

7SL RNA Is a Co-factor of the Antiviral Cytidine Deaminase APOBEC3G

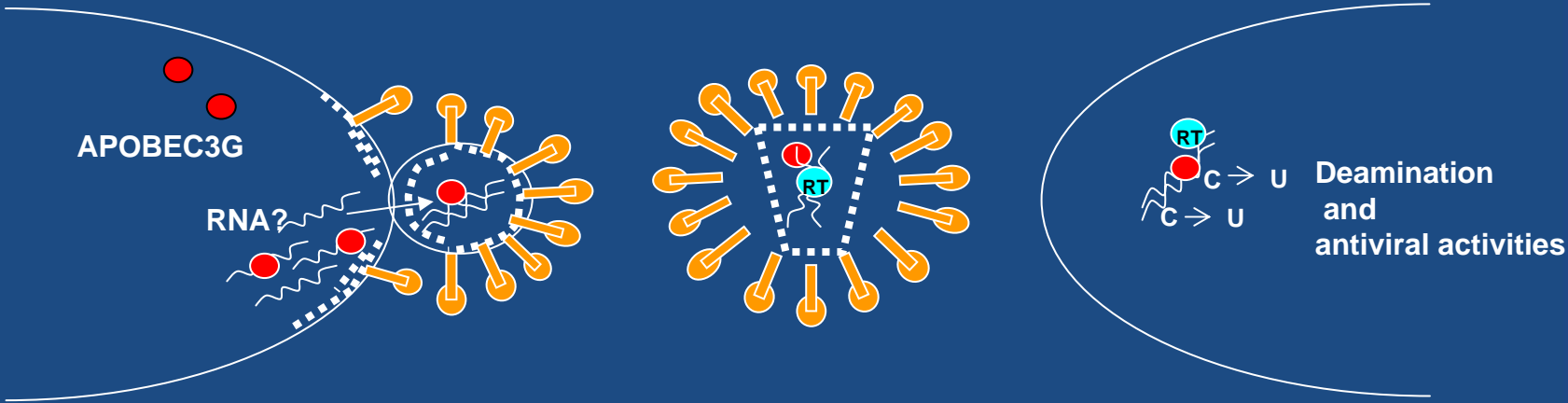
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Luo, Bindong Liu, and Xiao-Fang Yu

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Immunology, Johns Hopkins Bloomberg School
of Public Health, Baltimore, MD

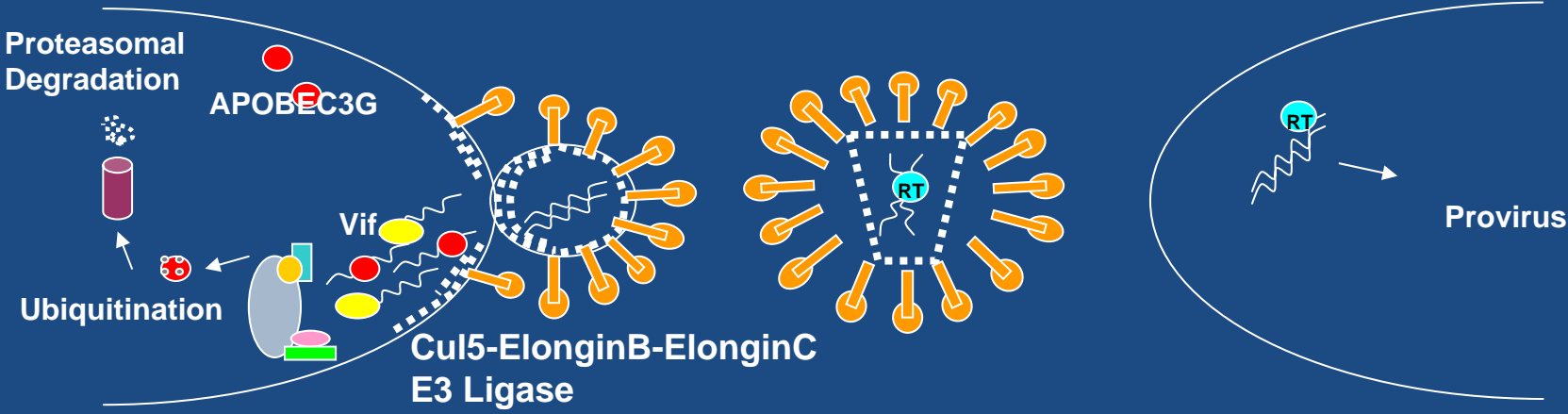
APOBEC3G

(Sheehy & Malim)

