

Nucleic Acid Chemistry

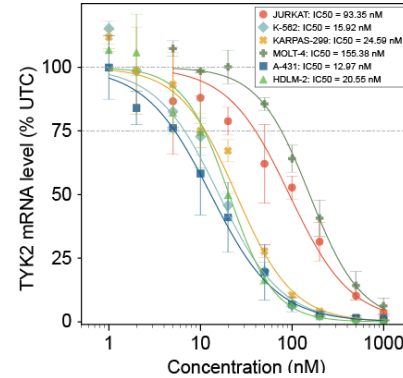
Nucleic Acid Therapeutics

@ Phan Lab (SPMS)

Pipeline for NAT discovery and R&D

- sequence design & cell-based screening:
 - ❑ antisense oligonucleotide (ASO)
 - ❑ splice-switching oligonucleotide (SSO)
 - ❑ small-interfering RNA (siRNA)
- chemical modifications for enhanced properties (e.g., stability/potency)
- potencies down to 10 nM or below

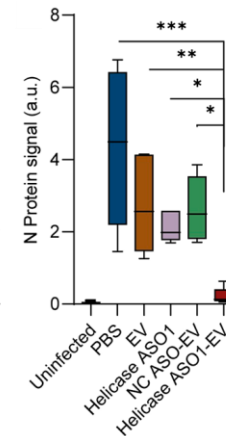
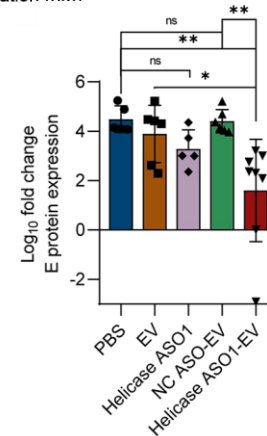
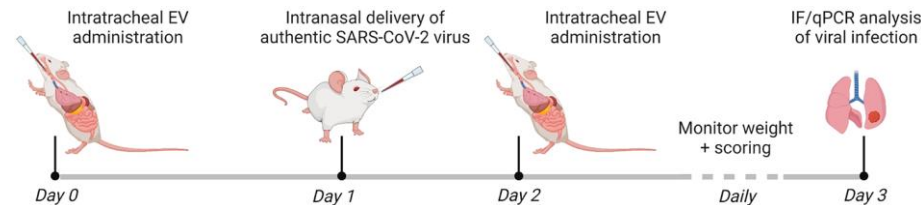
Tran et al., *ImmunoHorizons* 2021



NAT conjugate for targeted delivery

- small molecule, lipid and carbohydrate
- nucleic acid
- peptide and protein
- antibody

In collaboration with Minh Le (NUS); Jayasinghe et al., *ACS Nano*, 2023



Synthesis & chemical expertise on nucleic acids

- diverse modifications (fluorescence, conjugation handles, terminal phosphates, etc.)
- chemical modifications down to single atomic position
- custom-made phosphoramidite building blocks for novel functionalities
- chemical & enzymatic conjugation
- large-scale NAT production for *in vivo* study

NAS Bioscience

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- peptide synthesis
- bioconjugation
- biological & biophysical measurements