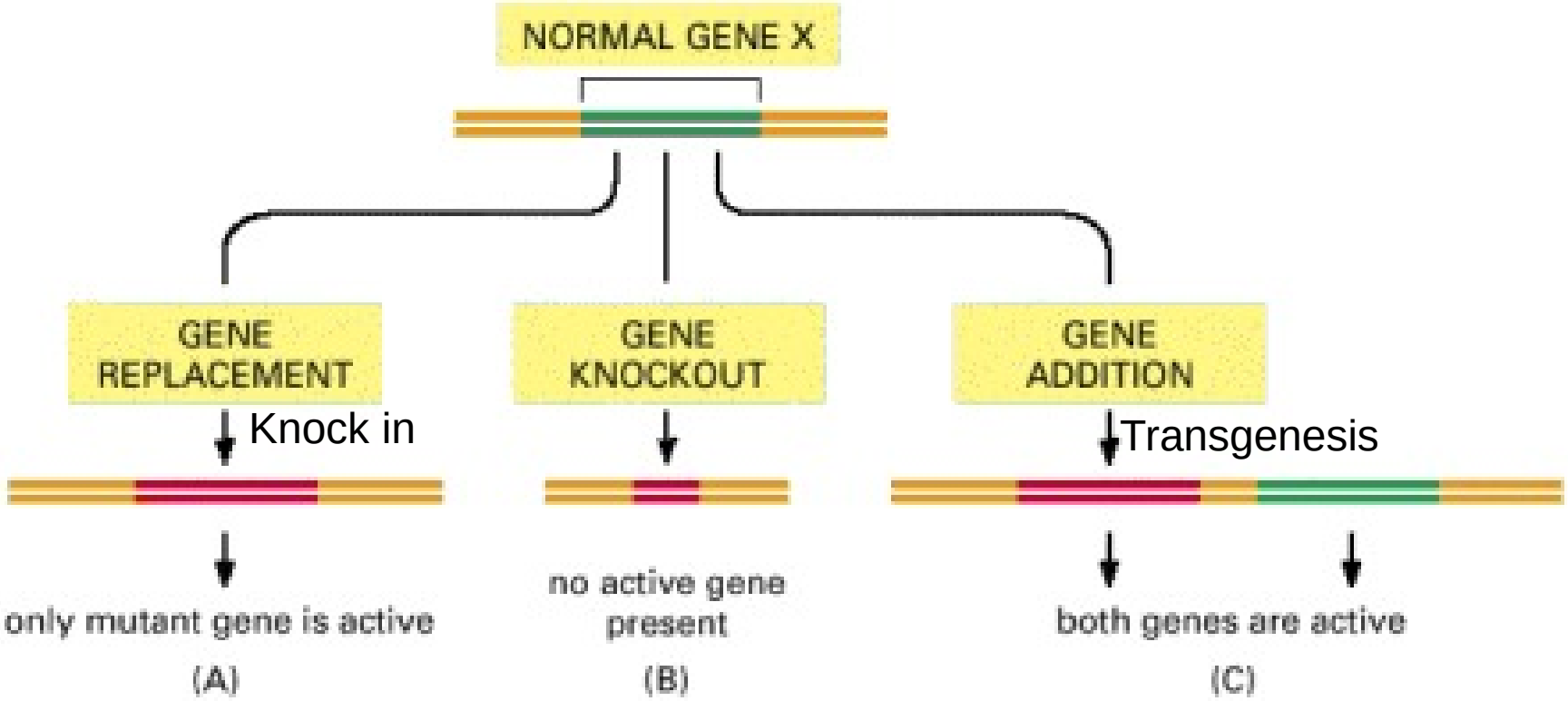
Johns Hopkins Engineering

Methods in Neurobiology

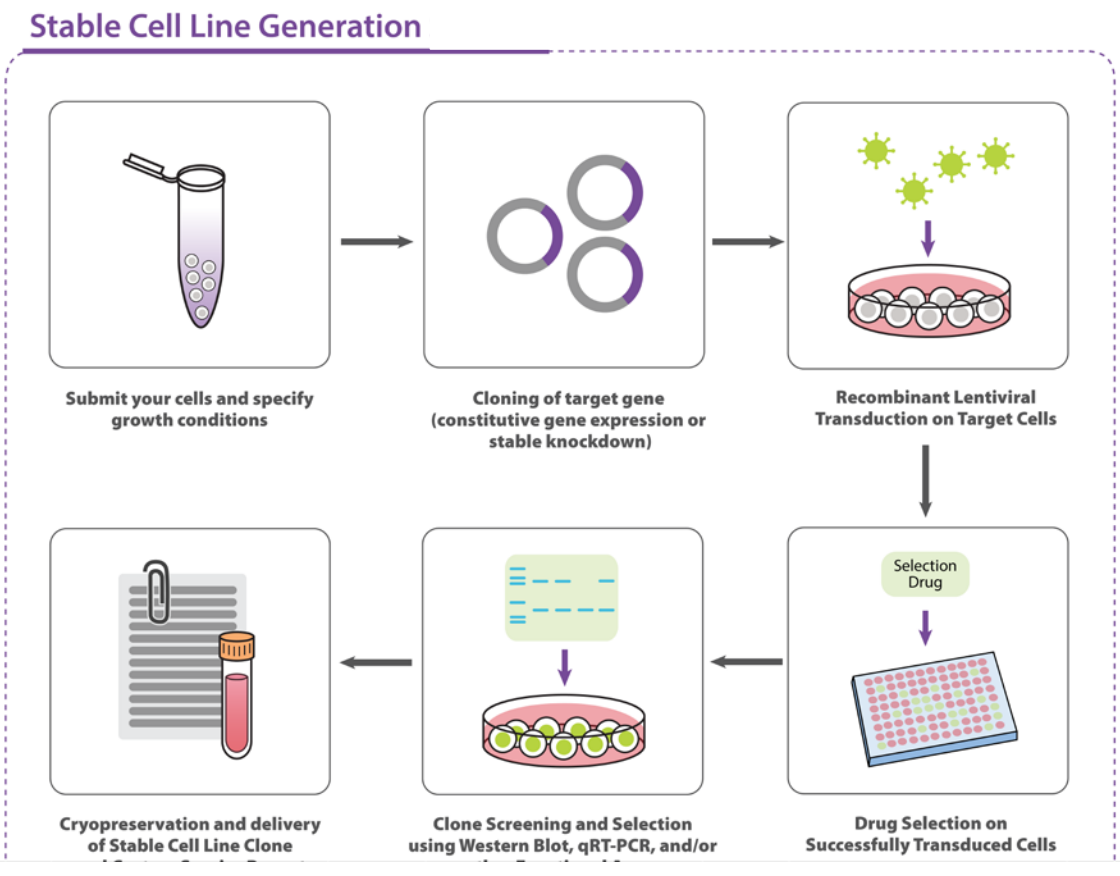
How to Study Gene Function in Cell Models

JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

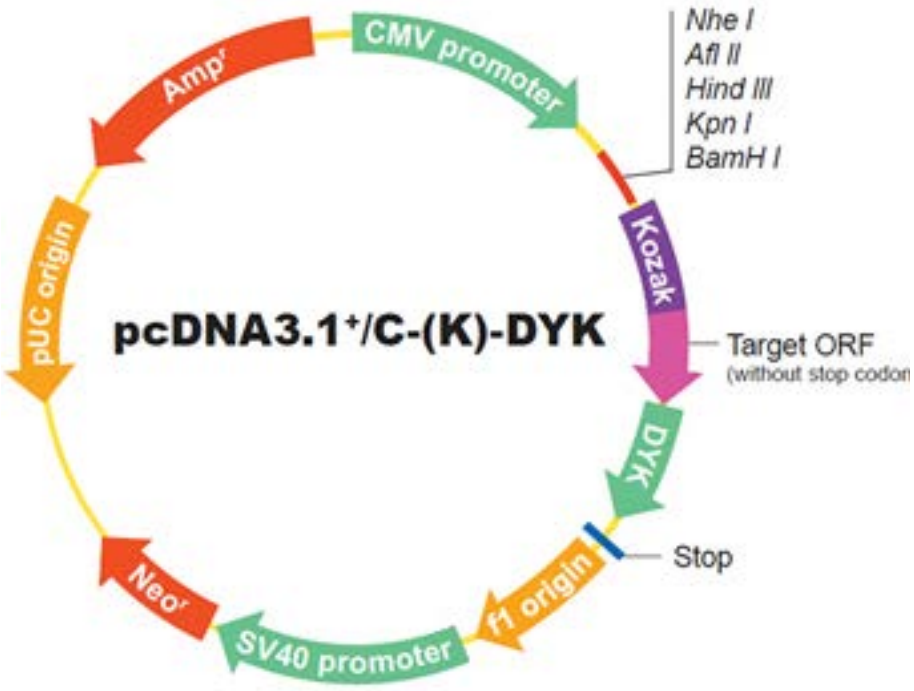
Cell cultures as experimental model to study gene expression and function