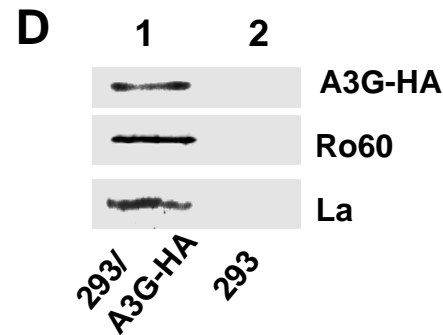
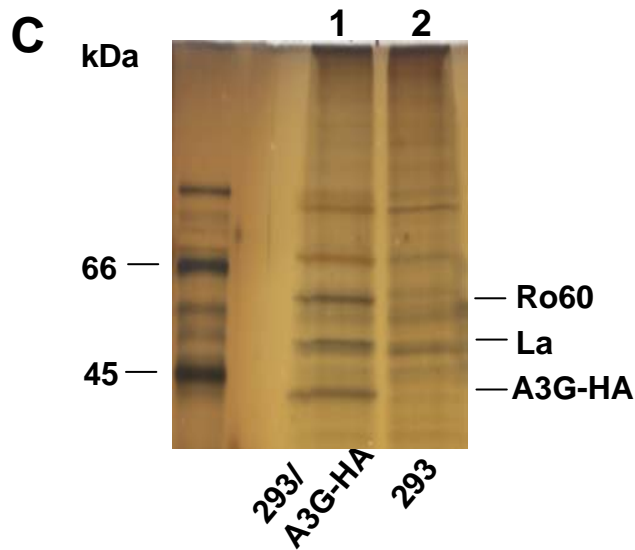
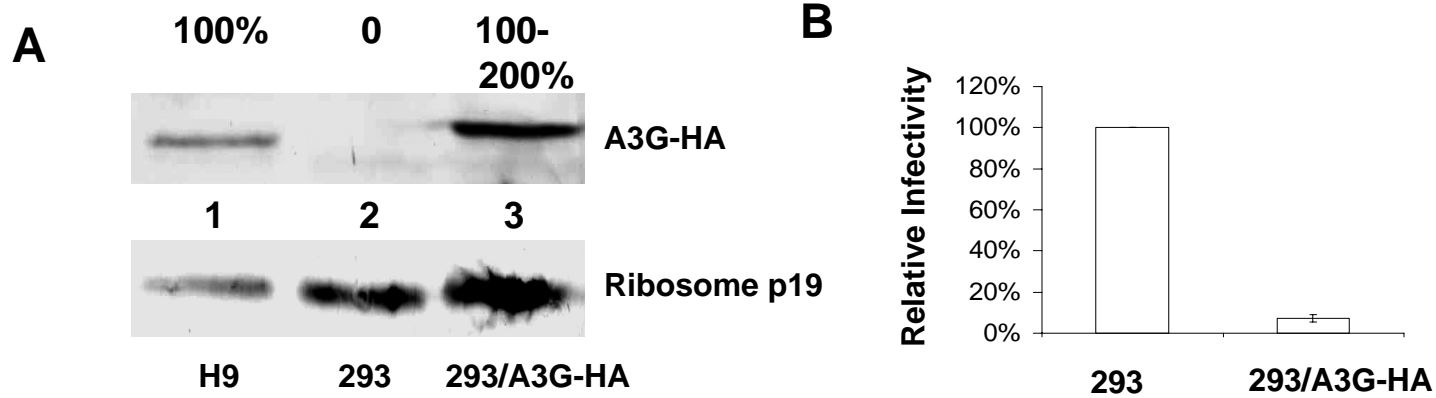
A. Vif-minus



