

Unraveling and inhibiting the cell entry mechanisms of emerging RNA viruses

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The Chandran Laboratory at Einstein studies emerging RNA viruses that cause zoonotic disease and pose the greatest risk to public health and security. In recent years, we have focused our efforts on three groups of such viruses—filoviruses (causing Ebola and Marburg hemorrhagic fever), hantaviruses (causing cardiopulmonary syndrome and hemorrhagic fever with renal syndrome), and nairoviruses (causing Crimean-Congo hemorrhagic fever). All of these agents are associated with deadly outbreaks of disease in humans for which no approved vaccines or treatments are available. Using surrogate systems developed in our lab to safely study how these viruses invade and infect host cells, we have discovered some of their key molecular vulnerabilities and are targeting them with both natural and engineered antibodies. Our findings have set the stage for the development of immunotherapeutics that can broadly protect against filoviruses, hantaviruses, and nairoviruses.