Abstract Submitted
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Correlated Fluorescence-Atomic Force Microscopy Studies of the Clathrin Mediated Endocytosis in SKMEL Cells[1] STEVE SMITH, AMY HOR, ANH LUU, LIN KANG, South Dakota School of Mines and Technology, BRANDON SCOTT, ELIZABETH BAILEY, ADAM HOPPE, South Dakota State University — Clathrin-mediated endocytosis is one of the central pathways for cargo transport into cells, and plays a major role in the maintenance of cellular functions, such as intercellular signaling, nutrient intake, and turnover of plasma membrane in cells. The clathrin-mediated endocytosis process involves invagination and formation of clathrin-coated vesicles. However, the biophysical mechanisms of vesicle formation are still debated. We investigate clathrin vesicle formation mechanisms through the utilization of tapping-mode atomic force microscopy for high resolution topographical imaging in neutral buffer solution of unroofed cells exposing the inner membrane, combined with fluorescence imaging to definitively label intracellular constituents with specific fluorescent fusion proteins (actin filaments labeled with green phalloidin-antibody and clathrin coated vesicles with the fusion protein Tq2) in SKMEL (Human Melanoma) cells. Results from our work are compared against dynamical polarized total internal fluorescence (TIRF), super-resolution photo-activated localization microscopy (PALM) and transmission electron microscopy (TEM) to draw conclusions regarding the prominent model of vesicle formation in clathrin-mediated endocytosis.

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