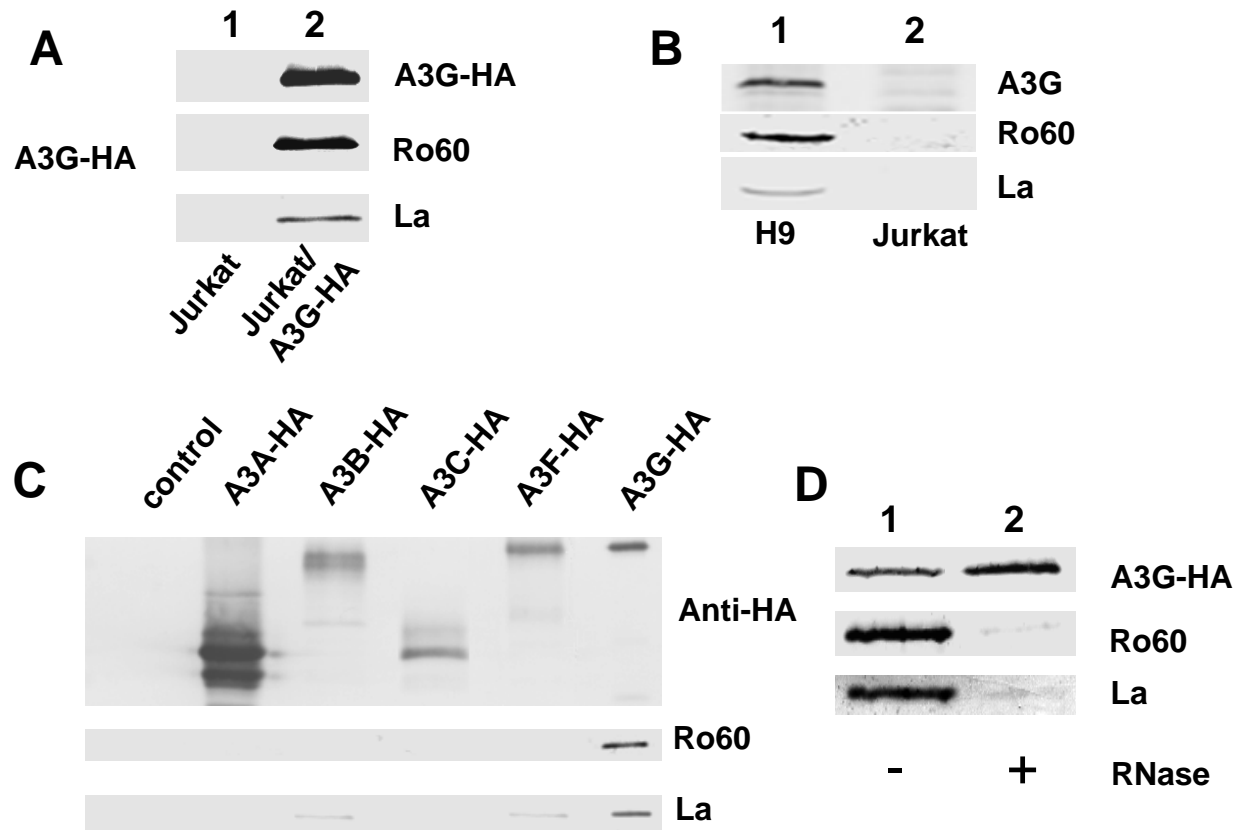
B. Vif-plus



Interaction of cellular proteins with APOBEC3G

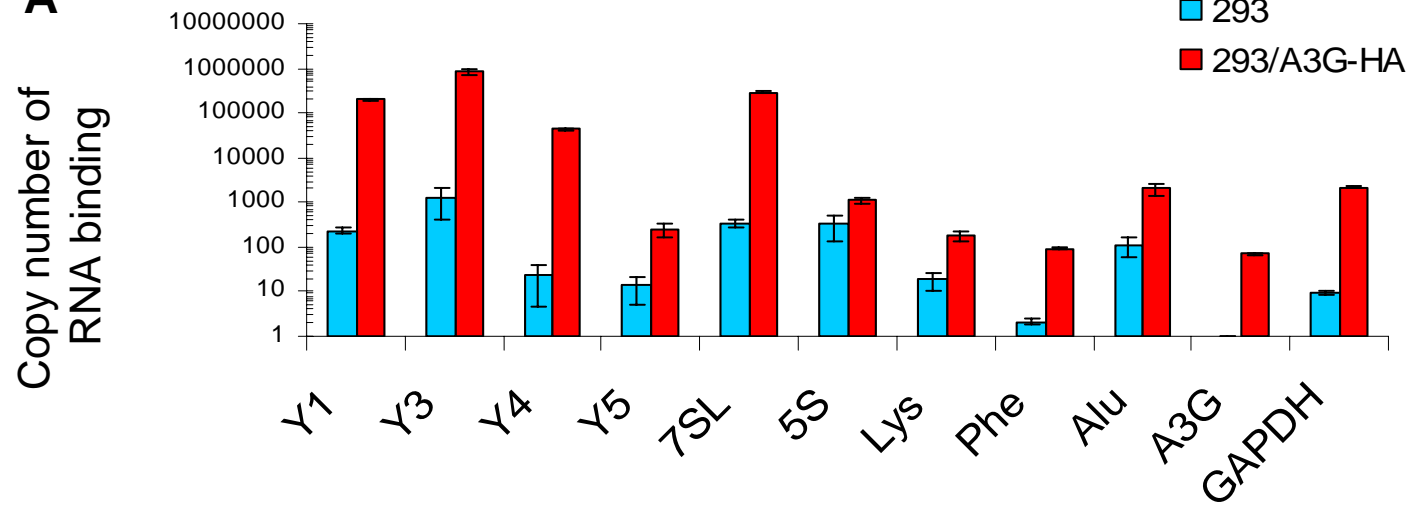


Selective interaction of human APOBEC3 with Ro60 and La

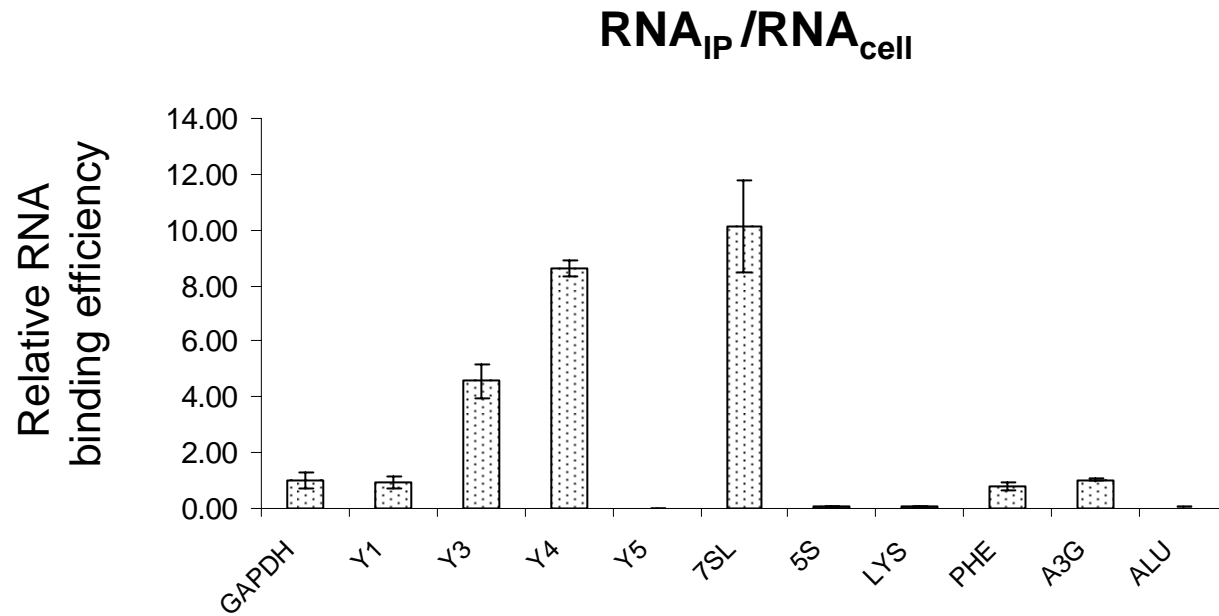


Interaction of 7SL and Y RNAs with APOBEC3G

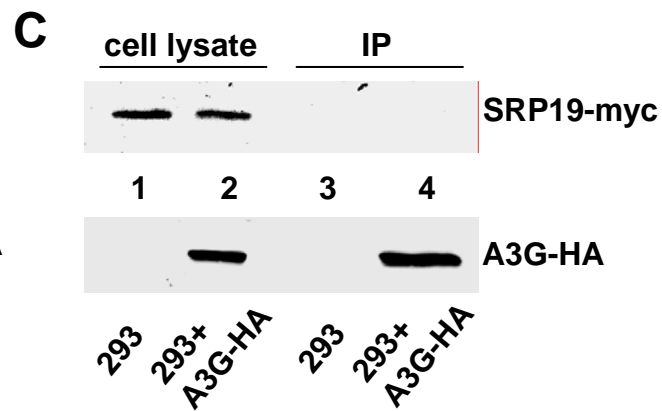
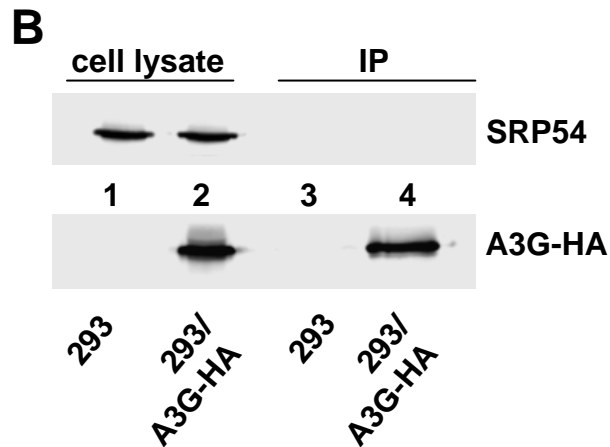
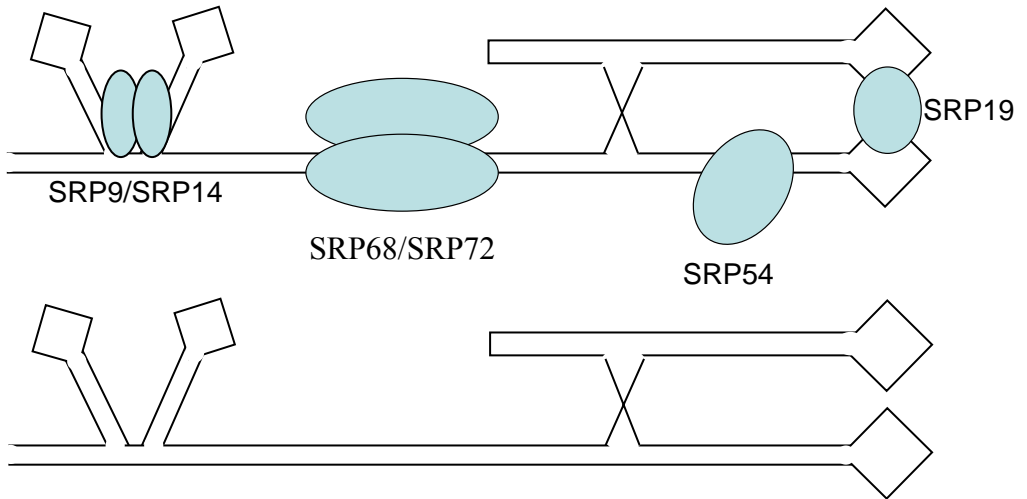
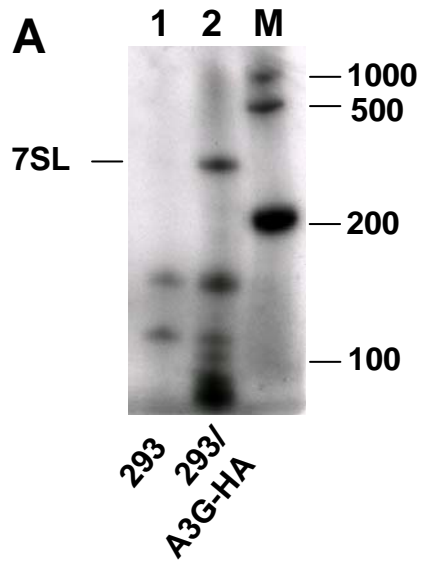
A



