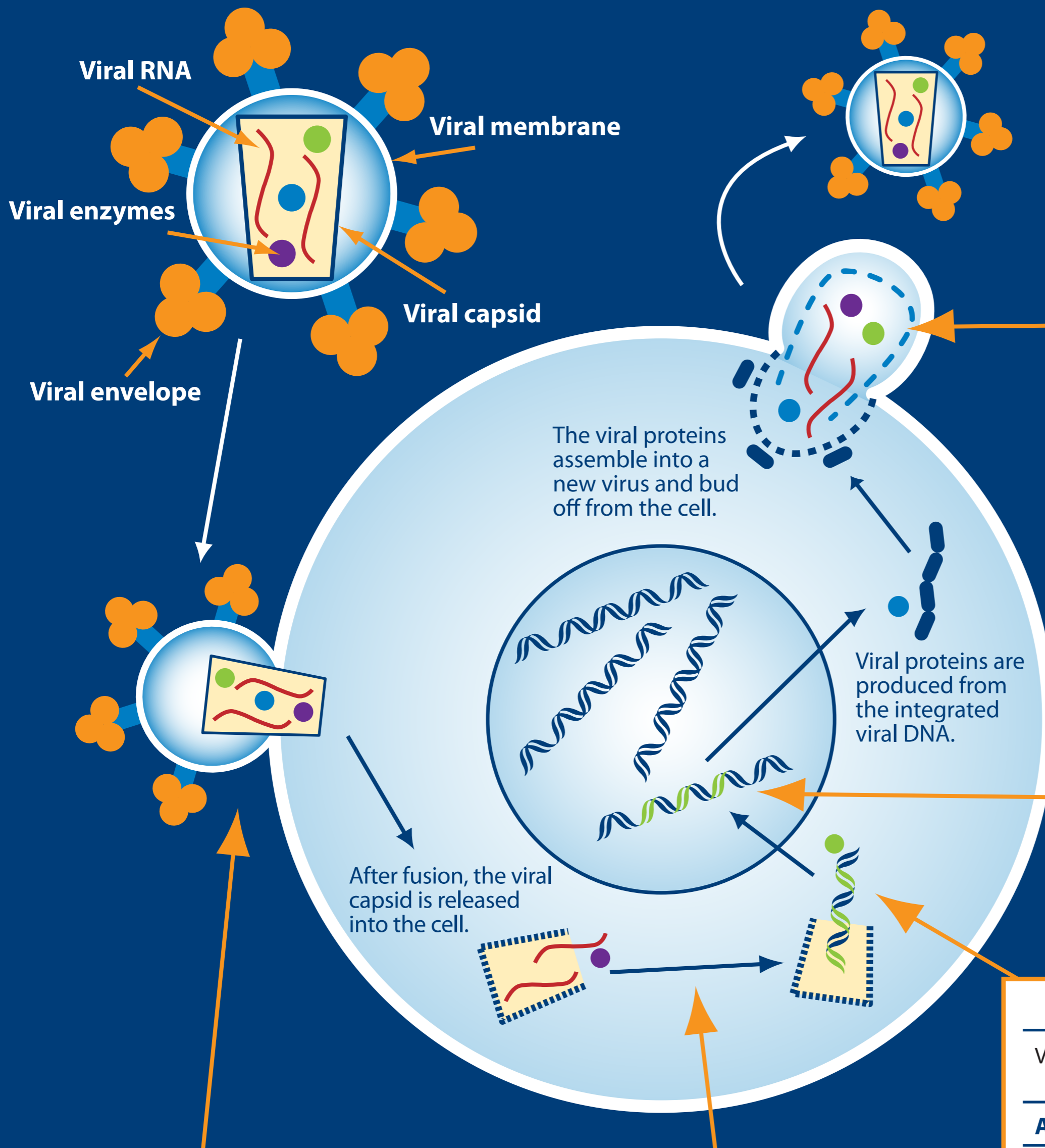


HIV-1 Life Cycle, Drugs, and Susceptibility Assays

HIV-1 is a single-stranded retrovirus that carries two copies of its genome in its capsid. It also carries three enzymes that are necessary for its life cycle and are therefore targets of antiretroviral (ARV) drugs: reverse transcriptase (RT), integrase (IN), and protease (PR). These enzymes are all produced by the *pol* gene, one of HIV-1's nine genes. Resistance testing analyzes changes in the *pol* gene to determine viral susceptibility to ARVs. Steps in the viral life cycle for which there are drug interventions are represented here.



Protease Cleavage

HIV proteins are cleaved by the protease enzyme into their individual parts for assembly.

ARVs	Protease Inhibitors
	GenoSure[®] MG <small>HIV DRUG RESISTANCE ASSAY</small>
	GenoSurePRIme[™] <small>HIV DRUG RESISTANCE ASSAY PR RT IN</small>
Assays	PHENOSENSE[®] <small>HIV DRUG RESISTANCE ASSAY</small>
	PhenoSENSEGT[®] <small>COMBINATION HIV DRUG RESISTANCE ASSAY</small>
	PhenoSENSEGT[®] <small>PLUS INTEGRASE</small>

Archive

Proviral DNA is archived into infected cells.

ARVs	NRTIs, NNRTIs Protease Inhibitors Integrase Inhibitors
Assay	GenoSure archive[®] <small>HIV-1 Next Generation DNA Sequencing Assay</small>
ARVs	CCR5 Antagonists
Assay	trofileDNA[®] <small>CO-RECEPTOR TROPISM ASSAY</small>

Integration

Viral DNA is incorporated into the host cell genome by the integrase enzyme.

ARVs	Integrase Inhibitors
	GenoSure[®] Integrase PhenoSense Integrase[®] <small>PHENOTYPIC TEST</small>
Assays	GenoSurePRIme[™] <small>HIV DRUG RESISTANCE ASSAY PR RT IN</small>
	PhenoSENSEGT[®] <small>PLUS INTEGRASE</small>

Co-Receptor Binding

After binding CD4, the virus then binds to either the CCR5 or CXCR4 co-receptor.

ARVs CCR5 Antagonists

Assays **trofile[®]**
CO-RECEPTOR TROPISM ASSAY

trofileDNA[®]
CO-RECEPTOR TROPISM ASSAY

Fusion

The viral and cell membranes fuse together.

Fusion Inhibitors

PhenoSENSE ENTRY[®]
HIV DRUG RESISTANCE ASSAY

Reverse Transcription

Viral RNA is converted into DNA by the RT enzyme.

ARVs NRTIs and NNRTIs

Assays

GenoSure[®] MG
HIV DRUG RESISTANCE ASSAY

GenoSurePRIme[™]
HIV DRUG RESISTANCE ASSAY PR RT IN

PHENOSENSE[®]
HIV DRUG RESISTANCE ASSAY

PhenoSENSEGT[®]
COMBINATION HIV DRUG RESISTANCE ASSAY

PhenoSENSEGT[®]
PLUS INTEGRASE

Monogram BIOSCIENCES
LabCorp Specialty Testing Group