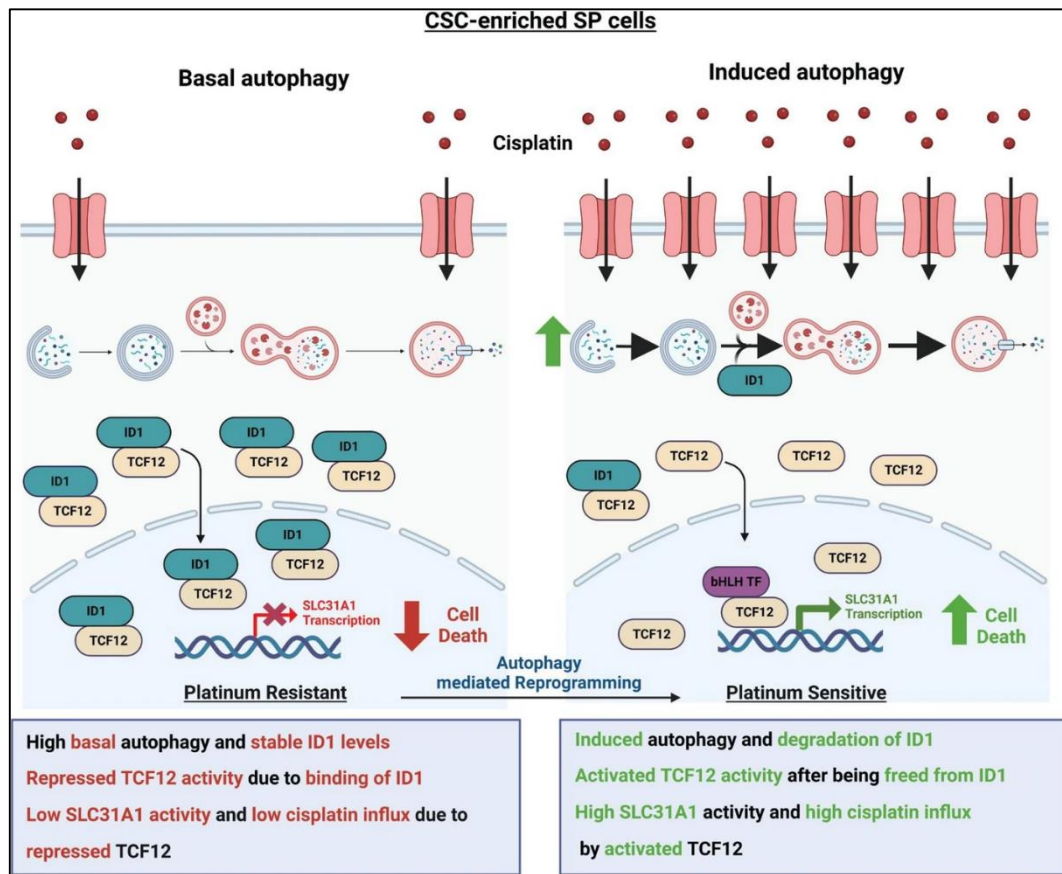


Autophagy-Mediated ID1 Turnover Dictates Chemo-Resistant Fate in Ovarian Cancer

Stem Cells



A recently published research article titled “[Autophagy-mediated ID1 turnover dictates chemo-resistant fate in ovarian cancer stem cells](#)” from Dr. Pritha Ray’s Lab was featured in “[Cancer Stem Cell News](#)” which is an online resource (maintained by [STEM CELL TECHNOLOGIES](#)) that curates the top research publications and reviews about cancer progenitor cells and cancer stem cells.

This study addresses a critical gap in understanding the mechanisms by which ovarian cancer stem cells (CSCs) maintain their chemo-resistant state, posing significant challenges to effective cancer treatment. The research focuses on the role of autophagy—a cellular degradation process—in regulating the fate of CSCs and their response to chemotherapy, particularly cisplatin. By elucidating the molecular pathways involved, the work aims to uncover potential therapeutic strategies to overcome drug resistance in ovarian cancer.

The study reveals that ovarian CSCs exhibit higher basal autophagy compared to non-CSCs. This heightened autophagic activity is essential for maintaining the stem-like properties and drug resistance of CSCs and is partially bestowed by high level of the Inhibitor of Differentiation Protein ID1. Further autophagy induction by microenvironmental stresses leads to the selective degradation of ID1 in CSCs thereby freeing up transcription factor TCF12 which in turn upregulates Cisplatin influx protein, triggering their differentiation into non-CSCs and enhancing their sensitivity to cisplatin. The authors finally validated this autophagy-ID1-TCF12 axis in relapsed ovarian cancer patient derived tumor spheroids who had further showed response to second-line cisplatin treatment. This is the first report to suggest that modulating the autophagy-ID1-TCF12-SLC31A1 axis could be a promising strategy to counteract chemo-resistance in ovarian cancer, offering new avenues for enhancing the efficacy of chemotherapy.

References:

1. Phadte, P., Bishnu, A., Dey, P., Manikandan, M., Mehrotra, M., Singh, P., Chakrabarty, S., Majumdar, R., Rekhi, B., Patra, M., De, A., & Ray, P. (2024). Autophagy-mediated ID1 turnover dictates chemo-resistant fate in ovarian cancer stem cells. *Journal of Experimental & Clinical Cancer Research*, 43(222). <https://doi.org/10.1186/s13046-024-03147-z>

2. Cancer Stem Cell News: Newsletter: Autophagy-Mediated ID1 Turnover Dictates Chemo-Resistant Fate in Ovarian Cancer Stem Cells

Link: <https://www.stemcellsciencenews.com/newsletter/229642/>