B

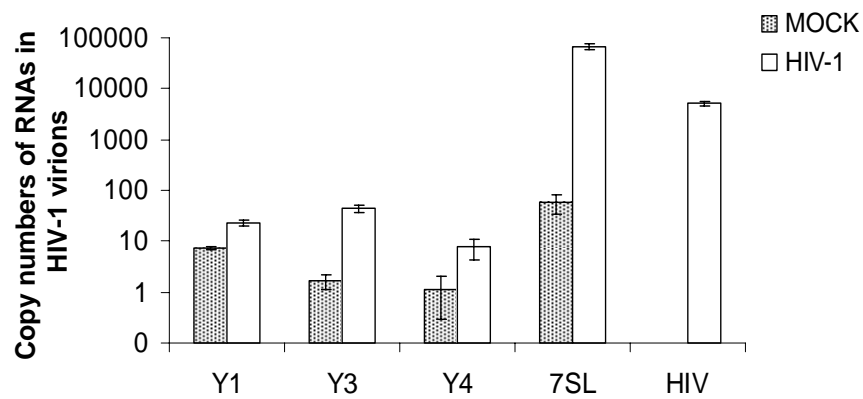


7SL RNAs but not SRP proteins interact with A3G

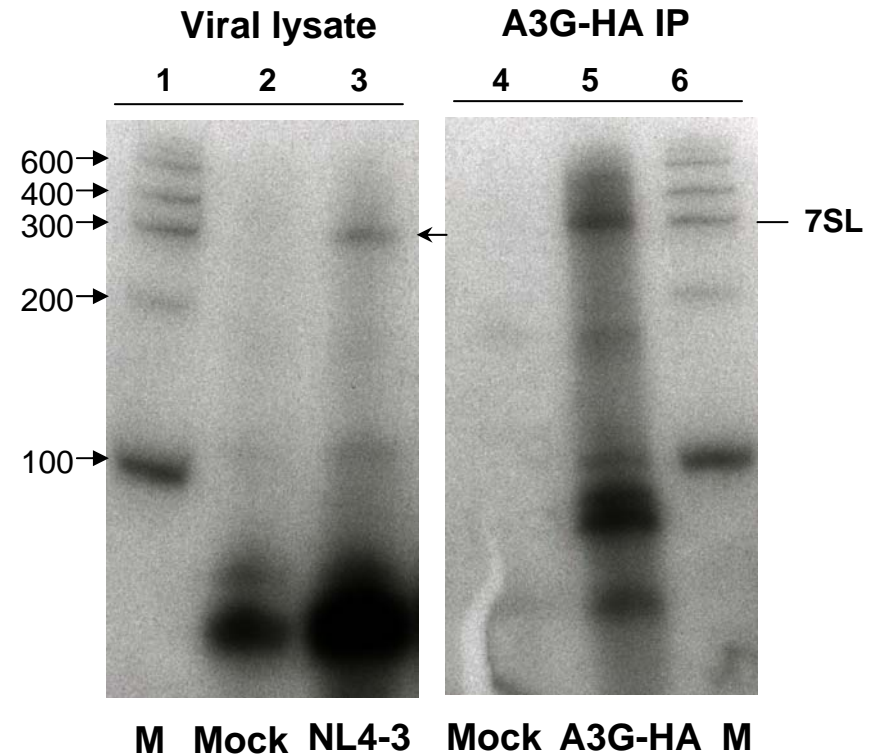


Efficient packaging of 7SL but not Y RNAs into HIV-1 virions

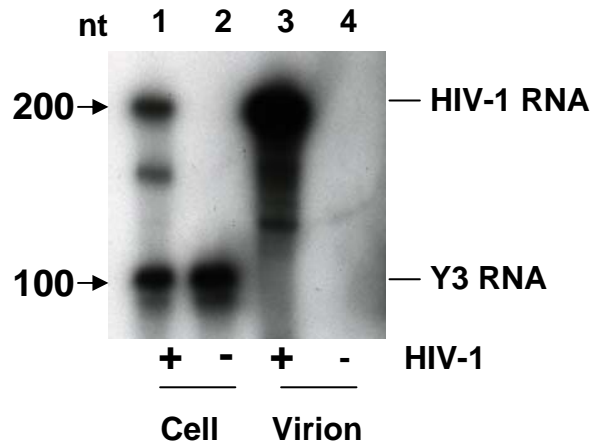
