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3D Tracking of individual growth factor receptors on polarized cells JAMES WERNER, DOMINIK STICH, Los Alamos Natl Lab, CEDRIC CLEYRAT, University of New Mexico, MARY PHIPPS, Los Alamos Natl Lab, ANGELA WADINGER-NESS, BRIDGET WILSON, University of New Mexico — We have been developing methods for following 3D motion of selected biomolecular species throughout mammalian cells. Our approach exploits a custom designed confocal microscope that uses a unique spatial filter geometry and active feedback 200 times/second to follow fast 3D motion. By exploiting new non-blinking quantum dots as fluorescence labels, individual molecular trajectories can be observed for several minutes. We also will discuss recent instrument upgrades, including the ability to perform spinning disk fluorescence microscopy on the whole mammalian cell performed simultaneously with 3D molecular tracking experiments. These instrument upgrades were used to quantify 3D heterogeneous transport of individual growth factor receptors (EGFR) on live human renal cortical epithelial cells.

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