

## Undergraduate Symposium

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### Two Dimensional Gel Electrophoresis

#### Abstract

Two-dimensional gel electrophoresis is the study of protein expression encoded by a genome. This technique is the only one that is able to separate thousands of protein in a reasonable time period. Isoelectric focusing (IEF) is used in the 1st Dimension, to separate proteins by their charge. SDS-Polyacrylamide gel electrophoresis in the 2nd Dimension separates proteins by their size (molecular weight, MW). It is used for two main purposes, firstly for the large scale identification of all proteins in a sample, secondly for differential expression of two or more samples to investigate the differences in their protein expression.

In our research thus far the first purpose is the main focus. The first task was to familiarize ourselves with the instruments and the procedure. Up to now, we have been able to reproduce and improve the quality of the final gels for different bacterial strains (first with *E. coli*, then with *P. putida* F1). We are now starting on the second purpose of investigating the differences in protein expression of *P. putida* F1 in different growth conditions. As this strain is well known to be able to degrade many hazardous organic compounds, we hope our research may contribute to a cleaner environment.