Ovarian cancer has the worst prognosis among gynecologic malignancies, in part due to presentation with later-stage disease in a majority of women. Much effort has been expended towards early detection, but it remains a significant issue and challenge. One approach which may have potential in improving the detection of ovarian cancer, particularly in women who present with an advanced or pelvic mass, is the isolation and interrogation of circulating tumor cells (CTCs) from peripheral blood. The microfluidic Parsortix™ system isolates rare cells from biological fluids, particularly blood, on the basis of cell size and deformability.

The primary aim of the present study was to evaluate the performance of a modified Parsortix system for the isolation of ovarian cancer cell lines spiked into blood drawn from healthy volunteers (HV). Parameters such as sensitivity, determined by dilution linearity, repeatability, and stability, were assessed. In addition, the ability to molecularly interrogate Parsortix harvests by HyCEAD™ Zepher and RT-qPCR for the CTC-specific gene EpCAM was explored.

RESULTS

- **Linearity**: The linearity was demonstrated through enriched cell counting and RT-qPCR analysis of spiked CaOV3 and SKOV3 cells. The assay was linear for at least 6 dilution steps using samples with 5–10 cells.

- **Harvest Percentage**: The harvest percentage of spiked samples was assessed. The average harvest percentage for CaOV3 spiked samples was 80% and for SKOV3 spiked samples was 75%

- **Nucleated Cell Number**: The number of nucleated cells in harvests was assessed. The average number of nucleated cells was consistent across samples.

- **Stability and Reproducibility**: The stability and reproducibility of harvests were evaluated. The harvests were consistent across different operators and times.

CONCLUSIONS

- Efficacy of harvests could be demonstrated for up to 120h and Parsortix-isolated cells could be assessed by counting, HyCEAD Zepher, or RT-qPCR from the Parsortix system for isolation of CTCs.

- These findings support the continued optimizations and sensitivity of the Parsortix system for the isolation and interrogation of CTCs.

- Further studies, specifically in the area of ovarian cancer, are ongoing.

**ANGEL/ph. 10 Nugent Road, The Surrey Research Park, Surrey, GU7 7AS, UK**

**ANGEL Europe Limited, 19 Nugent Road, Surrey Research Park, Guildford, Surrey, GU7 7AS, UK**

**A.Hustler@angleplc.com**

**Tel:** +44 (0)1483 363414

**For Research Use Only**

**Not for use in diagnostic procedures**

**www.angelpdx.com**