

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Membrane ruffling or blebbing cells under optical tweezers measurements. Time-lapse movies of MDA-MB-231 cells and Hs578T cells cultured on glass bottom dish during optical tweezers measurements. Arrows indicate membrane tether. The movies were taken at 1 frame per 2 seconds. Scale bars, 10 μm .

File Name: Supplementary Movie 2

Description: A decrease in PM tension induces epithelial cell migration in 2D. Time-lapse movies of MCF10A cells transfected with the indicated siRNA cultured on 2D glass substrates. The movies were taken at 1 frame per 5 min. Scale bar, 20 μm .

File Name: Supplementary Movie 3

Description: A decrease in PM tension induces epithelial cell migration in 3D environments. Time-lapse movies of MCF10A cells transfected with the indicated siRNA in a 3D collagen matrix. The movies were taken at 1 frame per 10 min. Scale bar, 20 μm .

File Name: Supplementary Movie 4

Description: Increasing PM tension is sufficient to suppress 3D migration of malignant cells. Time-lapse movies of ezrin, or MA-ezrin expressing MDA-MB231 cells in a 3D collagen matrix. The movies were taken at 1 frame per 6 min. Scale bar, 20 μm .

File Name: Supplementary Movie 5

Description: Depletion of BAR proteins suppresses 3D migration of malignant cells. Time-lapse movies of MDA-MB-231 cells transfected with the indicated siRNA in a 3D collagen matrix. The movies were taken at 1 frame per 6 min. Scale bar, 20 μm .

All movies were played at 10 frames per second.