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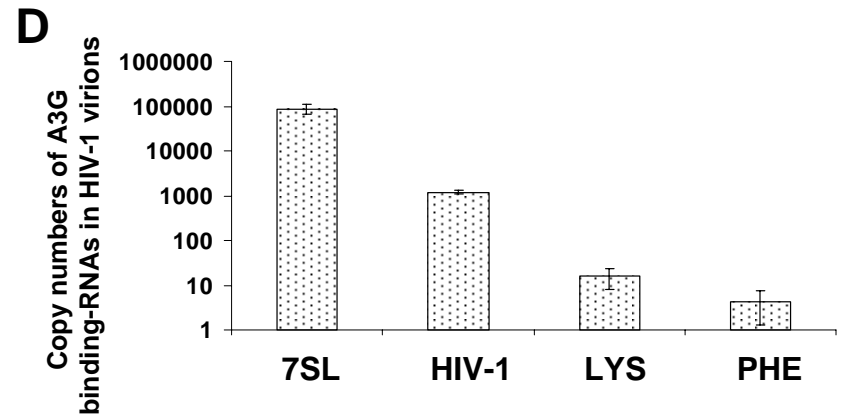
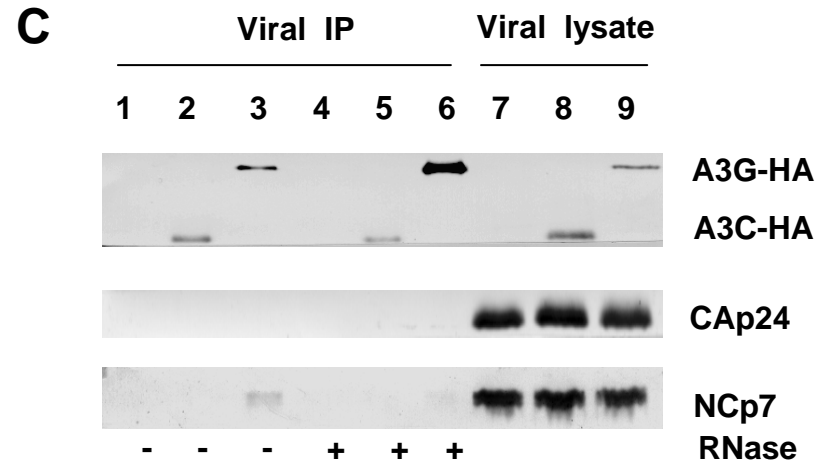
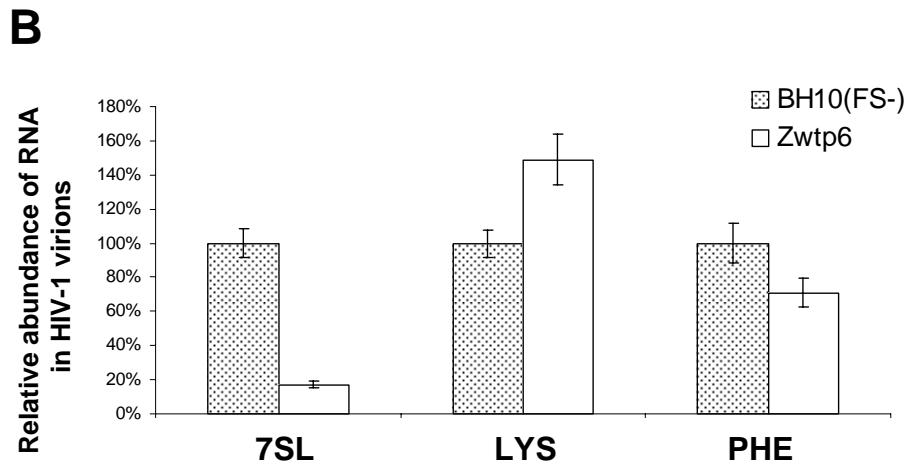
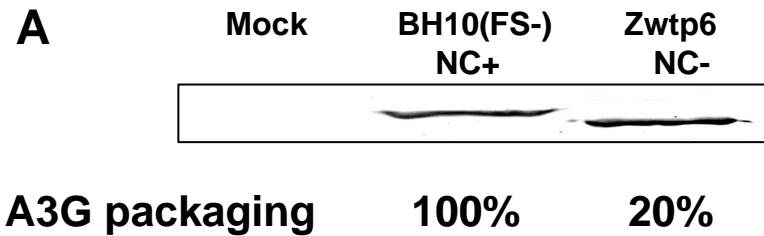
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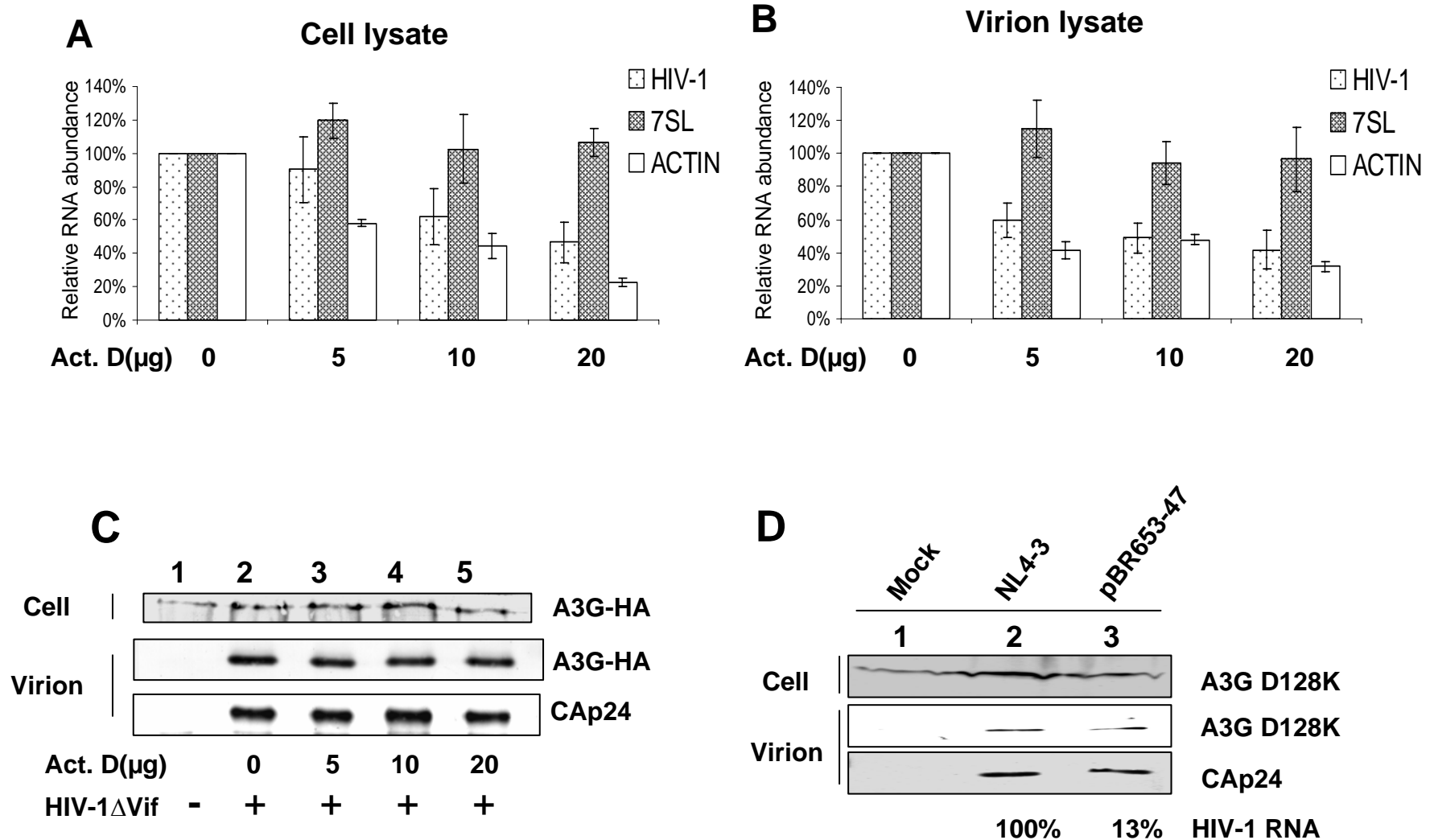
C