Making stable cell lines



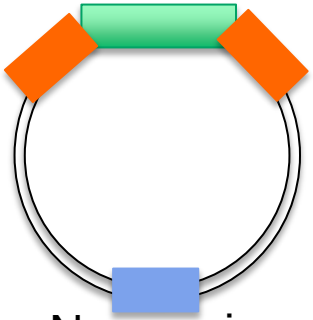
Types of DNA vectors for gene expression



- Vectors for targeting expression in organelles
- Bacterial chromosomes
- Viral vectors
- Vectors for inducible gene expression

Example of making a cell model to study alpha-synuclein

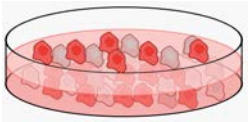
Alpha-synuclein



Neomycin
(antibiotic)

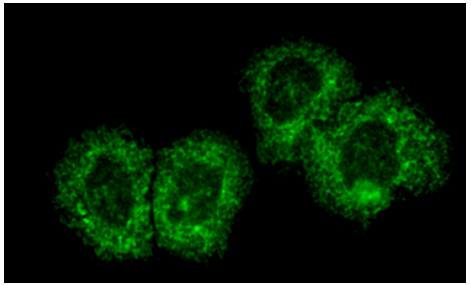
SH-S5Y5
(neuroblastoma cell line)

