

Understanding the Metabolic Response of Breast Cancer Cells to Olaparib

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Scientific Concern

Breast cancer leading cause of cancer-mortality in women globally. Absence of targetable aberrations in triple negative renders it most aggressive type.

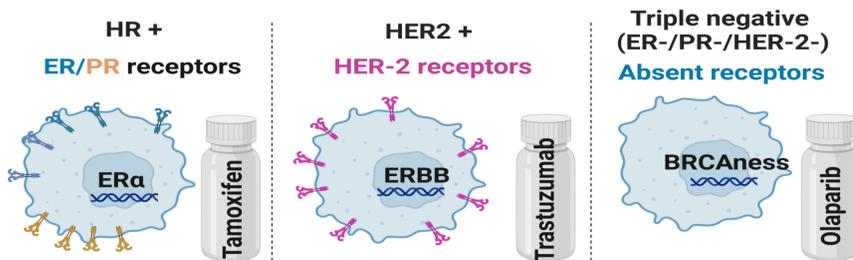


Figure 1 Breast cancer receptors expression and drug of choice.

Aims & Objectives

Investigating *in-vitro* metabolic response of breast cancer cells sensitivity to Olaparib, followed by metabolomics profiling of treated versus untreated cellular extracts.

Study Design

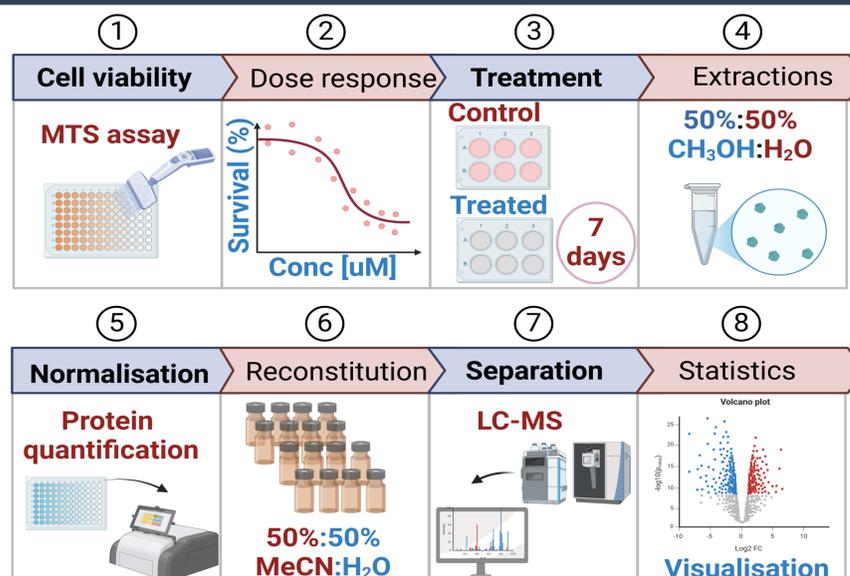


Figure 2 Our study methodology.

