

## **Genes that Affect Multiple Myeloma**

**Safir Rahman**

Canton, MI, United States

### **Abstract**

Multiple Myeloma is a cancer that affects over 350,000 individuals worldwide, and this figure is estimated to increase to 555,000 by year 2027. The purpose of this study is to determine different genetic factors that may cause multiple myeloma symptoms. Using microarray data on the GEO database, we have determined a few important genes that may cause multiple myeloma symptoms. An important set of genes we found were the IL1R1 and IL1RL2, which are found in the cytokine-cytokine receptor interaction pathway. These genes are involved in inflammatory responses. The PAR1 and PAR 3 genes, part of the complement and coagulation cascades pathway, are another set of genes we found in our study to be responsible for some of the multiple myeloma symptoms. These genes stimulate phosphoinositide hydrolysis, a process important to the regulation of cell development. Both of these sets of genes are downregulated in multiple myeloma. This study does find some new genes that cause multiple myeloma symptoms. More research is needed to determine how the downregulation of these genes affect multiple myeloma.