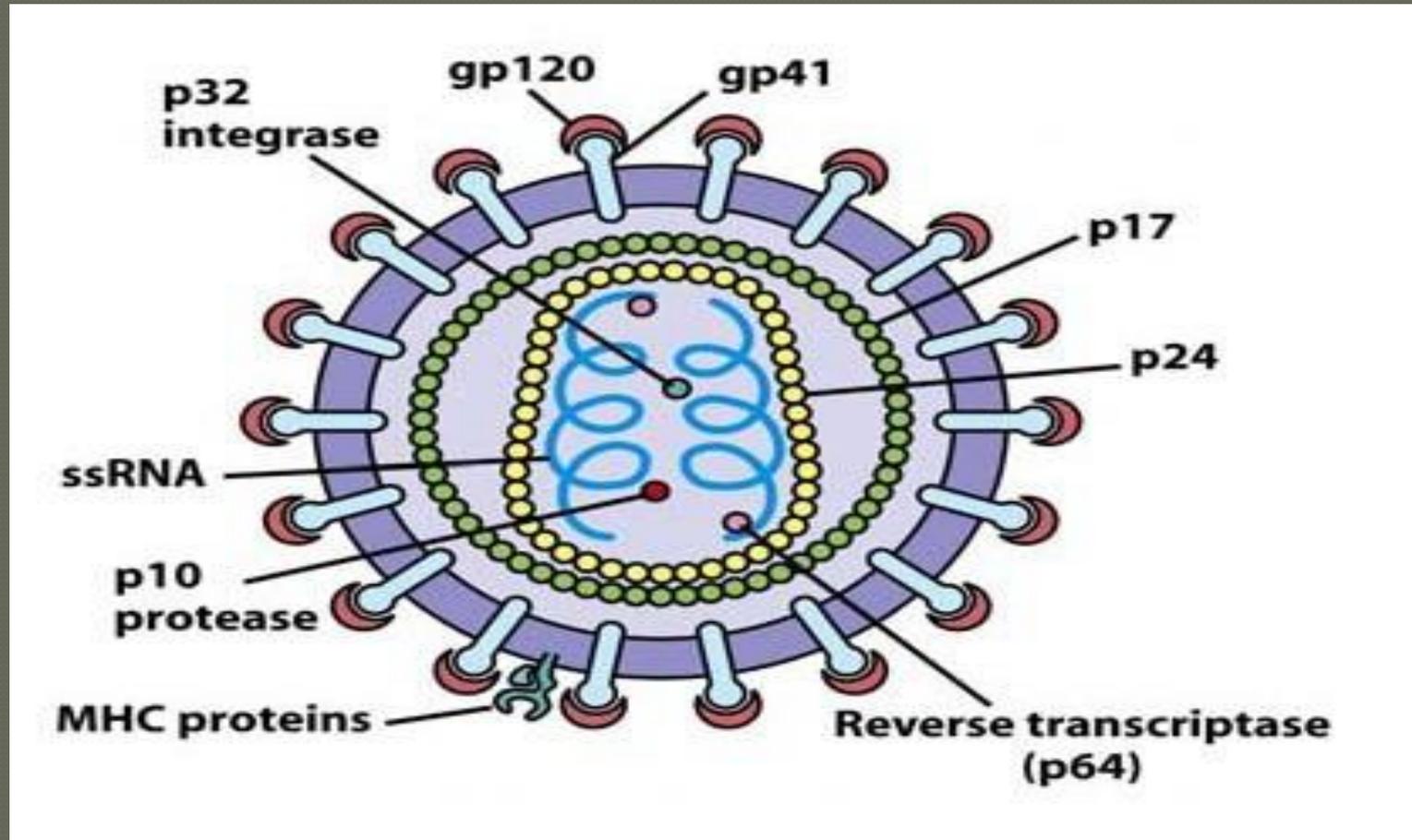


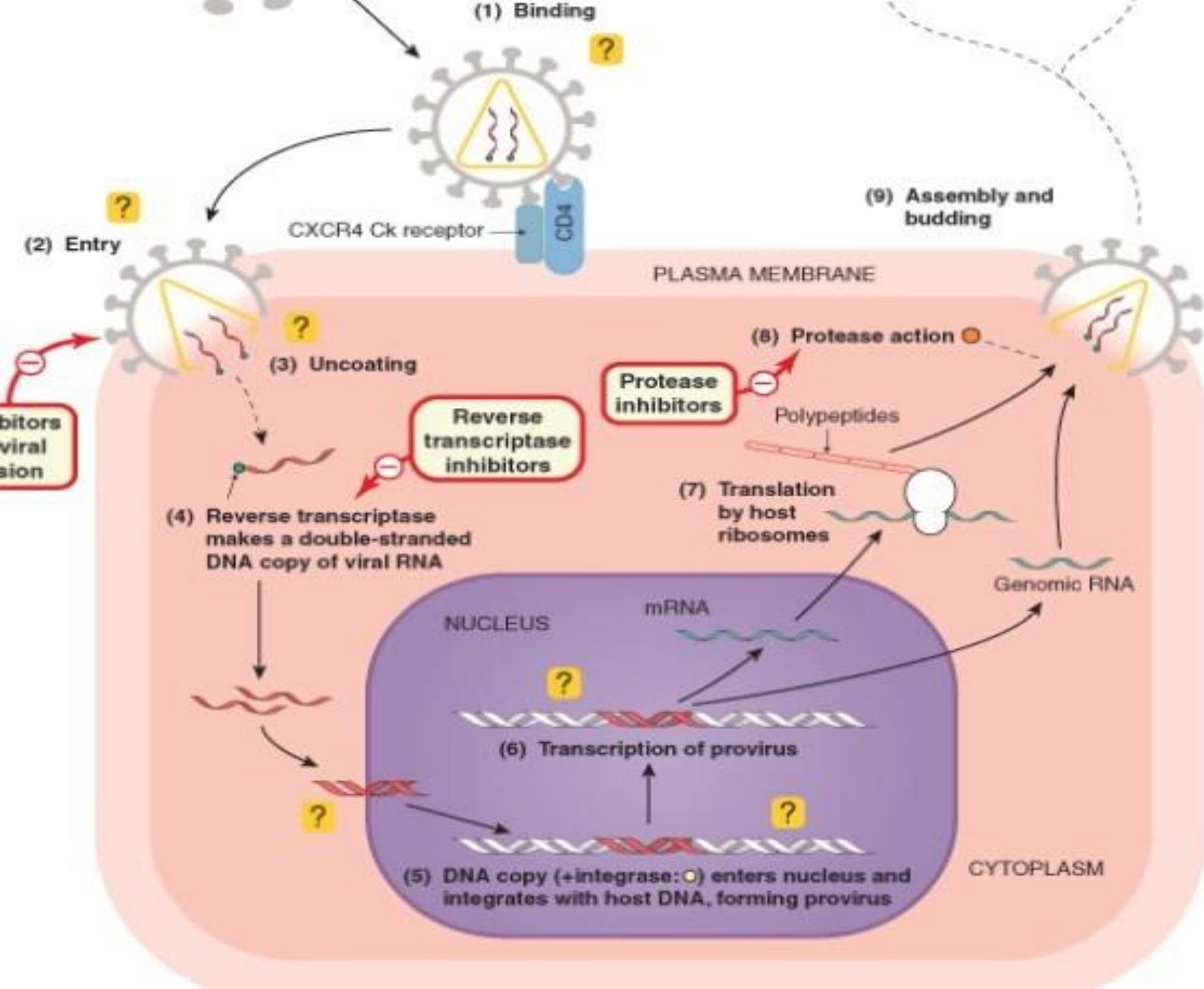
# ANTIVIRAL DRUGS

*-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

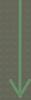
Interference with apoptotic pathway

Adopting 'baby turkey' ploy

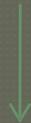
# NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS

## 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<sub>1/2</sub>-30 hours

Prevent mother to baby transmission

Hepatotoxic

EFAVIRENZ: Bioavailability-50%

T<sub>1/2</sub>-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	ANEAMIA, CONVULSION

