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Visualizing interactions between Sindbis virus and cells by single particle tracking MARY WILLIARD, GONGBO WANG, KEITH WENINGER, Deparment of Physics, North Carolina State University — Sindbis virus infects both mammalian and insect cells. Though not pathogenic in humans, Sindbis is a model for many mosquito- borne viruses that cause human disease, such as West Nile virus. We have used real-time single particle fluorescence microscopy to observe individual Sindbis virus particles as they infect living cells. Fluorescent labels were incorporated into both the viral coat proteins and the lipid envelope of the virus. Kinetics characteristic of free diffusion in solution, slower diffusion inside cells, attachment to spots on the cell surface, and motor protein transport inside cells have been observed. Dequenching of the membrane label is used to report membrane fusion events during the infection process. Tracking individual viral particles allows multiple pathways to be determined without the requirement of synchronicity.

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