

# Mucosal and endotracheal delivery of RSV peptide prevents nasopulmonary infection



Although commonly encountered, respiratory syncytial virus (RSV) infection which is responsible for more than sixty million cases of respiratory disease worldwide each year, has no effective prophylactic or treatment regimen available. The virus uses paired, self-associating, heptad repeat domains of its fusion protein, RSV-F, to form a fusogenic 6-helix bundle that enables the virus to penetrate the host cell membrane. Understanding this structure, this study developed hydrocarbon double-stapled RSV fusion peptides that exhibit stabilized alpha-helical structure and striking proteolytic resistance. They then showed that pretreatment with double-stapled RSV peptides bound to the RSV fusion bundle inhibited infection in both laboratory and clinical RSV isolates of cells and murine infection models. They demonstrated this by delivering a double-stapled RSV peptide intranasally, which was shown to effectively prevented viral infection within the nasal mucosa. They then prepared nanoparticles which were delivered endotracheally deeper into the respiratory system and were able to show that this formulation prevented RSV infection in the lungs. Thereby concluding that double-stapled RSV fusion peptides, are able to inhibit RSV infection within the respiratory system via mucosal and endotracheal delivery.

[Bird, G. et al. 2014. Mucosal delivery of a double-stapled RSV](#)

peptide prevents nasopulmonary infection. *The Journal of Clinical Investigation.*