## INHIBITORS OF VIRAL FUSION:

### ENFURVIRTIDE:

Given subcutaneously

Flu like symptoms

## NEURAMINIDASE AND VIRAL COAT ASSEMBLY INHIBITORS:

### ZANAMIVIR AND OSELTAMIVIR-

Inhalation and oral preparation

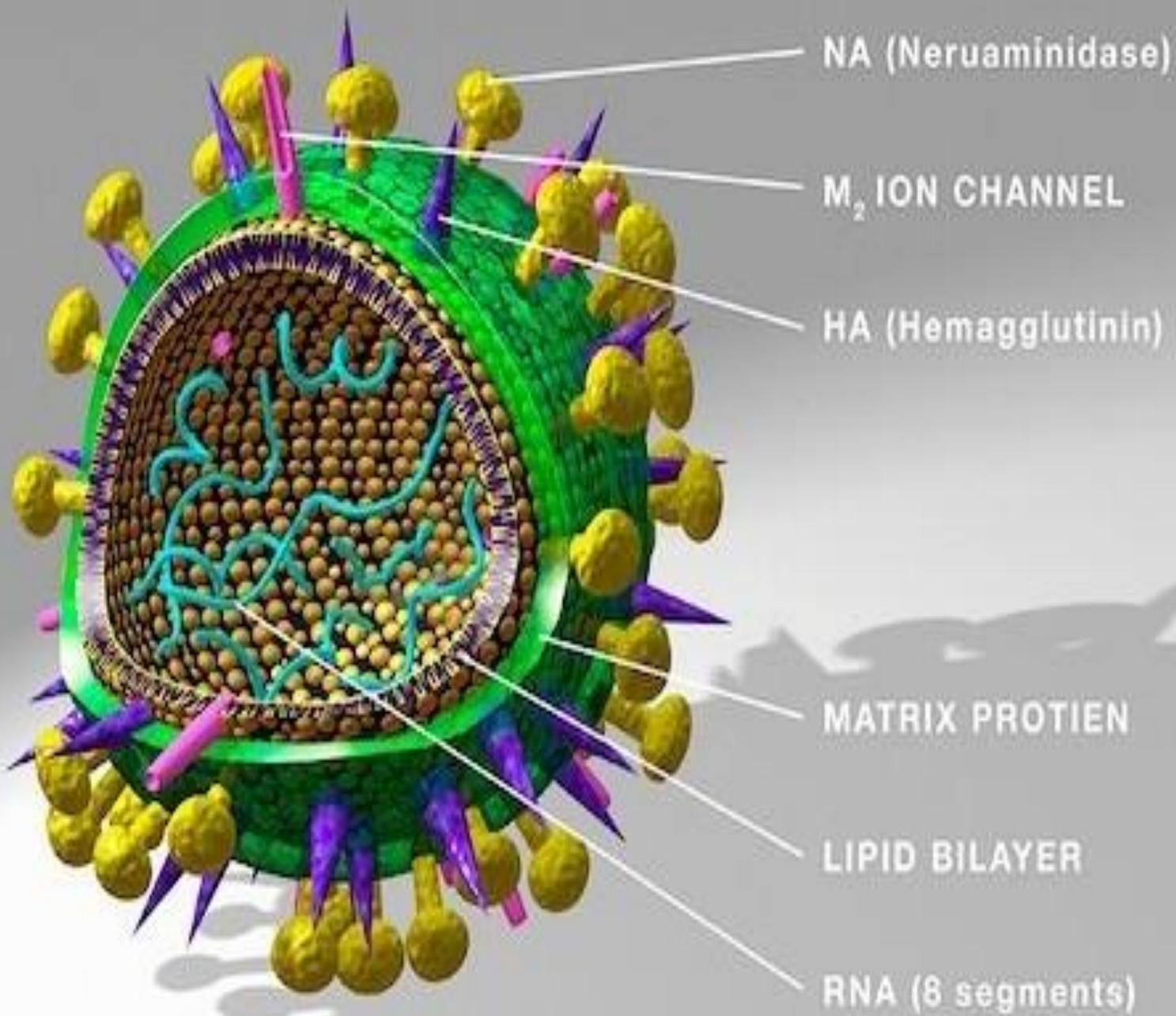
G.I upset

### 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- $\alpha$ -2a—treatment of hepatitis B and kaposi sarcoma
- Interferon- $\alpha$ -2b—treatment of hepatitis C
- Myalgia, bone marrow depression, alopecia