Adhesion Assay using Nano-Scaffolds for Metastatic Indicator
JAMES MATTHEWS, Dept of Physics, Texas Tech University, RAUL MARTINEZ-ZANGUILAN, Depts of Cell Physiology and Molecular Biophysics, Texas Tech University HSC, SOYEUN PARK, Dept of Physics, Texas Tech University — It is important to determine the metastatic potential of prostate cancer cells because the metastasis seriously affects the survival of prostate cancer patients. Nevertheless, multi-faceted aspects of metastasis hinder its accurate evaluation. Considering the altered cell-to-substrate adhesion in cancer cells, we performed the adhesion assay using our state-of-art nanoscaffolds to determine the metastatic potential. We have used lowly (LnCap) and highly (CL-1) metastatic human prostate cancer cells. Using the nanosphere lithography, we created the nano-scaffolds with defined spacing and size of nano-islands in 2D array. Subsequent funtionalization using the orthogonal chemistry and selective absorption of extra-cellular matrix proteins allows us to control the adhesions. We found that while the cell proliferation of LnCaP is similar to that of normal cells, CL-1 shows the aggressive proliferation even with restricting the adhesions. We concluded that the high metastatic potential of CL-1 cells is attributed from the abnormally enhanced adhesions.

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