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## Detection and molecular characterization of circulating epithelial tumor cells from solid tumors: A comparison of two methods

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**Background:** Only few cells from the primary tumor have the ability to initiate metastatic growth and only 1% of these develop into life-threatening metastases. Some approaches do not detect such cells in patients who ultimately will develop metastases raising the question of the "true" number of cells.

**Methods:** Blood from 20 primary breast cancer patients was drawn into CellSave Tubes or standard blood collection tubes (SBCT). Cells were stained with FITC-anti-EpCAM (tumor cells), Propidium Iodide for dead cells and quantified with an automated microscopeor with the CellSearch system.

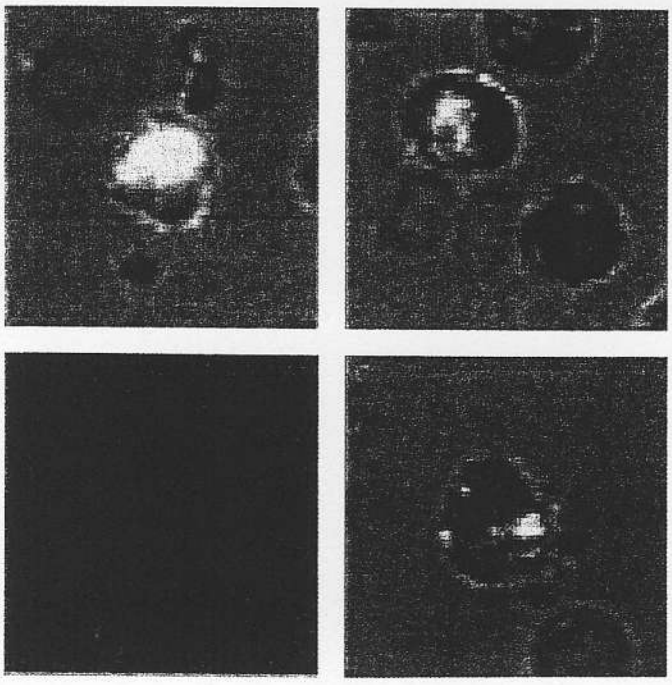

Fig. 1. CellSave



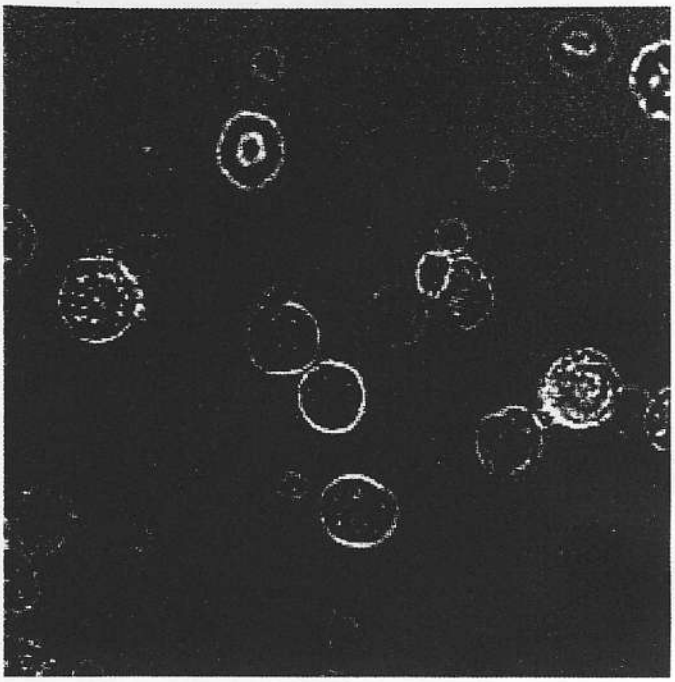

Fig. 2. Live and dead EpCam positive cells

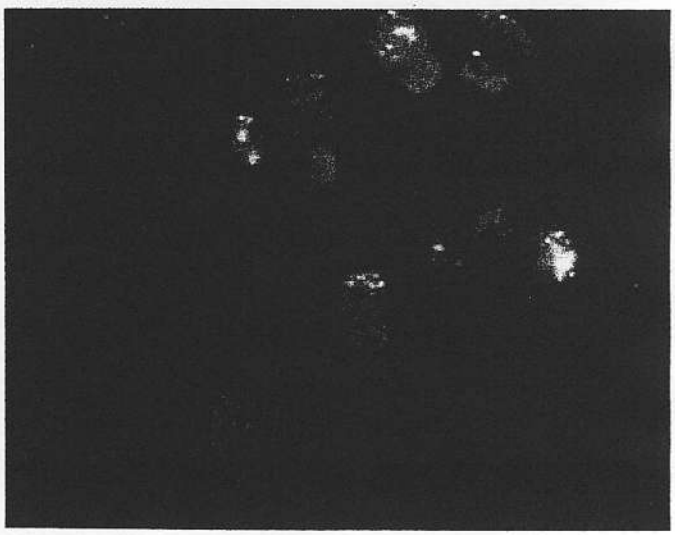

Fig. 3. A group of EpCam positive cells with variable Her2

**Results:** Positive events from the CellSave Tubes was 10fold reduced as compared to SBCT indicating that EpCAM was impaired by the preservative. Duplicate cell preparations showed a correlation of $r^2$=0.8 (CellSave) vs. $r^2$=0.96 (MAINTRAC). Cell morphology (CellSave) was poor with a poor correlation between the positive events and EpCAM-positive cells ($r^2$=0.47) indicating that most positive events were no cells. Correlation between direct analysis and CellTracks analyzer was good, but 50fold lower with the latter indicating that cells are lost through the enrichment step. Cell surface staining and morphology (MAINTRAC) was good with good correlation ($r^2$=0.82) between positive events and live cells and Her2/neu.

**Conclusions:** Reproducibility with CellSave is moderate morphology is poor (Fig 1) and magnetic bead enrichment reduces the number of tumor cells. Our approach shows good reproducibility, good morphology (Fig 2), discrimination between live and dead cells and good FISH analysis (Fig 3).

**Disclosure:** No conflict of interest disclosed.