

# **THE ESTABLISHMENT OF THREE NEW OVARIAN CANCER CELL LINES OPENS NEW AVENUE OF RESEARCH INTO TUMOR HETEROGENEITY AND CELL EVOLUTION**

Eglė Žymantaitė<sup>1,2</sup>, Agata Mlynska<sup>2</sup>, Neringa Dobrovolskienė<sup>2</sup>, Birutė Intaitė<sup>2</sup>, Vita Pašukonienė<sup>2</sup>

<sup>1</sup>Life Sciences Centre, Vilnius University, Lithuania

<sup>2</sup>National Cancer Institute, Vilnius, Lithuania

[egle.zymantaite@gmc.stud.vu.lt](mailto:egle.zymantaite@gmc.stud.vu.lt)

Ovarian cancer (OC) is one of the most fatal malignancies affecting women globally. The high level of heterogeneity of this cancer plays a big role in the lack of successful treatments. In the pursuit of studying cancer cell biology and testing new drugs, cell line models have emerged as the primary *in vitro* research model. However, recent data indicates that some of the frequently used OC cell lines in research no longer precisely represent their original tumor profile. Therefore, it is imperative to develop new cell lines that are well-characterized and closely resemble the various histological and molecular profiles of the tumor.

Our study has successfully established three distinct cell lines (CW1-NCI, CW2-NCI, SM-NCI) that were derived from different tumor pieces obtained from the same 62-year-old female patient diagnosed with high-grade serous ovarian carcinoma in the National Cancer Institute of Lithuania. To ensure accuracy, all newly established ovarian cell lines were observed and characterized at specific passages. The passaging process resulted in significant changes in the morphological characteristics of the cell lines, as well as differences in their ability to form 3D structures. Flow cytometry analysis was conducted on different cell line passages, revealing distinct marker expressions profiles that proved the existence of cancer cell heterogeneity within the same tumor. The findings also demonstrated that the marker expression fluctuated across different cell passages, indicating the plasticity and evolution of cells in the culture until they reached a stable marker expression.

The findings of our study are significant in the comprehensive understanding of ovarian cancer heterogeneity, cell plasticity, and evolution during the culturing process. Moreover, the establishment of a new stable ovarian cancer cell line models will prove to be a valuable tool for future research.

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