# The Effect of Cisplatin on Gene Expression in Breast Cancer

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Cisplatin is a platinum based chemotherapy that has been used for over 40 years in cancer treatment. The purpose of this experiment is to examine how cisplatin treatment in breast cancer affects the expression of ZNF238, APTX, and ALX3 genes. Expression patterns will be analyzed alongside the findings of other studies in order to determine whether or not a cell is sensitive, upwards regulation, or resistant, downwards regulation due to cisplatin. This will be beneficial in order to determine if any could be used as a potential biomarker for cisplatin treatment, which would help provide faster and more accurate treatment. It was hypothesized that the expression of ZNF238 and ALX3 would increase and that the expression of APTX would decrease. Previously treated breast cancer cells with cisplatin had their cDNA frozen. In this experiment the cDNA will be thawed and the expression of ZNF238, APTX, and ALX3 will be measured. The data will be analyzed using the delta-delta CT method with the CT means calculated from the data given by qPCR. All hypotheses were unsupported. ZNF238 decreased in expression over the first 24 hour time interval. The p value was also 0.0579 which shows that the expression of ZNF238 significantly decreased in expression in the 6-24 hour window. The downwards regulation correlated with cellular sensitivity when compared to the expression of ZNF238 in cisplatin treated blood cells. This means that ZNF238 could be used as a potential biomarker because of the trend of cellular sensitivity. APTX is highly complex and not a good biomarker as the expression of the gene changes between upwards and downwards regulation over the entire experiment and does not follow any sensitive or resistant pattern of expression. ALX3 was not expressed in breast cancer.

**Awards Won:**