Abstract Submitted
for the CUWIP21 Meeting of
The American Physical Society

Properties of Chromatin Extracted by Salt Fractionation from both Cancerous and Non-cancerous Esophageal Cell Lines[1] EMILY LUFFEY, JIAWEI LIU, Department of Physics, Arizona State University, STUART LINDSAY, Biodesign Center for Single Molecule Biophysics, Arizona State University, ROBERT ROS, Department of Physics, Arizona State University, ROBERT ROS LAB, ASU TEAM, BIODESIGN CENTER FOR SINGLE MOLECULE BIOPHYSICS, ASU COLLABORATION — The National Institute of Health estimates that approximately 38.4% of men and women will be diagnosed with cancer at some point during their lifetimes. While cancer is mostly viewed as a genetic disease characterized by genetic markers and expression of mutant proteins, there is considerable evidence that there is more to cancer than somatic mutations. For example, the first signature looked for by a pathologist is grossly aberrant cell nuclei. It has been shown that the more abnormal a particular cell nucleus is, the more aggressive a particular form of cancer is. A major variable in the overall nuclear structure is chromatin compaction and structure. We compared chromatin compaction and structure for two esophageal cell lines, EPC2 (non-cancerous) and CP-D (cancerous) by using a combination of salt fractionation and atomic force microscopy (AFM) and found significant differences in the chromatin morphology of cancerous and non-cancerous cell lines. We anticipate that our results will help to gain insight into the mechanisms of phenotypic change in cells from normal to cancerous.

[1]Funded partially by the AZ/NASA Space Grant and NIH

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Date submitted: 28 Dec 2020 Electronic form version 1.4