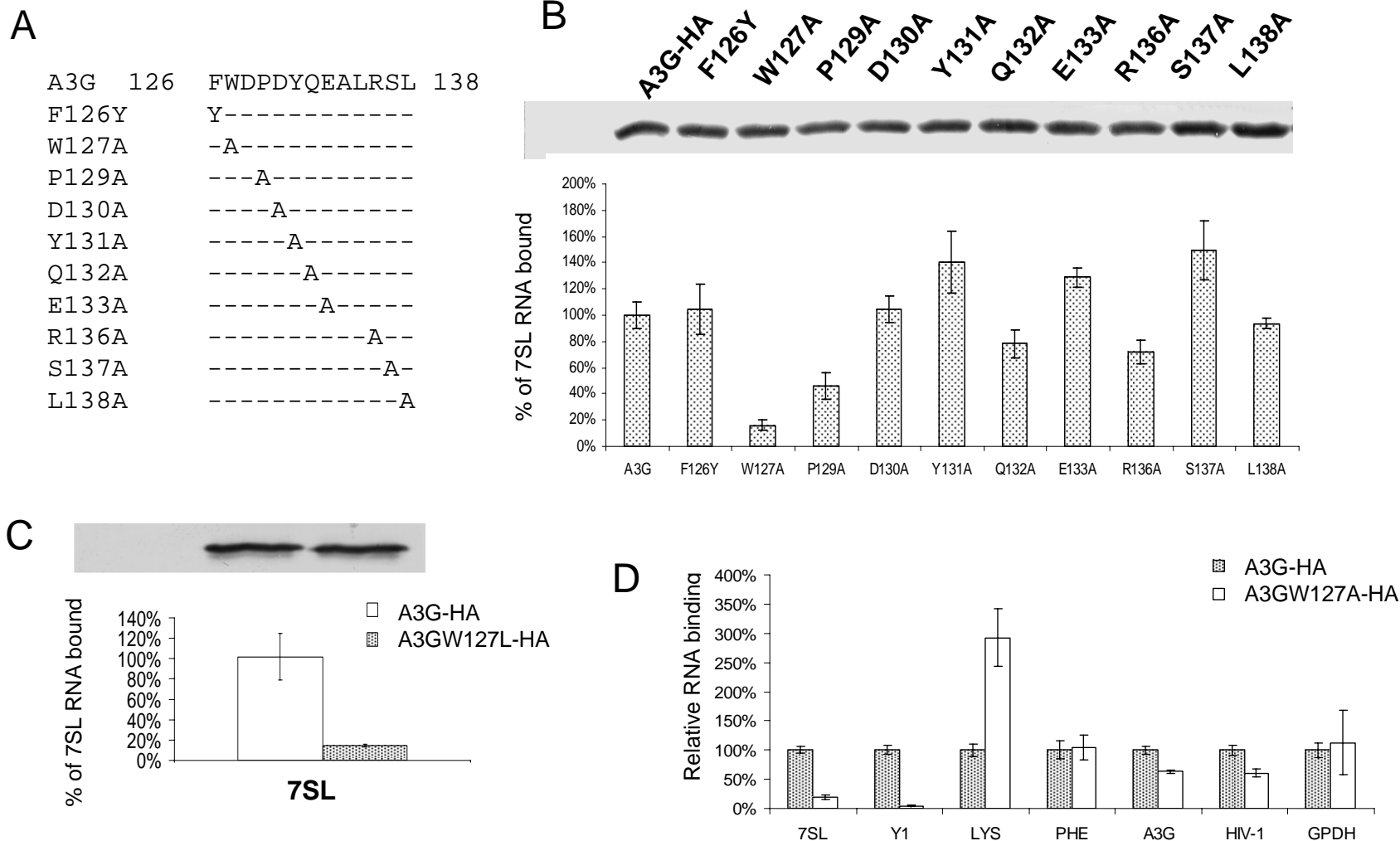
Virion packaging of 7SL RNA and A3G requires NC domain of HIV-1 Gag



