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Observation of membrane fusion between individual virus particles and supported lipid bilayers LAURA WESSELS, KEITH WENINGER, North Carolina State University — A portion of the host cell membrane is incorporated into newly produced, enveloped virus particles during an active infection. Fusion of that viral membrane with the membrane of targeted host cells is generally accepted to be a key step for the infection of normal cells as a virus spreads among a normal cell population. For the best studied enveloped viruses, viral proteins catalyze the membrane fusion reaction during a low pH step along the cellular endocytotic pathway. To gain a better understanding of the molecular mechanisms underlying viral membrane fusion, we have constructed an *in vitro* fluorescence assay to allow high resolution, real time measurements of Sindbis viral fusion to supported lipid bilayers. Single particle tracking is used to observe individual virus particles. The mixing of a fluorescent dye incorporated into the viral membrane with the supported bilayer reports fusion. We present results regarding the effects of different lipid blends as well as different buffer conditions on membrane fusion for Sindbis virus. We compare the fusion of virus produced in mammalian cells to that from insect cells. .

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