who you are, from your personality to your shoe size. So each cell in your body is like a small library, containing 46 books of instructions, recipes, and building codes. These 46 books are arranged in sets, and each set has a book with information from each of your two parents.

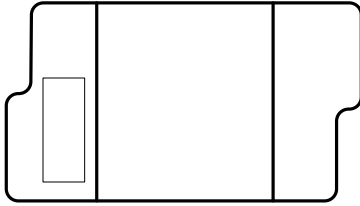
Out of the 23 gene pairs, all except one are the same in both men and women. The other chromosome is called the sex chromosome because it determines whether you are a girl or a boy. All babies receive an x chromosome from their mother. However, the other chromosome in the pair, the one they receive from their father, can be either an x or a y chromosome. If the baby gets an x chromosome from its father, it will be a girl. If it gets a y chromosome, it will be a boy.

Although you are different from every other person on the planet, you might be surprised to know that your instruction books are not. About 99.5% of your chromosomes are identical to those of every other human. Most of your genes are instructions for building things or telling cells what to do. These genes are pretty much the same in all of us, because we all have the same basic body parts that work the same way. Only about 0.5% of one percent of your genetic library is unique to you.

Just as you share most of your chromosomes with other humans, your chromosomes are also very similar to many mammals. Mammals all have eyes, so we all have eye instruction books. We all have hair, so we all need hair recipes. The more closely 'related' animals are, the more of their instruction manuals they share. Your pet dog and wild wolves share most of their chromosomes, because they are related.

Although different kinds of animals aren't related in the same way you and your cousins and grandparents are, they are related in a different sense. Because the word 'related' means similar, animals that are similar are more closely related. This is because they share more of their instruction books. Monkeys share more chromosomes with other monkeys than they do with elephants, and so monkeys are closely related.

Folder 1



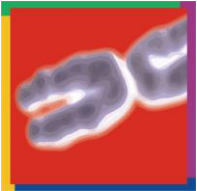
Read Chromosomes

Cut out the booklet as one piece. Fold in half so that words are on top. Booklet will open backwards. Cut on the dotted lines to create flaps. Lift each flap and define the words or answer the question.

Directions: Answer the questions.

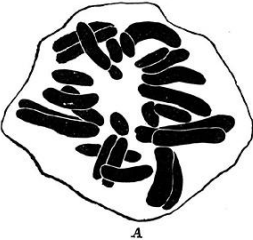
fold

How many chromosomes do you have?



How much of your chromosomes do you share with all humans?

GLUE



What does it mean when animals are 'related'?

SAMPLER PAGE