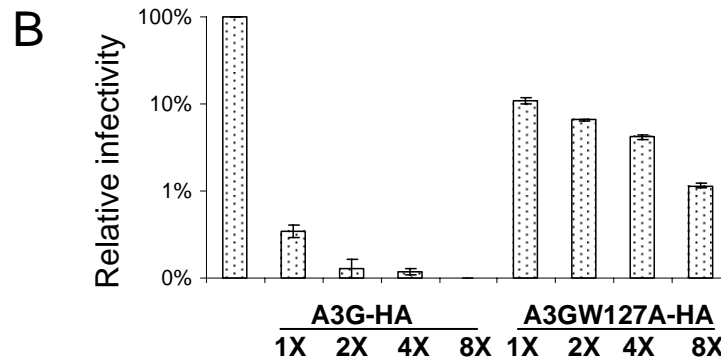
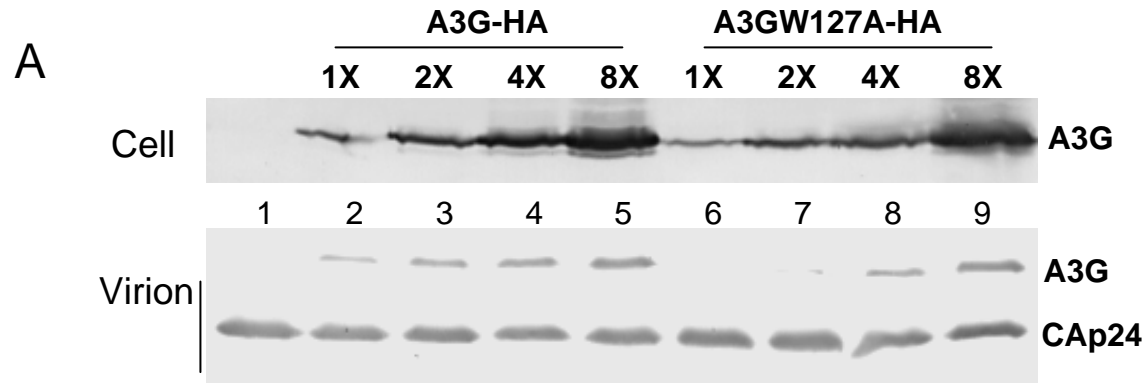
Viral genomic RNA is not required for APOBEC3G packaging



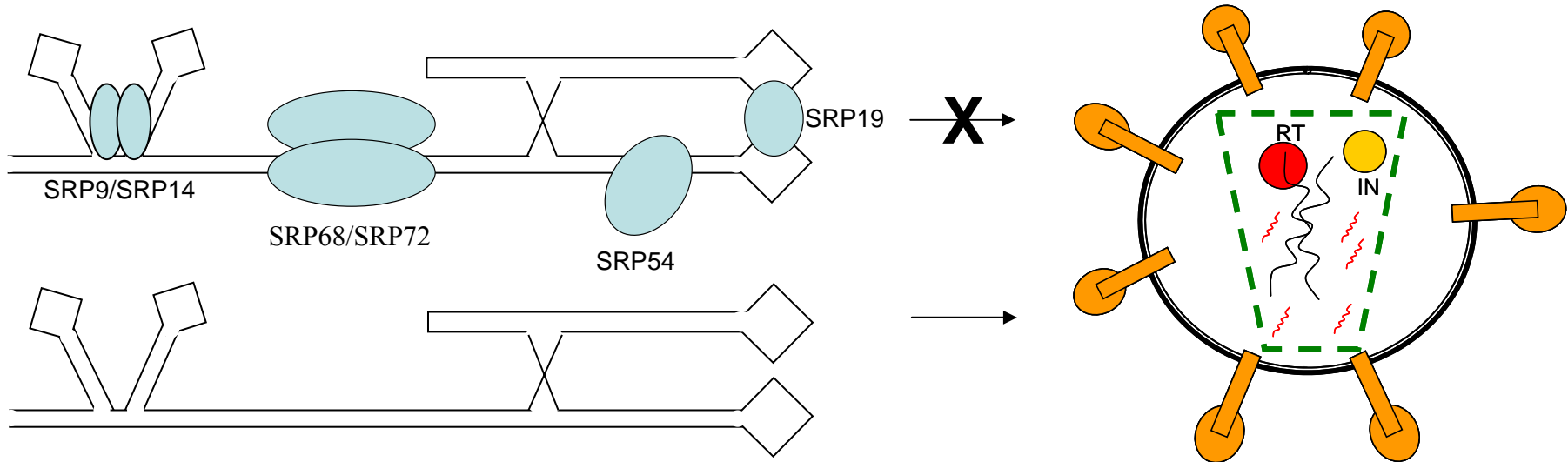
Amino acids in the linker region of APOBEC3G are required for selective interaction with 7SL RNAs



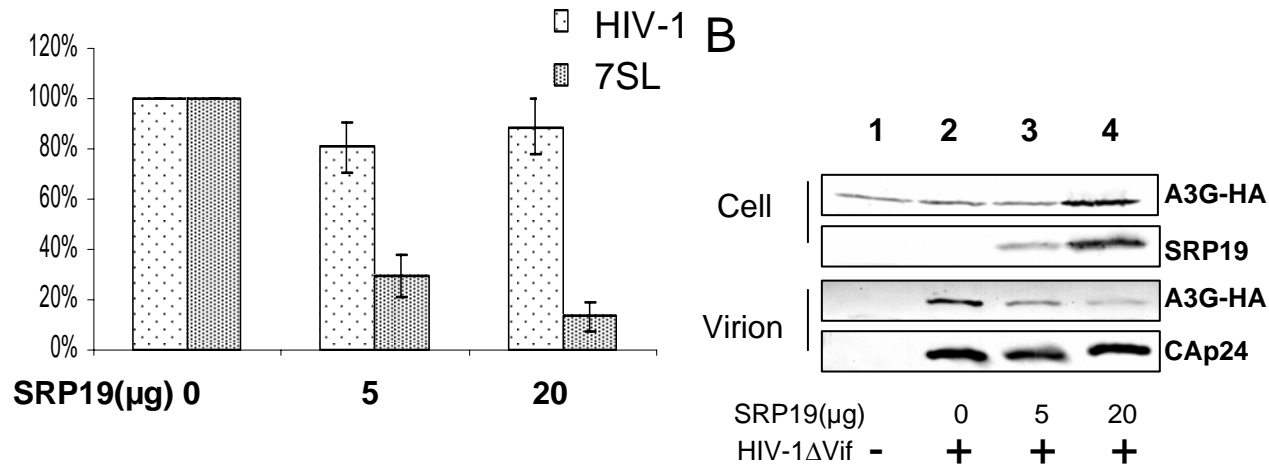
W127 of APOBEC3G is required for A3G packaging and its antiviral function



