102-2 遺傳學 隨堂測驗 04　姓名 _____ 學號 _____

1. A homozygous strain of yellow corn is crossed with a homozygous strain of purple corn. The F1 are intercrossed, producing an ear of corn with 119 purple kernels and 89 yellow kernels (the progeny). What is the genotype of the yellow kernels? Please use chi-square test to verify your hypothesis for the model of inheritance on kernel color.)(50 points)

Critical value of the χ^2 distribution				
df	1	2	3	4
P=0.05	3.841	5.991	7.851	9.488

2. In *D. melanogaster*, cherub wing (***ch***), black body (***b***), and cinnabar eyes (***cn***) result from recessive alleles that are all located on chromosome 2. A homozygous wild-type fly was mated with a cherub, black, and cinnabar fly, and the resulting F1 females were test-crossed with cherub, black, and cinnabar males. The following progeny were produced from the testcross:

ch	***b*$^+$**	***cn***	105
***ch*$^+$**	***b*$^+$**	***cn*$^+$**	750
***ch*$^+$**	***b***	***cn***	40
***ch*$^+$**	***b*$^+$**	***cn***	4
ch	***b***	***cn***	753
ch	***b*$^+$**	***cn*$^+$**	41
***ch*$^+$**	***b***	***cn*$^+$**	102
ch	***b***	***cn*$^+$**	5
Total			1800

   a. Determine the linear order of the genes on the chromosome. (which gene is in the middle?) (10 points)
   b. Calculate the recombinant distances between the three loci. (20 points)
   c. Determine the coefficient of coincidence and the interference for these three loci. (20 points)