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Creation of a Cell Line for Rapid Identification of Potential Receptor Agonists or Antagonists

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Creation of a Cell Line for Rapid Identification of Potential Receptor Agonists or Antagonists

Brandon Baxter

Abstract

Developing drugs to combat disease is costly and time-consuming. Efficient methods for rapid drug screening for diseases such as Type 2 diabetes mellitus or cancer would be extremely advantageous. Diabetes affects 33.3 million people in the United States and 462 million worldwide and 17 million new cases of cancer are diagnosed each year. Many diseases result from the cells inability to respond to external signals that bind to receptors on the cytoplasmic membrane. This research attempted to create a cell line containing an intracellular protein fused to GFP. This protein would alter its cellular location and serve as an indicator that the cytoplasmic membrane receptor was activated or inactivated. Using Lipofectamine 3000, a plasmid encoding fusion protein was transfected into mouse cells, followed by 2 weeks of selection with gentamicin. The highest intensity-expressing cells were selected by using FACS. Studies are on-going to confirm the fusion proteins response to external signals.