

HOMEWORK # 2

Answer sheet

1 a) autosomal recessive

b) Chi-square test .

Hypothesis: if Waltzing is caused by autosomal recessive, expect 3:1 normal to Waltzer in F2

Test	<u>Obs</u>	<u>Exp</u>	<u>O-E</u>	<u>(O-E)²</u>	<u>(O-E)²/E</u>
	124	128	4	16	0.125
	47	43	4	16	<u>0.36</u>

$$\Sigma = 0.485 = X^2_{1df} \sim 50\% \text{ probability}$$

Conclusion (ie. reject or retain hypothesis)

Retain, since prob. of getting such observed numbers is high

2. a) A Hh

B hh

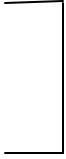
C hh

D Hh

b) 0.5

c) 0.5

d) 0.25

3. a) A  Pp or PP in each case
 B
 C

b) 2/3

c) Pp or pp

d) cannot marry Pp or pp freq of Pp = 2% freq of pp = 1/10000

$$PP = 1 - (0.2 + 0.00001) = 0.97999 \text{ around } 98\%$$

4.	<u>Family</u>	<u>Children</u>	<u>Phenotype</u>	<u>Possible genotype : MOM DAD</u>	
	A	2 males	normal	XX	XY most likely
		2 females	normal		
	B	2 females	color-blind		
		3 females	normal	X ^C X	X ^C Y
		2 males	color-blind		
	C	4 males	color-blind	X ^C X	XY most likely
		4 females	normal		
	D	2 females	color-blind	X ^C X	X ^C Y
		2 males	normal		

5. Pedigree diagram for Family B described above

Pedigree must show Mom and Dad and all 7 children, affected shaded, genotypes under symbols