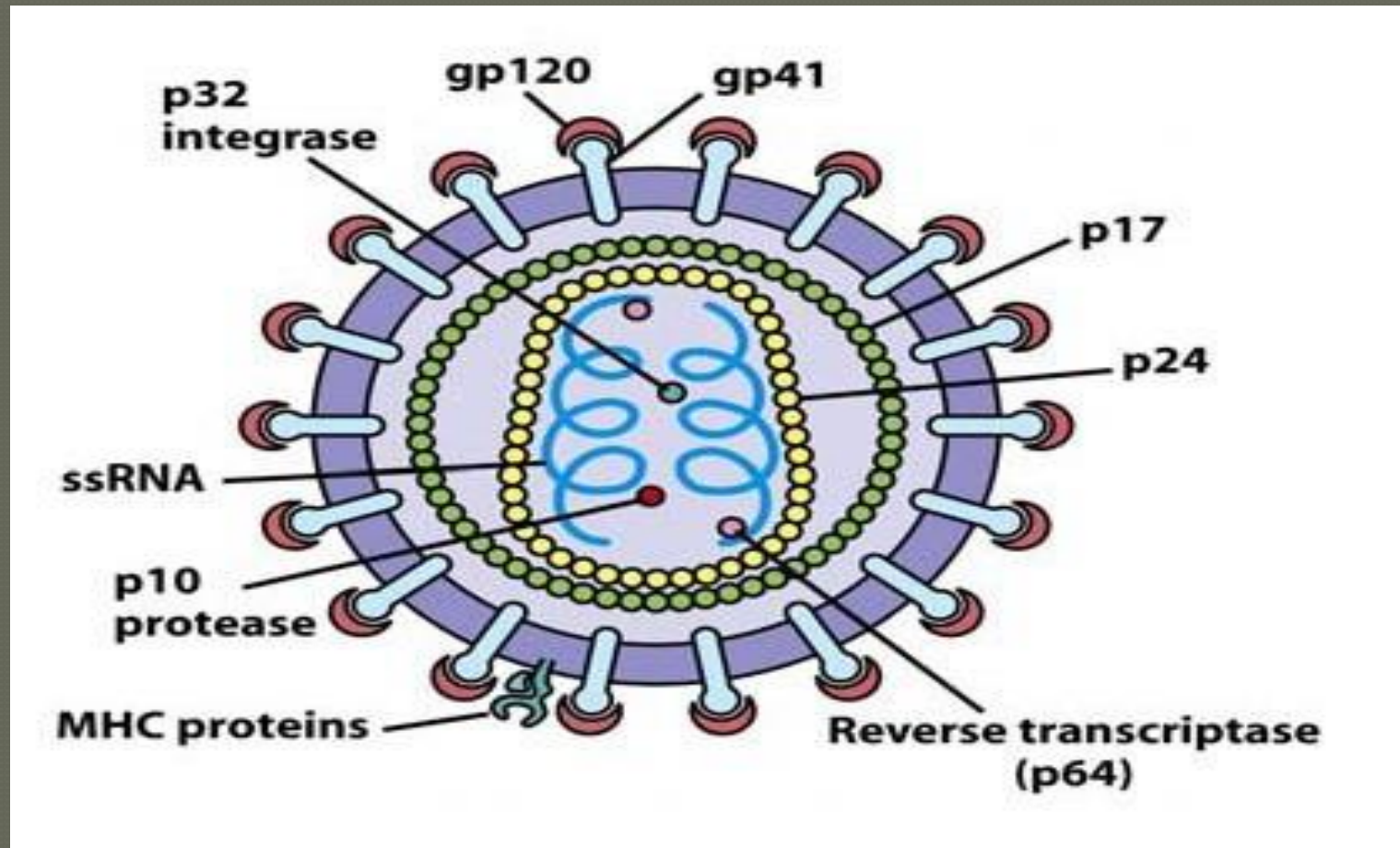


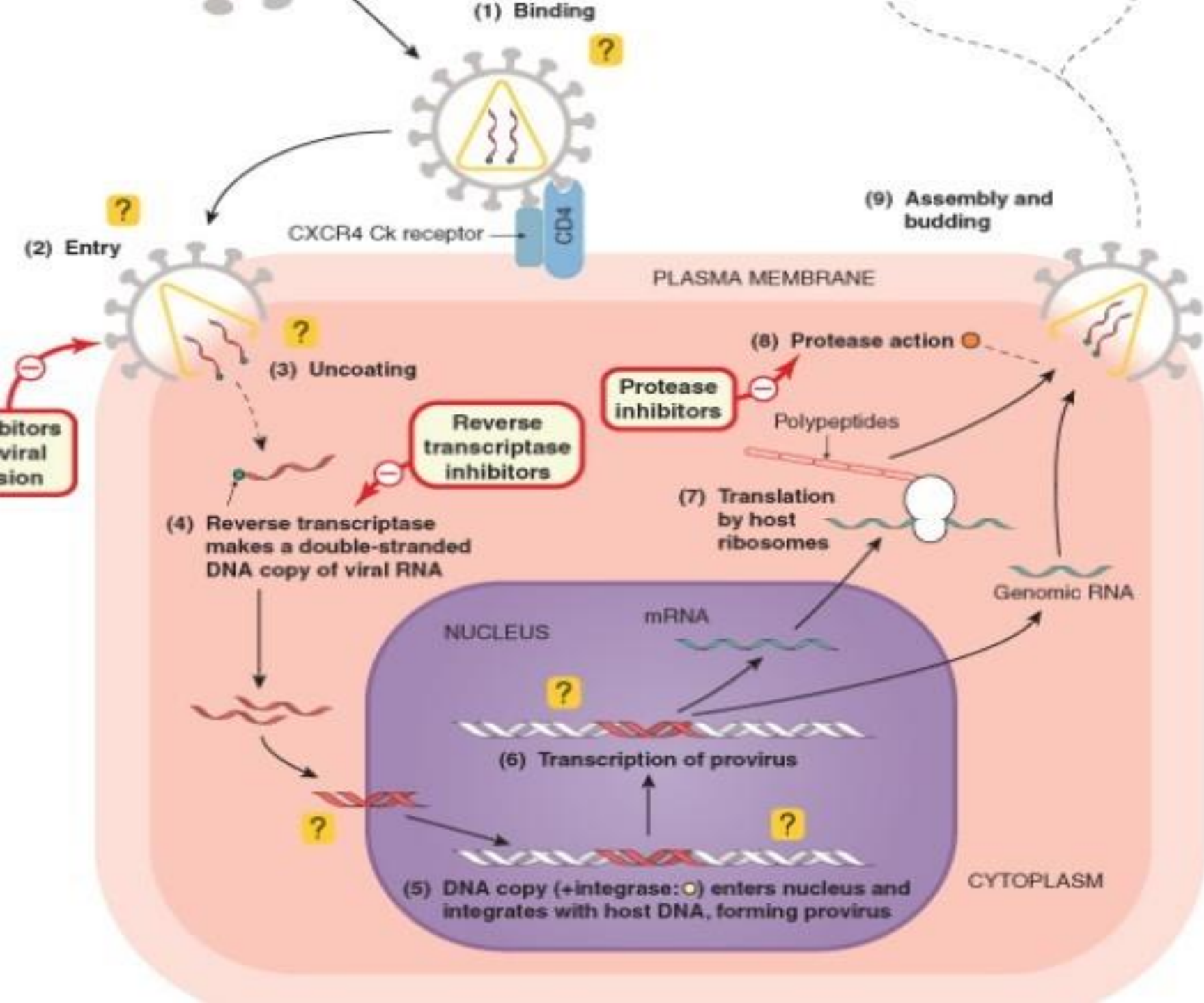
ANTIVIRAL DRUGS

-By Rupam Swain

ANTIVIRAL DRUGS

➤ Viruses are small (20-30 nm) infective agents that are incapable of reproduction outside their host cells





