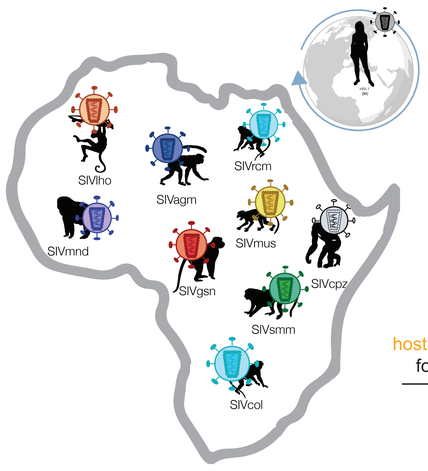
# The role of capsid-host interaction on lentiviral evolution

**Clare Gill**, Molly Ohainle

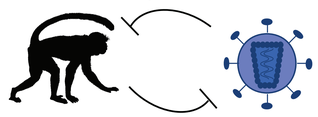
UC Berkeley, Dept of Molecular and Cell Biology, Division of Immunology and Molecular Medicine

328

## HIV is a new virus from an old family




SIVs have been evolving with their hosts for several million years



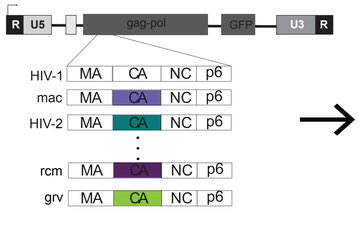
Conflicting host protein interactions shape viral capsid evolution

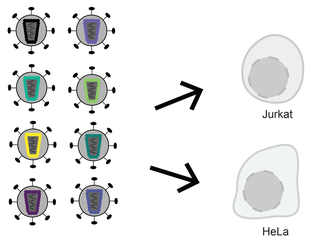
Rely on host cell machinery for replication

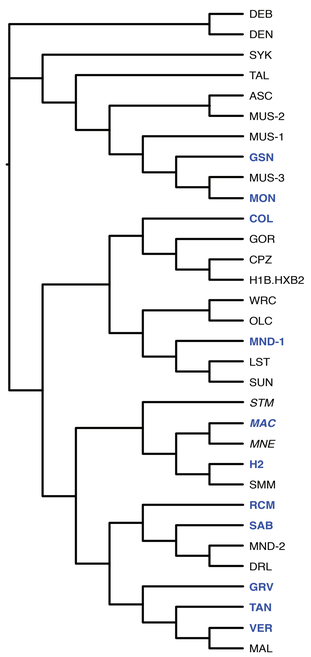


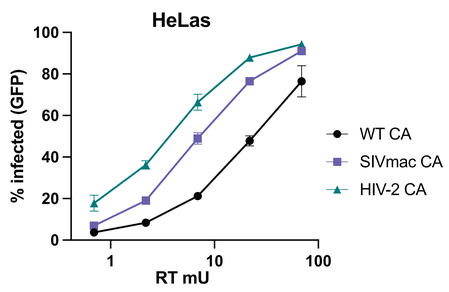
Intracellular host defenses inhibit replication

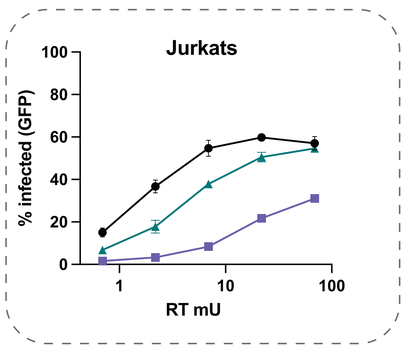
## Unknown host protein(s) restrict viral replication in a capsid specific manner



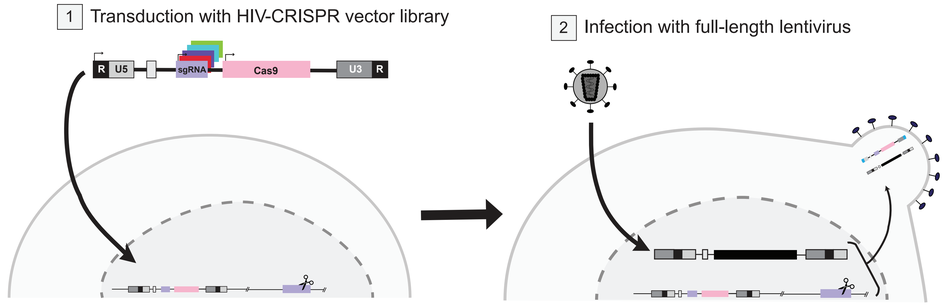



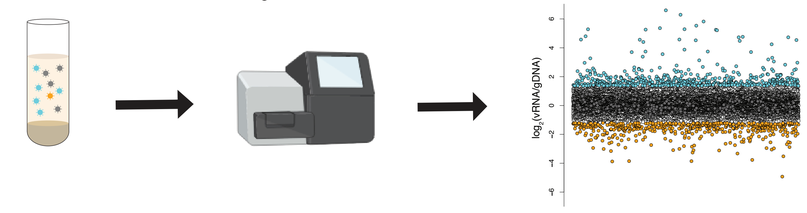

Lv4 Restriction

Pizzato 2015 PMID: 26181333

## How do capsid-host protein interactions shape virus evolution?

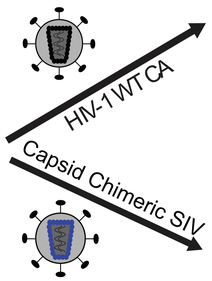
## HIV-CRISPR reveals capsid-specific restriction factors

