

세미나 초록

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발표 주제	Transkingdom Interplay Promoting Adenovirus Recombination
발표 내용	<p>Human adenoviruses are common viruses that can cause severe illnesses and are also widely used in gene therapy. These viruses evolve rapidly by mixing and matching their DNA—a process known as recombination. Because adenovirus infections typically start in bacteria-rich areas of the body, like the gut, lungs, and eyes, we investigated whether these local bacteria play a role in viral evolution. By analyzing 38 adenovirus genomes, we discovered specific DNA patterns in the viruses that perfectly mimic bacterial DNA sequences. In bacteria, these patterns (called "Chi" sequences) act as landing pads for a bacterial protein called RecA, which helps shuffle DNA. We named the viral version "ChiAD." Crucially, these ChiAD sequences are located right next to the exact part of the virus responsible for breaking into human cells. To test our theory, we infected cells with two different adenoviruses at the same time and added a bacterial extract. The result was striking: the viruses began mixing their DNA much more frequently. We confirmed that this increased evolution was directly caused by the bacterial RecA protein binding to the viral ChiAD sequences. Even when the virus's ability to multiply slowed down, its ability to evolve through DNA sharing went up. Simply put, adenoviruses are "hijacking" the genetic tools left behind by dying bacteria in our bodies. By using the bacterial RecA protein, these viruses can easily recombine their DNA, alter the key proteins they use to infect us, and rapidly evolve. This reveals a fascinating and complex relationship where viruses directly benefit from the bacteria living in our mucosal tissues.</p>