Homework 1 – BSCI370

1) Blending inheritance was a major stumbling block for the maintenance of genetic variation and Darwin’s theory of evolution via natural selection. The following example will reinforce how our knowledge of inheritance eliminates this stumbling block. 5 pts.

A white flowered, small flowered individual is crossed with a red flowered individual having large flowers and gives rise to offspring that are pink flowered and produce intermediate sized flowers. Given that AA and aa refers to the homozygous conditions of white and red, respectively and BB and bb refers to small and large flowered individuals, respectively:

1. Give the genotype of the pink intermediate sized flower individual.
2. LIST the gametes produced by the pink, intermediate sized flowers for these two loci. Assume the loci are unlinked.
3. Diagram the stages of meiosis that lead to each gamete, indicating the movement of each specific allele.
4. How many different phenotype(s) would appear in the progeny of crosses between two Pink Intermediate parents?

2) Describe how drug cocktail and drug holiday HIV therapies are impacted by and understanding of evolution. How is HIV virulence impacted by natural selection, mutation, gene flow, and descent by modification? Provide and explanation for each.