What is the Role of PRPF39 in Cisplatin Treated Cancer Cells?

May Weston, Marian High School, Mishawaka, Indiana, United States of America

BMED079

Scientific Question

What is the role of PRPF39 in cisplatin treated cancer cells? How can PRPF39 be used to improve cisplatin treatment?

- Chemotherapy treatments are extremely complex, and many genes play a role in them.
- Understanding a gene's role in response to cancer treatment is critical to improve drug treatments to be most effective.
- I investigated the trends of cisplatin induced expression of PRPF39 in cancer cells.
- **Hypothesis**: That PRPF39 will change in response to cisplatin treatment.
- **Null Hypothesis**: The expression of PRPF39 will not change in response to cisplatin treated cancer cells.

Data Analysis & Results

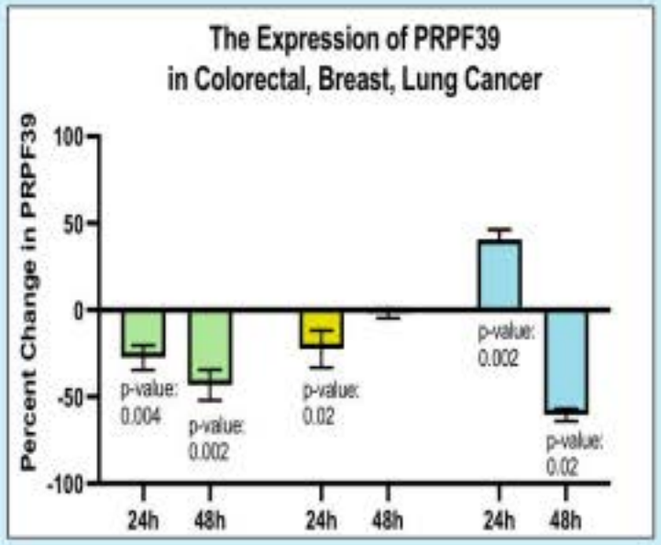
• These results show that PRPF39 is extremely dynamic and exhibits different trends in each cancer.

• **colorectal cancer** (green)
-24h: 28% downregulated
-48h: 48% downregulated

• **breast cancer** (yellow):
-24h: 23% downregulated
-48h: no change

• **lung cancer** (blue):
-24h: 52% upregulated
-48h: 61% downregulated

All figures created by the finalist.



Methodology

1. Thaw frozen cDNA from cancer cells treated with cisplatin
2. Take the cDNA and dilute it to 12ng/ul and combine it with the PRPF39 primer.
3. Put the prepared reaction in a QPCR machine and let it run for 40 cycles.
4. Analyze the fold change in PRPF39 expression. Determine whether the gene plays a role in sensitivity or resistance mechanism.

Conclusions

- These results show that colorectal cancer is the most promising candidate for PRPF39 modulation to be used to improve cisplatin treatment outcomes.
- Understand the role of this gene in cancer cells will help scientist know how to improve drug treatments.