**Instructions**

In assessment 6 we have identified genes differentially expressed between fetal and adult brain. Now we will examine these results in a wider context. The roadmap epigenomics project has profiled both fetal and adult brain and other tissues such as liver for the promoter associated histone modification H3K4me3. Using this data, examine whether genes which are differentially associated between fetal and adult brain, are associated with changes in H3K4me3 in their promoters, between fetal and adult brain. As a sanity check, note that the list of differentially expressed genes is expressed in brain at some developmental time point. H3K4me3 is an epigenetic mark which is cell type dependent. We would expect that genes important for brain development are not expressed in the liver (say). Therefore, as a sanity check, examine whether promoters for the list of differentially expressed genes are marked by H3K4me3 in liver.

## **Review criteria**

Upload a PDF document with the results of your analysis, including the answers to the two questions: “Are there changes in H3K4me3 between fetal and adult brain over promoters for genes differentially expressed between fetal and adult brain?” And “Are promoters of genes differentially expressed between adult and fetal brain marked by H3K4me3 in liver”? The latter question is a control question.

* Does the document contain an answer to the two questions.
* Are the answers convincing?

**PROMPT**

Upload a PDF document with the results of your analysis, including the answers to the two questions: “Are there changes in H3K4me3 between fetal and adult brain over promoters for genes differentially expressed between fetal and adult brain?” And “Are promoters of genes differentially expressed between adult and fetal brain marked by H3K4me3 in liver”? The latter question is a control question.

Gene Set Analysis and Results

[Gene Set Analysis and Results](https://coursera-assessments.s3.amazonaws.com/assessments/1633545385586/dc21526b-66b2-4869-8362-d7fec2e149fd/W9_GeneSetAnalysis.pdf)