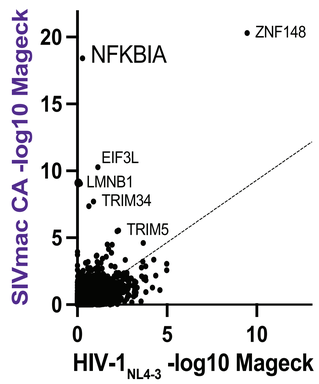


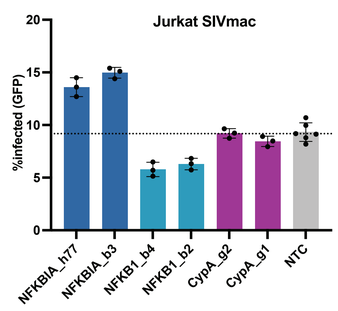





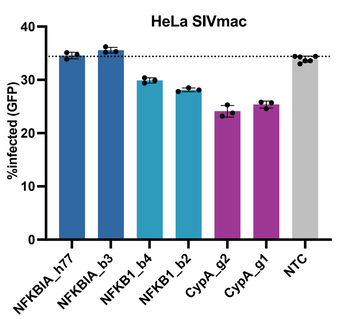

HIV-CRISPR cells: Expressing Cas9 and sgRNAs



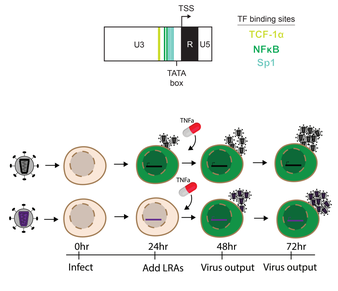



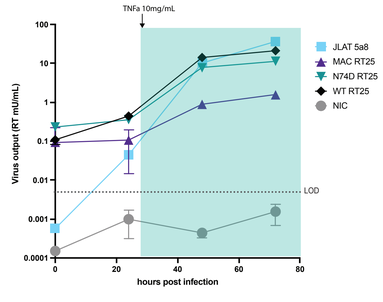

KO%: 64 45 58 62 64 35

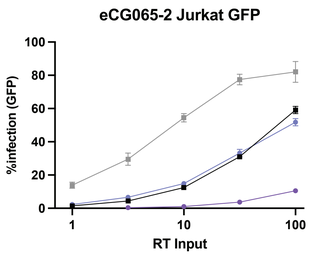


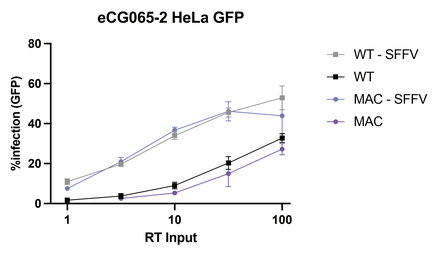

KO%: 74 39 33 56 57 22

## NFKB transcription does not explain restriction

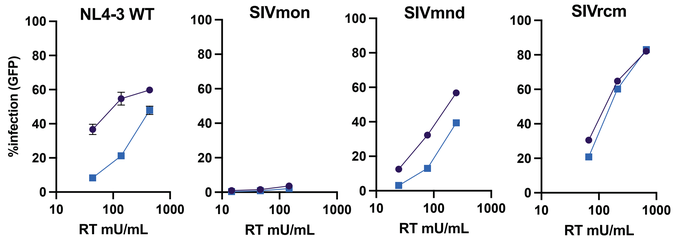


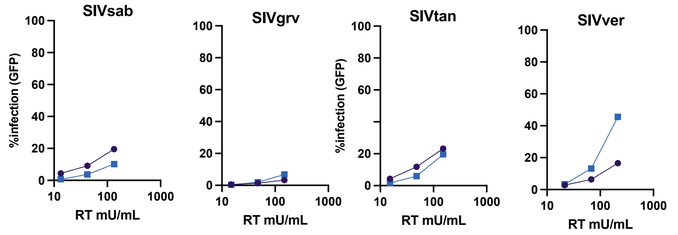



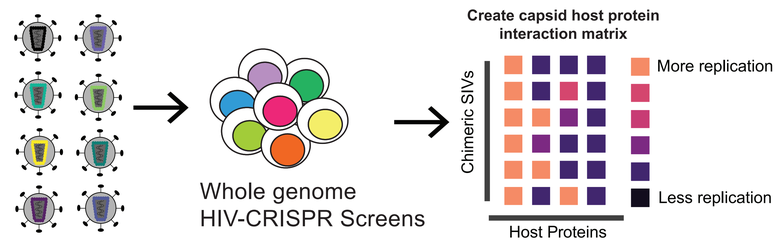




## Conclusions & future directions




Acknowledgments:

Jeremy Luban (UMass Medical)