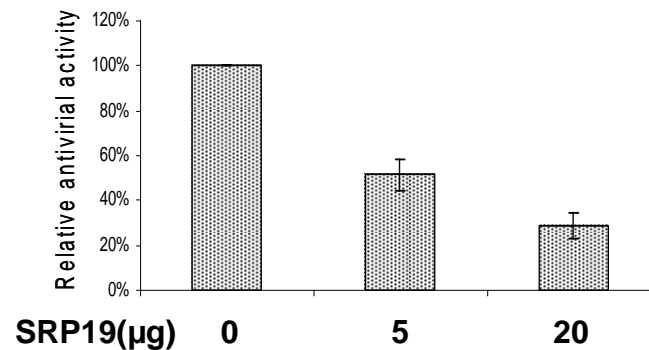
7SL RNAs but not SRP proteins are packaged into HIV-1 virions



Overexpression of SRP19 inhibited 7SL RNA as well as A3G packaged into HIV-1 virions



C

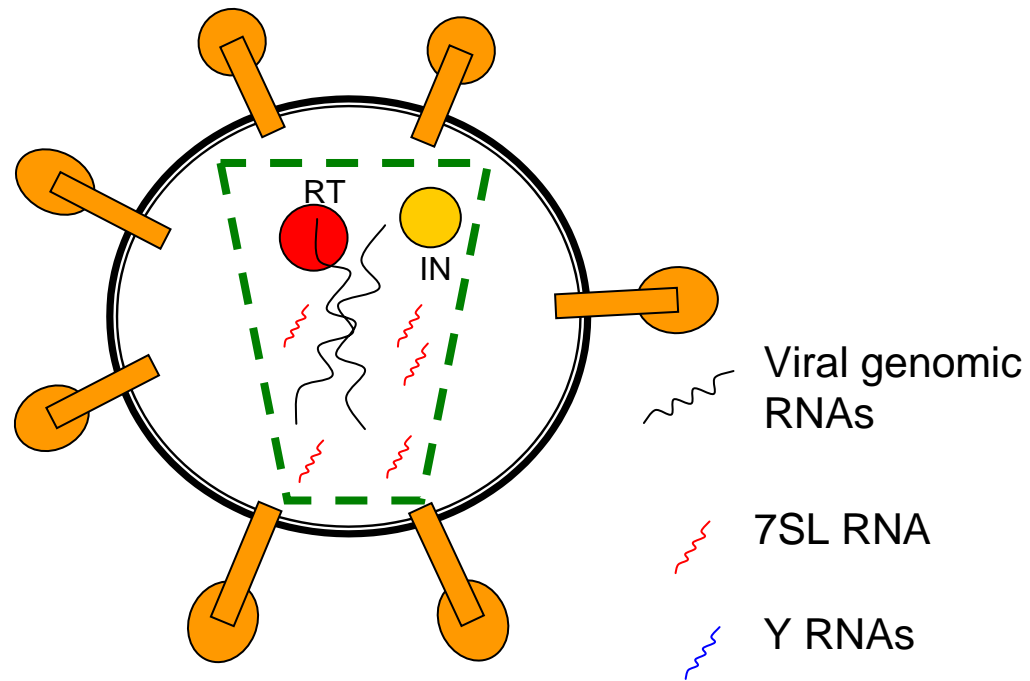


Summary

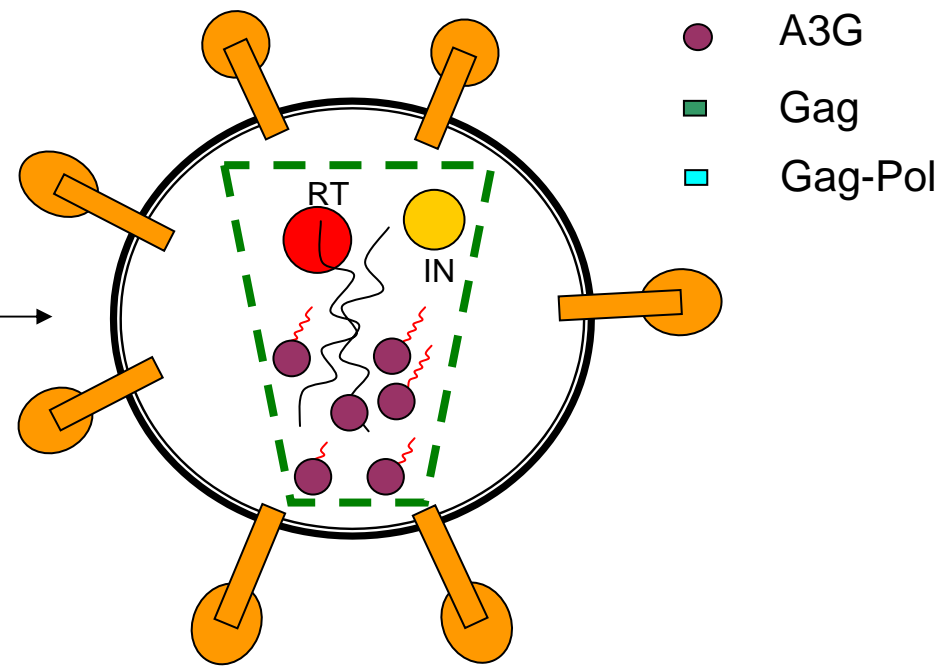
- **A3G selectively binds 7SL RNA and certain Y RNAs (Y1, Y3, Y4, but not Y5)**
- **7SL RNAs but not Y RNAs are efficiently packaged into HIV-1 virions**
- **Virion packaging of 7SL RNAs and A3G is mediated by the NC domain of HIV-1 Gag molecules**
- **Selective interaction with 7SL RNA and virion packaging requires tryptophan 127 of A3G.**
- **Inhibition of 7SL RNA packaging also inhibited A3G packaging**
- **7SL RNA Is a Key Co-factor of the Antiviral Cytidine Deaminase APOBEC3G**

A Packaging of 7SL RNAs into HIV-1 virions

Virus producing cells



B Packaging of A3G with 7SL RNAs into HIV-1 virions



Acknowledgements

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