HCRI Research Day Abstract Format General Instructions:

1. **Limit abstract body to 350 words**
2. **1 inch margins**
3. **Title font Calibri 12 bold; rest of text Calibri 11**
4. **Underline poster presenter; provide department and institutional affiliations**

Cadherin Profile Alterations and Epithelial Ovarian Carcinoma Progression

Yuliya Klymenko[1] and M. Sharon Stack[2]

[1]Department of Biological Sciences, [2]Department of Chemistry and Biochemistry,
Harper Cancer Research Institute, University of Notre Dame, Notre Dame, IN

Epithelial ovarian carcinoma (EOC) demonstrates a unique mode of metastasis, which is initiated by shedding of cells from the primary carcinoma into peritoneal cavity. Both single cells and multicellular aggregates (MCAs) subsequently adhere to and migrate through peritoneal mesothelial cells to anchor in the sub-mesothelial matrix wherein they proliferate to generate secondary tumors. Another distinct feature of EOC is an increase of E-cadherin (E-cad) expression at early stages of metastasis, frequently together with conserved expression of N-cadherin (N-cad). In human EOC, patterns of both "mixed hybrid" cadherin expression (presence of both E- and N-cad expressing cells in the same tumor) and "true hybrid" cadherin expression (presence of both E- and N-cad expression in the same cell) are observed. The role of these cadherins in initial cell detachment, MCA formation, survival in ascites fluid, and intra-peritoneal adhesion and anchoring remains poorly understood. Our previous research has revealed that dramatic differences in cell-cell interactions, MCA formation, aggregate surface morphology and cross-sectional ultrastructure are dependent on cellular cadherin profiles. In general, N-cad expressing cells (DOV13) form stable, highly cohesive smooth solid spheroids, while E-cad expressing cells (OvCa433) form loosely conglomerated and less adhesive aggregates. To further investigate the role of cadherin expression we have generated a stable "true hybrid", bicadherin expressing OvCa433 Ecad+/Ncad+ cell line via *cdh2*-mCherry vector electroporation. Scanning electron microscopy demonstrated changes in MCA surface morphology, with increased lamellipodia and filopodia compared to OvCa433 control MCAs, that are uniformly covered by microvilli. Cell migration, Matrigel invasion and cell proliferation assays showed enhanced invasive and proliferative properties of OvCa433Ecad+/Ncad+ line. Dispase-based dissociation of a hybrid Ecad+/Ncad+ cell monolayer resulted in a longer detachment time period together with higher number of segregated fragments compared to Ecad+ control, indicative of altered epithelial cohesivity. These data suggest that N-cadherin expression alters MCA intra-peritoneal dynamics and may contribute to EOC progression.