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Biostatistical Analysis on the Effects of the Circadian Clock & Glucose Genes on Different Feeding Regimens

College of Sciences and Health Professions

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Abstract

Circadian clocks are internal biological systems that control many physiological processes. The circadian clock is considered to be the master regulator of metabolism in mammals. The molecular metabolism is not very well known. The circadian clock regulated expression in metabolic enzymes and in turn, diet also regulates circadian clock on a molecular level. To better understand the interaction between circadian clock and metabolism, mice were subjected to different feeding regimens and metabolic tissue, such as liver and skeletal muscles, have been collected across the circadian cycle. Expression of genes have been analyzed in the liver using RT-QPCR. Large set of experimental data on the expression of circadian clock genes and metabolic genes in the liver of mice on different feeding regimens across the circadian cycle has been collected. My task is to analyze using the statistical analysis which treatment has statistically significant effect on rhythms of gene expression. First, I will have to work with three softwares on some data that has been previously analyzed in order to understand how it works and find out the most appropriate one to use. Once that has been done, I will select the software and use future data in this particular software. The complexity of this task is complicated because it comes from multiple parameters, such as several diets and time of day, which might have effect on gene expression.