Computational exercise 1.1_Estimation of heritability

In this computer exercise we will improve our intuition about heritability in a couple of ways. First, we will use actual data from a natural population to obtain a point estimate of heritability using the statistical procedure of regression. We will write and use a program that can estimate heritability for any one of the 6 traits in our dataset. Second, we will use bootstrapping to see how our point estimate of heritability (2 times the regression slope) is affected by the particular sample of mothers and daughters that we use.

If you haven't used R before, you might want to run the video, which will take you thru the steps of the first part of the exercise:

http://screencast.com/t/K73XvXt14RT

The first thing that you will do in that tutorial, or if you follow the exercise without the video, is bring the data for the exercise into R, so let's look briefly at the description of that data file, **R_inland_snake_data.txt**, which you can open in a text file editor such as Notepad.

The data are the values of 6 traits in a sample of mothers and their daughters from one population of a garter snake, *Thamnophis elegans*. The first line is the header which lists the names of the variables (8 columns):

- local = the name of the population
- family = the name of the family (the first row with each family name is the mother, the rows that follow with the same name are her daughters)
- body = the number of vertebrae in the body
- tail = the number of vertebrae in the tail
- mid = the number of scale rows around the snake, assessed at the middle point of the body
- ilab = the number of scales on the lower lip (infralabials, sum of left and right sides)
- slab = the number of scales on the upper lip (supralabials, sum of left and right sides)
- post = the nmber of scales behind the eye (postoculars, sum of left and right sides)

Missing values are denoted by NA. More information on the traits and the sample can be found in **Phillips & Arnold (1999)** and **Arnold & Phillips (1999)**. Pdfs are available on Arnold's website.