

**Stony Brook University  
The Graduate School**

Doctoral Defense Announcement

**Abstract**

Serotype Specificity of Adenovirus Packaging

By

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Encapsidation of viral DNA is dependent upon a stretch of DNA located at the left-end of the adenovirus (Ad) genome between nucleotides 200-400 referred to as the packaging domain. The packaging domain is comprised of seven known consensus sequences (termed A repeats), which direct packaging. Each contains the bipartite consensus motif 5'TTTG N8 CG 3'. Studies have demonstrated that there exists a serotype specificity to Ad packaging, where the viral DNA of one Ad serotype is preferentially packaged into the capsid of the same serotype. Three viral proteins shown to interact with the packaging sequences both in vivo and in vitro include IVa2, L1 52/55K, and L4 22K. Through the use of gel mobility shift assays we were able to see binding of the viral proteins from one serotype to the packaging sequences of a different serotype. We then used an in vivo complementation assay to study the involvement of these three viral proteins in serotype specificity of packaging. Both Ad5 and Ad17 IVa2 and L4 22K proteins were able to complement Ad5 IVa2 and L4 22K mutant virus growth, respectively. While an Ad5 L1 52/55K, but not Ad17 L1 52/55K, was able to complement an Ad5 L1 52/55K mutant defective for virus production. In order to further investigate this finding we created three L1 52/55K chimeric proteins between Ad5 and Ad17, fusing the N-terminus of one to the C-terminus of the other. An Ad5/17 L1, but not an Ad17/5 L1, chimeric protein could complement an Ad5 L1 52/55K mutant virus. These results suggest the possible involvement of L1 52/55K in serotype specificity of Ad packaging and that the region responsible is located within the N-terminus.

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