Results & Data Analysis

Metabolic profiling of Olaparib-treated BT-20 cells

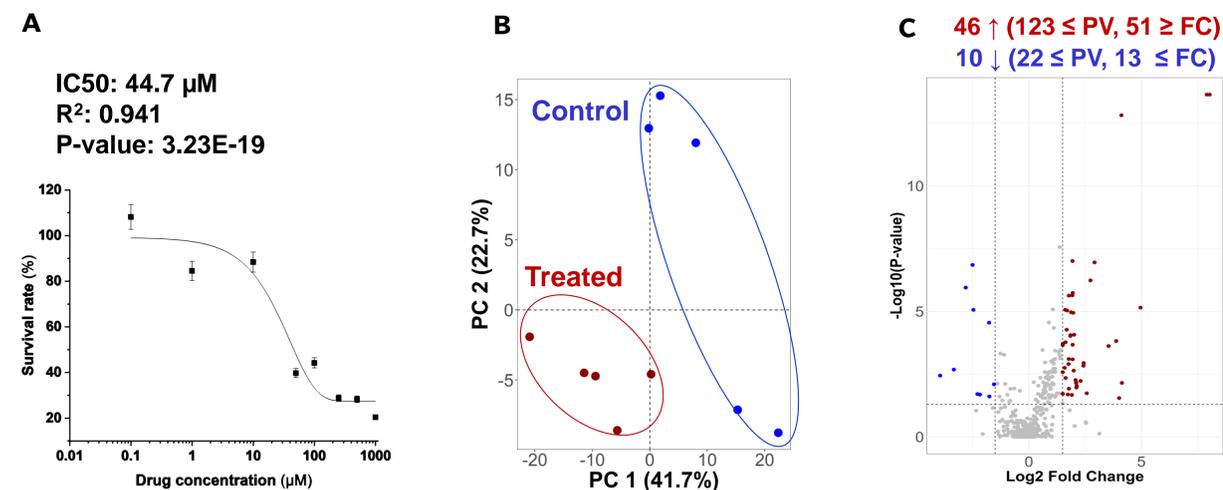
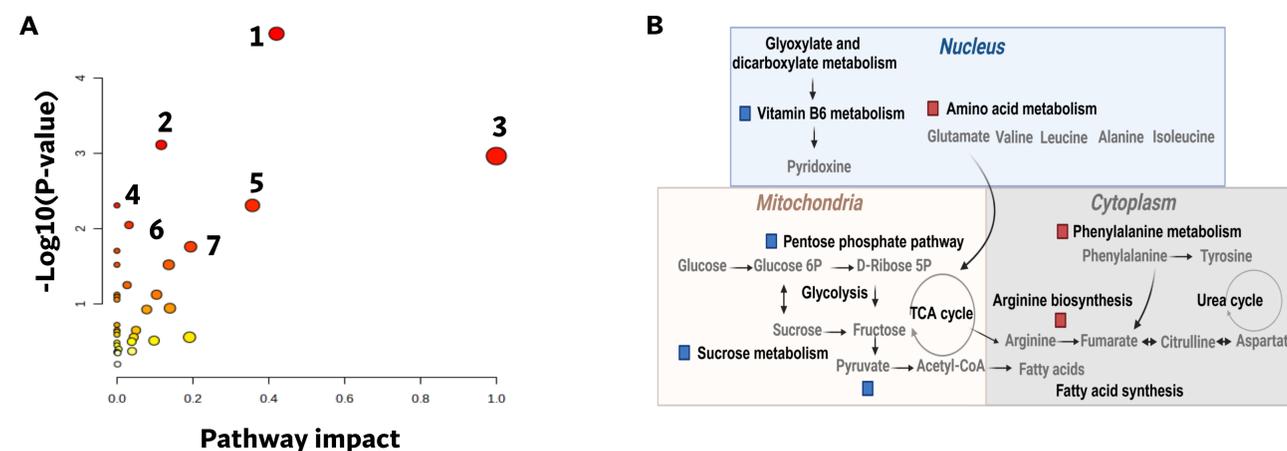


Figure 3 (A) Dose response curve of cell viability assay. (B) PCA plot to visualize variance in global metabolic features between control and treated samples. (C) Volcano plot displaying nonsignificant (grey), enriched (red), depleted (blue) metabolites.

Understanding pathway alterations in Olaparib-treated BT-20 cells



1. Alanine, aspartate, and glutamate metabolism, 2. Arginine biosynthesis, 3. Tyrosine and tryptophan biosynthesis, 4. Valine, leucine, and isoleucine biosynthesis, 5. Phenylalanine metabolism, 6. Vitamin B6 metabolism, 7. Sucrose metabolism.

Figure 4 (A) Top altered pathways indicating metabolic rewiring driving tumor development.

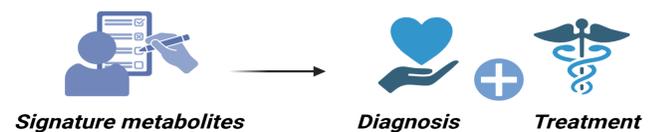
(B) Pathway map showing pathways with high metabolic impact (red), and low metabolic impact (blue).

Discussion

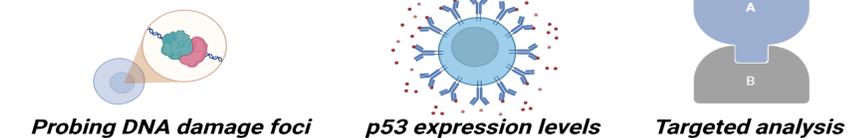
- Dose-dependent *in vitro* sensitivity of BT-20 cells to Olaparib.
- Differential metabolic features in control versus treated samples.
- Galactosamine and glutathione are examples of depleted metabolites.
- Enriched metabolites include gluconic acid and acylcarnitine.
- Significant amino acids dysregulation observed due to increased demand for growth and proliferation in breast cancer cells.
- Metabolic dysregulations contribute to cellular reprogramming.

Key implications

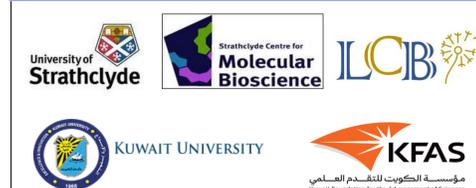
Corresponding cell passport



Validation experiments



Acknowledgments



Contact us



References