DIFFERENT HOST DEFENCES:

- Skin
- T-lymphocytes
- NK cells
- Gene silencing

VIRAL PLOY:

- Subversion of immune response
- Interference with surface protein markers
- Interference with apoptotic pathway
- Adopting 'baby turkey' ploy

NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS

Mechanism of action:

Phosphorylation to 5'-triphosphate residues



Competes with host triphosphate for proviral DNA synthesis



Incorporation into growing viral DNA and chain termination

DRUG	ANALOGUE	HALF-LIFE	R.O.A	ADR
ZIDOVUDINE(AZT)	THYMIDINE	1-3 HR	ORAL	ANEAMIA,MYOPATHY
DIDANOSINE(ddI)	ADENOSINE	1-1.5 HR	ORAL	PERIPHERAL NEUROPATHY
STAVUDINE(d4T)	THYMIDINE	1.5 HR	ORAL	LIPODYSTROPHY
LAMIVUDINE(3TC)	CYTOSINE	6-8 HR	ORAL	ANOREXIA
ABACAVIR(ABC)	GUANOSINE	1-1.5,12 HR	ORAL	HYPERSENSITIVITY AND FLU LIKE SYMPTOMS

NON-NUCLEOSIDE REVERSE TRANSCRIPTASE UNHIBITORS

NEVIRAPINE Orally well absorbed

Bioavailability-90%

T_{1/2}-30 hours

Prevent mother to baby transmission

Hepatotoxic

EFAVIRENZ: Bioavailability-50%

T_{1/2}-48 hours

99% albumin bound

Insomnia,dizziness

PROTEASE INHIBITORS

Saquinavir,nelfinavir,indinavir,ritonavir,amprenavir

Given orally

Increase CD4 count in AIDS patients

Tablet load is high

Lipodystrophy,numbness,rhabdomyolysis are adverse effects

DNA POLYMERASE INHIBITORS

Mechanism of action:

Converted to monophosphate by thymidine kinase of virus



Host cell convert monophosphate to triphosphate



Inhibits DNA polymerase and terminate nucleotide chain

DRUG	ANALOGUE	DRUG OF CHOICE FOR	R.O.A	HALF LIFE	ADR
ACICLOVIR	GUANIDINE	HERPES,VARICELLA	I.V, TOPICAL	2-3 HR	TREMORS, MALAISE, RENAL DYSFUNCTION
GANCICLOVIR	GUANIDINE	CYTOMEGALY	I.V	2-4 HR	CARCINOGENECITY, BONE MARROW DEPRESSION
RIBAVIRIN	GUANIDINE	SYNCYTIAL VIRUS	I.V	2-3 HR	INSOMNIA, MYALGIA
FOSCARNET	NON NUCLEOSIDE	CYTOMEGALY	ORAL	4-8 HR	ANEMIA, CONVULSION

INHIBITORS OF VIRAL FUSION:

ENFURVIRTIDE:

Given subcutaneously

Flu like symptoms

NEURAMINIDASE AND VIRAL COAT ASSEMBLY INHIBITORS:

