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## SKIN COLOR

**JESUS LOVES THE LITTLE CHILDREN  
 ALL THE CHILDREN OF THE WORLD  
 RED AND YELLOW, BLACK AND WHITE  
 THEY ARE PRECIOUS IN HIS SIGHT  
 JESUS LOVES THE LITTLE CHILDREN  
 OF THE WORLD**



This is one of my favorite songs to sing with kids (Eugene's too). How did we get all those skin colors? An evolutionary idea that the darker skin colors came from man being exposed to lots of sun, and each generation got darker and darker, has real problems. The Eskimo has fairly dark skin, yet he keeps his body covered with furs most of the time. How could the sun change his skin color? Could we get all the skin colors from just two people, Adam and Eve?

If mankind began from just two people, then to get all the different colors that we see in people today, Adam and Eve would have had to been polka dotted! Or striped!..... Or checkered? Paisley? Camouflaged? No. To get all the kinds of skin color that we see, Adam and Eve would only had to have the right assortment of genes. That is genes with a **G**...not the kind that your Mom and Dad buy from a store; those are jeans with a **J**...the kind you wear. Genes are the small parts of your cell that are the pattern for what you look like. You get your genes from you parents. You will have light or dark skin depending on what kind of genes your parents have: not from polka dots!

Red and yellow, black and white, and let's not forget

brown; to get all these skin colors it would seem that there must be red, yellow, brown, black, and white colorings or pigments in the skin. But in fact, there is only one skin color: a brown pigment called melanin. We basically all have the same skin color, just different amounts of melanin. Albinos have no melanin, so they have very white skin (almost pink because of the blood vessels that show through). If you have only a little melanin,



you have white skin. If you have very black skin, it is because your skin makes a lot of melanin. Brown skin comes from all the variations you can get between white and black. If you are Chinese, your skin is slightly thicker, which gives your skin a yellowish shade. No matter the color, it all comes from melanin. Melanin is produced by cells called melanocytes. It is produced to protect the skin from the harmful ultraviolet rays of the sun. If you have light skin (little melanin), a lot of sun can give you a sunburn. Even dark skinned people can get a sunburn, making their skin even darker. Take the sun away and their skin color returns to the original shade.



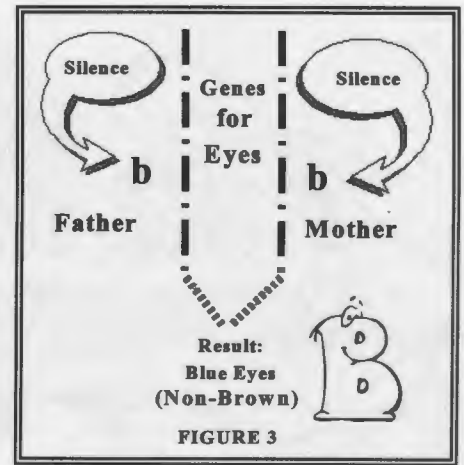
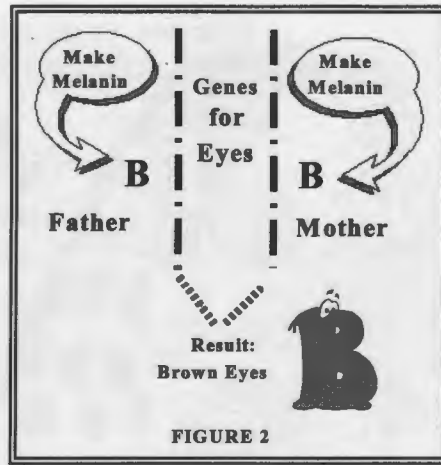
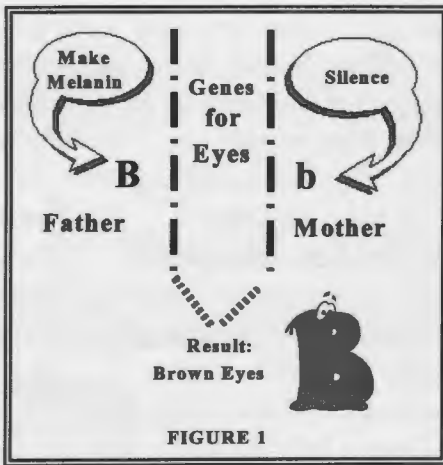
How long would it take to get all the different skin colors we see in people today? Thousands of years? Millions of years? No, it could happen in just one generation! That's about 30 years! To understand how this can happen, let's take a very basic course in genetics.



Genes in the DNA carry the instructions on how to make each and every feature that makes your body. We get our genes from our parents; one half comes from the father and the other half comes from the mother.

Melanin is the stuff that also gives your hair and eye color. For simplicity, let's call the gene that carries the directions to make melanin in your eyes **B**; it is asking your cells to make melanin. Genes come in matching pairs. Another gene of the pair says nothing (silent) about making melanin (let's call it **b**). If you get **B** from your father, and **b** from your mother, you will have brown eyes (fig. 1). If your father has **B** and your mother also has **B**, you will also have brown eyes (fig. 2). If you get **b** from your father, and **b** from your mother, there are no instructions for melanin, so you will have blue or non-brown eyes (fig. 3). Get the idea?

Now to get a little more complicated. Skin color is



determined by at least two sets of genes. Lets call the genes that ask for melanin to be made by your cells A and B, and the genes (silent) that ask the cells to make very little melanin a and b. People with the darkest skin would have genes AABB and those with very light skin would have genes aabb. Now let's see what combinations we could get from medium skinned parents (AaBb) using what is called a punnet square pictured below. The sex cells of each parent can carry only one half of any pair of genes; in this case there are four possible combinations of genes that can be passed on to their children ( AB, Ab, aB, or ab). If the father passes on ab, and the mother Ab, then the child would have Aabb, or light skin. If the father passes on AB, and the mother passes on aB, the child would be AaBB, or dark brown. Get the idea?

As you can see, all the skin colors in the world can come from just two medium skinned parents in just one generation. So what color were Adam and Eve, or Noah and his wife? Probably medium skinned. Most of the people in the world today have medium skin.

		FATHER			
		AB	Ab	aB	ab
M O T H E R	AB	AA BB	AA Bb	Aa BB	Aa Bb
	Ab	AA Bb	AA bb	Aa Bb	Aa bb
	aB	Aa BB	Aa Bb	aa BB	aa Bb
	ab	Aa Bb	Aa bb	aa Bb	aa bb

Remember, the discussion given is a very simplified explanation of genetics, but it shows you how it works!

Now you try it! Using the square, what skin color will a child have? Answers at end of page.

	Father	Mother	Child?
1.	Ab	Ab	?
2.	aB	Ab	?
3.	Ab	ab	?
4.	aB	aB	?
5.	ab	aB	?
6.	Ab	AB	?



### ASK EUGENE

Wow! This exercise in genetics either educated you or fried your brain. This is high school and college level stuff, so if you understood all of it, pat yourself on the back. I'm still trying to figure out where my orange hair (yes, I have orange hair!) comes from. Since I'm a puppet and I am made out of cloth, I guess my color comes from some dye. Ahhh...but where did the dye get its color? You figure it out!

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**Answers**  
 1. Aabb middle 2. AaBb middle 3. Aabb middle  
 4. aABb middle 5. aabb light 6. AaBB dark

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