Transfection



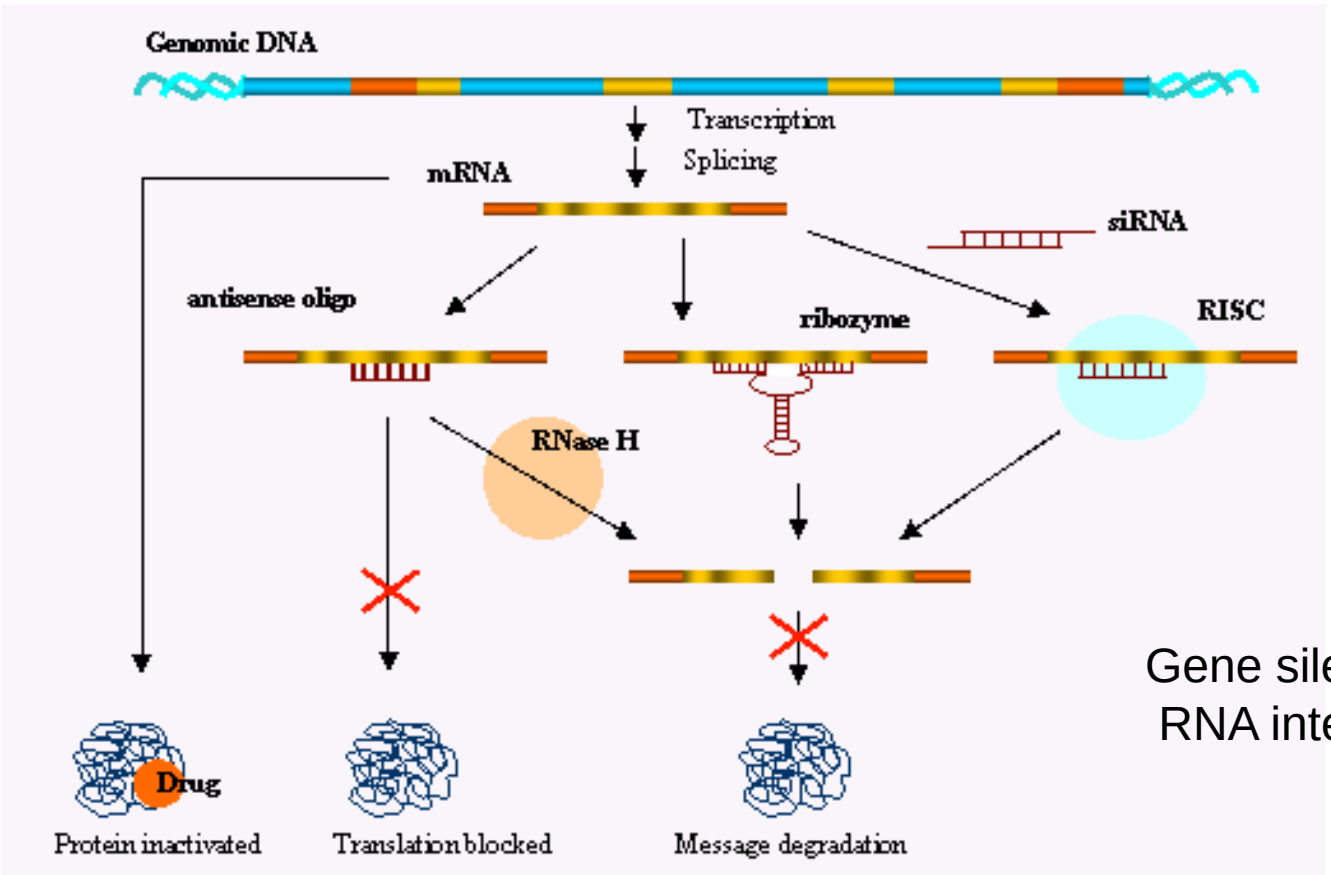
+ NEO

Selection



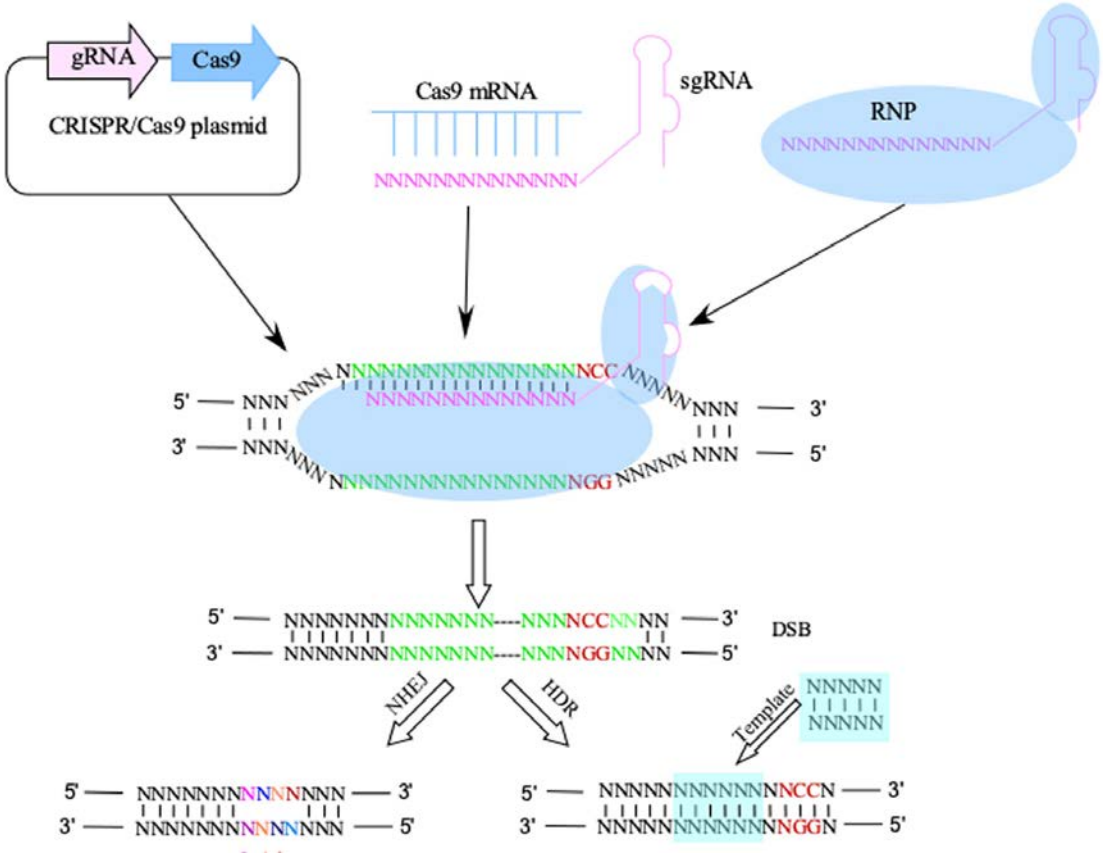
Individual clones
to validate

How to knock out a gene in cells



Gene silencing through RNA interference

CRISP/CAS9 technology for gene modifications



References

Slide	Reference
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