SELECT VIRAL VECTOR ACRONYMS AND ABBREVIATIONS

Acronym	Expanded	Definition
AAV	Adeno-Associated Virus	Small, replication-defective, nonenveloped viruses with a single stranded RNA genome in the genus Dependoparvovirus. In the presence of a helper virus, AAV is able to replicate using the host cell's polymerase. In the absence of helper virus, AAV integrates the host cell genome. AAV is not known to cause any disease. Replacement of the Rep gene in the three-gene genome with a transgene results in the formation of episomal genomes in the host cell nucleus, a property that makes AAV an appealing vector for certain gene therapy applications
AdV	Adenovirus	Medium-sized, nonenveloped virus with a double-strand DNA genome. Able to infect both replicating and non-replicating host cells and accommodate large transgenes without integrating into the host genome. Often used to administer recombinant DNA or protein as a targeted therapy.
AmpR	Beta-lactamase (Ampicillin Resistance)	Antibiotic resistance marker commonly used as a selection factor when cloning genes into bacterial plasmids
BHK	Baby Hamster Kidney cells	An adherent fibroblast cell line that lacks integral retrovirus genomes, making them a common substrate for propagating viral vectors for use in in vivo applications and for producing recombinant proteins.
cDNA	complementary DNA	DNA synthesized from a single strand of RNA by reverse transcriptase. Often used for cloning eukaryotic genes into bacterial plasmids or for the detection of viral genomic material by polymerase chain reaction
CHO	Chinese Hamster Ovary cells	An adherent epithelial cell line widely used for the industrial production of recombinant proteins.
CmR	Chloramphenicol Resistance	Antibiotic resistance marker commonly used as a selection factor when cloning genes into bacterial plasmids
CMV		Typically, CMV promoter (choriomeningitis virus). A promoter known for driving high constitutive protein expression levels in certain cell lines, particularly in the presence of the SV40 replication origin

SELECT VIRAL VECTOR ACRONYMS AND ABBREVIATIONS

Acronym	Expanded	Definition
cPPT	Central polypurine tract	A purine-rich region near the center of the genome that serves as site of the initiation of the second-strand DNA synthesis during the reverse transcription of lentiviruses such as HIV. This initiation of synthesis in the middle of the genome results in the plus strands being synthesized in two distinct segments separated by a unique discontinuity representing an overlap between the two segments. The presence of a functional cPPT is believed to be important to viral DNA nuclear import, and may help reduce the susceptibility of the viral genome to editing by host cell APOBEC enzymes during synthesis.
CRISPR	Clustered Regularly Interspersed Short Palindromic Repeats	A family of DNA sequences found in many prokaryotic genomes that provide a template nucleases such as Cas9 use to detect and destroy related bacteriophage sequences. Forms the basis of nuclease-based genetic manipulation in eukaryotic organisms, in which a nuclease such as Cas9 is complexed with a synthetic guide RNA and introduced into cells by a viral vector
env	envelope	A gene in lentivirus genomes that encodes the surface envelope protein SU (GP120) and the transmembrane envelope protein TM (GP41)
gag	glycosaminoglycan	A gene in lentivirus genomes that encodes the capsid proteins CA and NC (P24 and P7/9), as well as the matrix protein MA (P17)
GAPDH	Glyceraldehyde-3-phosphate dehydrogenase	common cellular enzyme involved in glycolysis; sometimes used as a "negative control insert" or as calibration for Western Blots
GentR	Gentamicin Resistance	Antibiotic resistance marker commonly used as a selection factor when cloning genes into bacterial plasmids
GFP	Green Fluorescent Protein	see also: YFP, CFP, BFP, mCherry, etc.
HEK	Human Embryonic Kidney	general term for cells derived from human embryonic kidneys
HEK293		A specific cell line immortalized by transfection with sheared Ad5 viral genome. Easily transfected, HEK 293s are commonly used to produce therapeutic proteins and viruses for gene therapy.

