Who Did I Get THIS Nose From!

By: Professor Kate Lormand, M.S.

PROCEDURES:

1. Review the unique characteristics for the dominant and recessive alleles listed in the following chart.

2. Determine which person will toss for the female and which will toss for the male. Assume each parent is heterozygous for each trait. Remember that there are two genes per trait.

3. Have the person who is representing the male flip a coin to determine the sex of the offspring. If the coin lands heads up, the offspring is a female. If the coin lands tails up, the offspring is a male. Can you figure out why only the male needs to flip to determine the sex of the child?

4. For all future coin tosses, heads will represent the dominant allele and tails will represent the recessive allele.

5. The researchers should now flip their coins at the same time to determine the genotype of the first trait, the shape of the face. Record the results for this set of coin tosses. Note: *The coins should be flipped only once for each trait.*

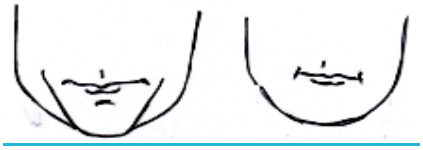
6. For example: for the trait face shape the alleles could be *A* for round and *a* for square. Each parent starts out as a heterozygote so the mother has the combination *Aa* and the father also has the combination *Aa*. If the mother flips a coin and it lands tails up then the allele she contributes to the child would be *a*. When the father flips the coin it also lands tails up so he also contributes an *a.* The child then has the gene combination *aa*. This would then result in a child with a square face shape. See the example in the chart.

7. Continue to flip the coins for each trait listed in Table 1. After each flip, record the trait of the offspring by placing a mark in the appropriate box in the table. Note: Some information in the table has been simplified, for in many cases traits are actually produced by two or more genes.

8. Now for the fun part: draw a picture of the child created with the characteristics determined by flipping coins. This exercise can be repeated as often as desired.

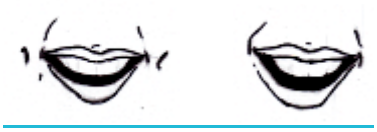
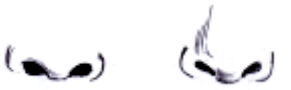
NOTES: Hair Type (# 4) is what we call incompletely dominant so:

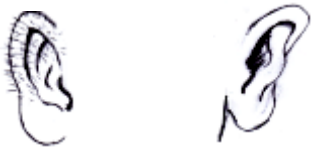
DD = straight Dd = wavy and dd = curly

#	Trait	Allele from Mother	Allele from Father	Child's Genotype	Child's Phenotype (written)
1	Face Shape  AA, Aa Round aa Square	A or a **a**	A or a **a**	**aa**	**square**
2	Chin Size  BB, Bb Prominent bb Average	B or b	B or b		

3	Cleft Chin  CC, Cc cc Cleft Chin No Cleft	C or c	C or c		
4	Hair Type  DD Dd dd Straight Wavy Curly	D or d	D or d		
5	Widows Peak  EE, Ee ee Widows Peak Absent	E or e	E or e		
6	White Forelock  FF, Ff ff White Forelock Absent	F or f	F or f		

7	Eye Shape  GG, Gg gg Almond Shape Round Shape	G or g	G or g		
8	Eye Slantedness  HH, Hh hh Horizontal Upward Slant	H or h	H or h		
9	Eye Lashes  II, Ii ii Long lashes Short lashes	I or i	I or i		
10	Eyebrow Thickness  JJ, Jj jj Thick Thin	J or j	J or j		
11	Eyebrow Length  KK, Kk kk Separated Brows Brows joined	K or k	K or k		
12	Lip Thickness  LL, Ll ll	L or l	L or l		

	Thick Lips Thin Lips				
13	Dimples  MM, Mm mm Dimples No Dimples	M or m	M or m		
14	Nose Shape  NN, Nn nn Round Pointed	N or n	N or n		
15	Nostril Shape  OO, Oo oo Round Pointed	O or o	O or o		

16	Earlobe Attachment  PP, Pp pp Free Attached	P or p	P or p		
17	Darwin's Earpoint  QQ, Qq qq Pointed Point Absent	Q or q	Q or q		
18	Hairy Ears (males only)  RR, Rr rr Hairy No Hair	R or r	R or r		
19	Cheek Freckles  SS, Ss ss Present Absent	S or s	S or s		

20	Forehead Freckles  TT, Tt tt Forehead Freckles Absent	T or t	T or t		

Illustrations by Phyllis Carpenter of Hands-On Labs, Inc.

Kate Lormand, M.S. has been an adjunct biology professor for over 20 years and teaches online as well as face-to-face courses. Her Masters Degree is in Plant Genetics and Agriculture. Kate has three sons, and her family spends a great deal of time gardening and attending swim meets.

Kate also works with Hands-On- Labs, Inc. (www.LabPaq.com) as a biology researcher to develop safe yet effective laboratory experiments for inclusion in LabPaqs. Hands-On Labs, an educator owned company, pioneered the development of LabPaqs for home-based experimentation. LabPaqs are academically aligned collections of science equipment and supplies that allow students to perform traditional science experimentation at home. Various LabPaqs in biology, chemistry, geology, and physics are used by thousands of online and alternative high school and college students each year. To learn more about the college, high school, and AP-level high school LabPaqs available for home instruction, visit www.LabPaq.com.