Attached is a datafile ‘BayesDat.csv’. It contains 250 samples obtained from different donors that were run in replicates and their mean values. Our goal is to model the Coefficient of Variation (CV) of the assay as a function of the mean (CV = standard deviation / mean).

We will assume that the raw data follows a log-Normal distribution. We are going to use same parameterization as the dlnorm() function in R (Note: this is different than OPENBUGS, so take a look at the manual if you use OPENBUGS to call within R).

Yl, Y2 ~ log-Normal(log(mu),σ(mu))

In this form, the scale parameter ‘σ’ is a function of the location parameter ‘mu’, and that function is given by:

It turns out that in a log-Normal setting and, with the parameterization, CV(mu) =. So all you need to do is get posterior samples of and and use those to get posterior samples of CV for a range of values of *mu*. For priors, use:

Here, Ga(a,b) represents the Gamma distribution with mean of and a variance of .

At the end, we want you the produce a plot like this. The last plot shows the raw data and the fitted %CV as a function of *mu*. Also report out posterior summaries of and .