ZANAMIVIR AND OSELTAMIVIR-

Inhalation and oral preparation

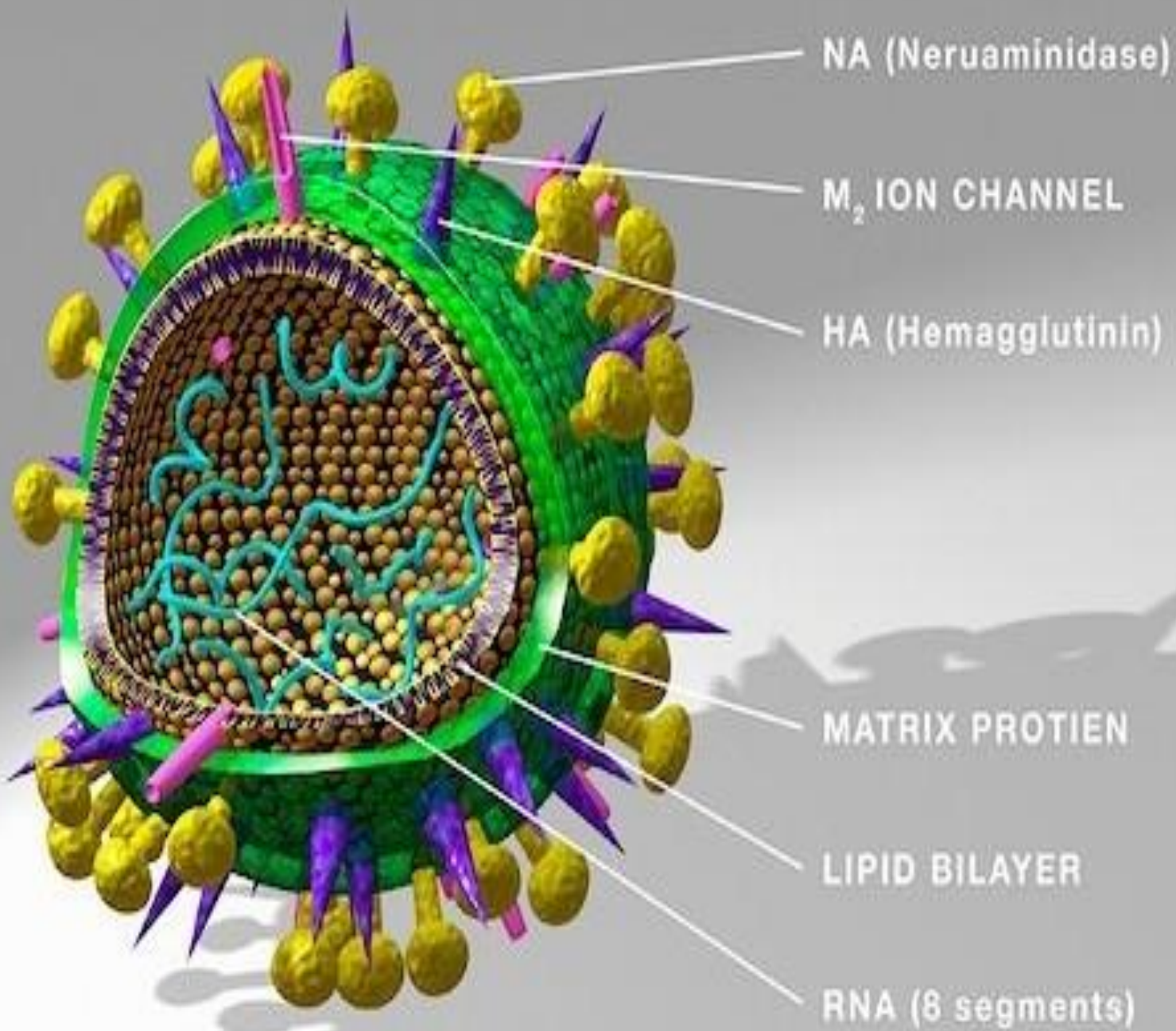
G.I upset

AMANTIDINE AND RIMANTIDINE-

Block M2 ion channel

Effective only against influenza A virus

Dizziness, insomnia, slurred speech



BIOLOGICS AND IMMUNOMODULATORS

Immunoglobulin: Pooled antibodies against virus envelope are used

Hyperimmune globulin against hepatitis B, rabies, varicella are used

Palivisumab: Monoclonal antibody directed against glycoprotein on surface of syncytial virus

Inosine pranobex: Interfere with viral nucleic acid synthesis and has immunopotentiating action on host

INTERFERONS:

- Bind to specific ganglioside receptors on host cell
- Induce enzymes that inhibit viral mRNA translation
- Broad spectrum
- Half life of 2-4 hours
- Do not cross blood brain barrier
- Interferon- α -2a—treatment of hepatitis B and Kaposi sarcoma
- Interferon- α -2b—treatment of hepatitis C
- Myalgia, bone marrow depression, alopecia