SELECT VIRAL VECTOR ACRONYMS AND ABBREVIATIONS

Acronym	Expanded	Definition
HEK293T		HEK293-derived cell line expressing mutant SV40 large T antigen which is temperature-sensitive; allows expression of large amounts of protein in culture
HEK293FT		A fast growing HEK293T-derived cell line that is often used for generating high titers of lentiviruses
HeLa	Henrietta Lacks (cervical cancer epithelial cell line)	The first human cell line successfully maintained in vitro. Susceptible to infection by a number of viruses; notorious for contaminating other cell cultures. Contains integrated genes from human papillomavirus 18.
IRES	Internal Ribosome Enzyme Site	An internal RNA sequence that is a feature of many RNA viral genomes that allows the initiation of synthesis of viral proteins even if host protein synthesis is inhibited.
KanR	Kanamycin Resistance	Antibiotic resistance marker commonly used as a selection factor when cloning genes into bacterial plasmids
lacUV5	lactose operon promoter (mutated)	Commonly used bacterial promoter used to drive high levels of gene expression on a plasmid. When no activators are present, expression can be induced with IPTG and regulated by the LacI repressor protein.
LTR	Long Terminal Repeat	A pair of identical sequences of DNA on either end of the sequences that make up a retrotransposon, endogenous retrovirus, or retroviral provirus
MESV	Murine Embryonic Stem Cell Virus	A retroviral vector derived from a mutant myeloproliferative sarcoma virus with a cell tropism that includes embryonal stem cells. Embryonal stem cells typically repress retroviral regulatory elements.
MMLV (MoMLV)	Moloney Murine Leukemia Virus	A gammaretrovirus that causes cancer in mice. MMLV-derived particles are often used to deliver therapeutic genes to target cells.
MSCV	Murine Stem Cell Virus	A retroviral vector derived from MMLV, MSCV has a broader cell tropism than the parent virus and is active in undifferentiated mouse embryonic stem cells and embryonic carcinoma cells.

SELECT VIRAL VECTOR ACRONYMS AND ABBREVIATIONS

Acronym	Expanded	Definition
NeoR	Neomycin Resistance	Antibiotic resistance marker commonly used as a selection factor when creating stable mammalian cell lines expressing cloned proteins in culture
ori	origin of replication	The particular region in a genome where DNA replication begins. Most commonly referenced in regards to plasmids, such as F1ori and pUC ori
pol	polymerase	A gene in lentivirus genomes that encodes the reverse transcriptase, integrase, and in some cases the protease enzymes
Psi (ψ)		Retroviral packaging signal. Regulates the packaging of the retroviral genome into the viral capsid.
sgRNA	small guide RNA	In the CRISPR-CAS system, a complex comprised of the CRISPR RNA, which is complementary to the target site of interest, and the trans-activating CRISPR RNA, which serves as the scaffold that binds to the Cas9 enzyme.
shRNA	small hairpin RNA	An artificial, self-complementary piece of RNA that assembles into a tight hairpin turn. Usually delivered into host cell nuclei by plasmids, bacterial vectors, or viral vectors, once expressed the shRNA can silence target gene expression via RNA interference.
SP6	Bacteriophage SP6 DNA-Dependent RNA Polymerase Promoter	A bacteriophage-derived promoter specifically recognized by the SP6 RNA polymerase.
SV40	Simian Virus 40/ simian vacuolating virus 40	A DNA polyomavirus most commonly associated with latent infection in humans. The origin of replication site from the SV40 T antigen is often used to enhance transcription from plasmid vectors delivered to cells that express the SV40 large T antigen (such as HEK293T cells), allowing the plasmid to be replicated in the cells and thereby increasing transcription targets.
SV40NLS	Simian Virus 40 Nuclear Localization Sequence	A monopartite sequence isolated from the SV40 Large T-antigen that "tags" a protein for import into the cell nucleus.

SELECT VIRAL VECTOR ACRONYMS AND ABBREVIATIONS

Acronym	Expanded	Definition
TALEN	Transcription Activator Effector-Like Nuclease	Enzymes that can be engineered to cleave specific sequences of DNA. Used as an alternative to CRISPR/Cas9 for genome editing.
Tet	Tetracycline-controlled transactivator-responsive promoter	A prokaryotic inducible promoter system that has been adapted for use in mammalian cells. Contains two components; a response unit composed of a tetracycline resistance operon regulatory element embedded in a CMV promoter, and a regulator unit composed of the tetracycline repressor protein fused to the herpes simplex virus transactivator protein. Transgenes inserted downstream of the promoter are constitutively expressed; the addition of tetracycline to the cell culture suppresses transcription of the transgenes.
TMV	Tobacco Mosaic Virus	A positive-sense single stranded RNA virus in the genus Tobamovirus with a broad host plant tropism. Commonly used as a viral vector for plant systems.
UTR	Untranslated region	The portion of mRNA immediately upstream (5') or downstream (3') of the sequence that codes for the gene. Both serve various regulatory functions that impact transcription and translation
VSVG	Vesicular Stomatitis Virus G Protein	The envelope glycoprotein of the vesicular stomatitis virus, a member of the Rhabdovirus family. Can be deleted from the VSV genome and complemented with the envelope glycoprotein of other viruses, producing particles with a VSV core and surface that immunologically resembles a different virus, a process called pseudotyping.
WPRE	Woodchuck Hepatitis Virus Posttranscriptional Regulatory Element	A DNA sequence that generates a regulatory RNA with a tertiary structure that enhances gene expression. Often inserted in the 3' UTR of mammalian expression cassettes to improve protein yield.