

# HIV / AIDS

A Comprehensive Approach

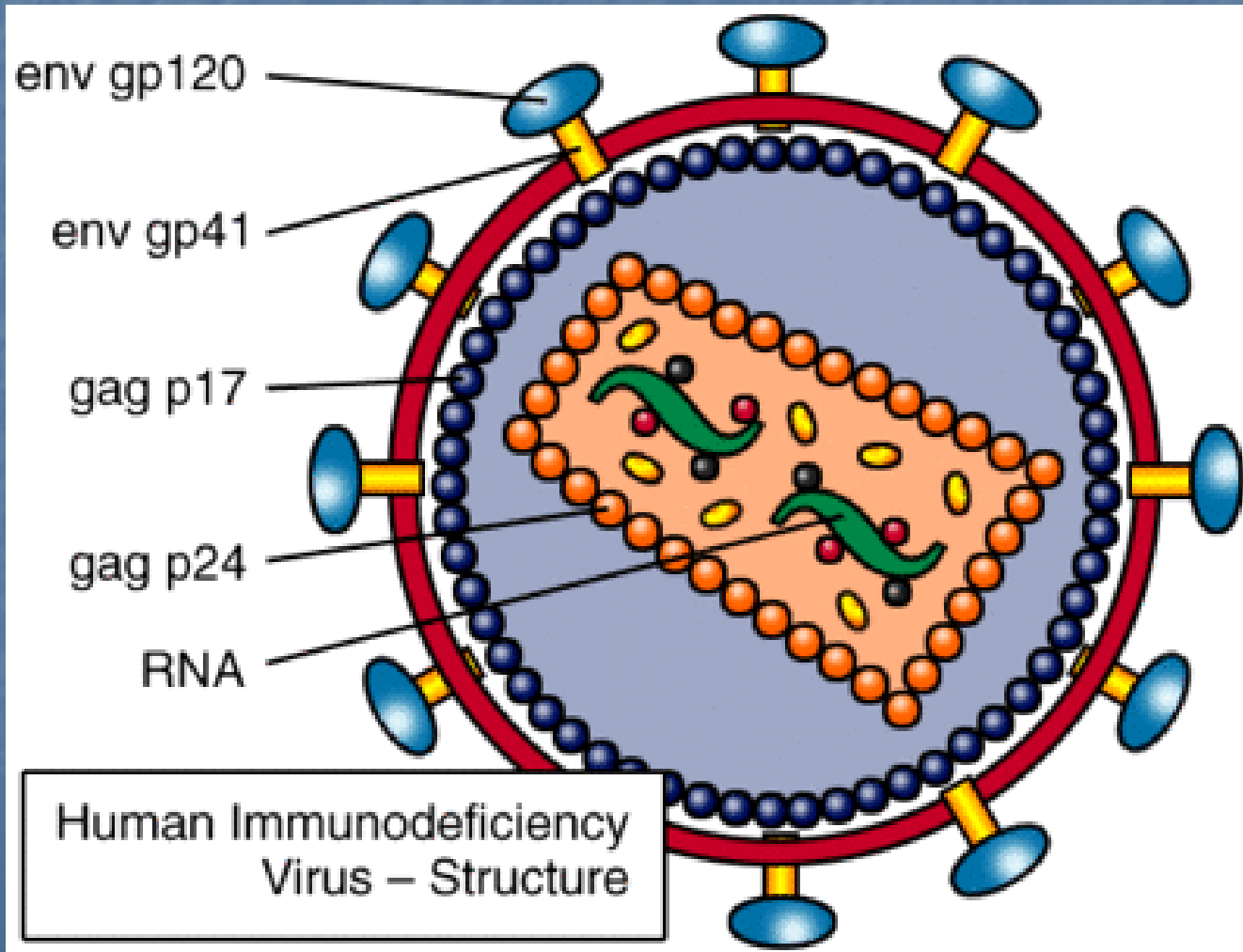
# What is HIV

- Human Immunodeficiency Virus
- Retro Virus
- Subgroup lentivirus (SIV and FIV)
- HIV has 9 genes
- Gag, Pol and Env (makes new viruses)
- Tat, Rev, Nef, Vif, Vpr and Vpu (how HIV infects cells and cause the disease)

# What is HIV

- Two main strains type-1 and type-2
- Type-2 mainly found in Africa
- Type-2 closely related to SIV
- Type-1 is more pathogenic than type-2
- The virus that leads to AIDS (Acquired Immunodeficiency Syndrome)

# HIV Virus



# HIV Origins



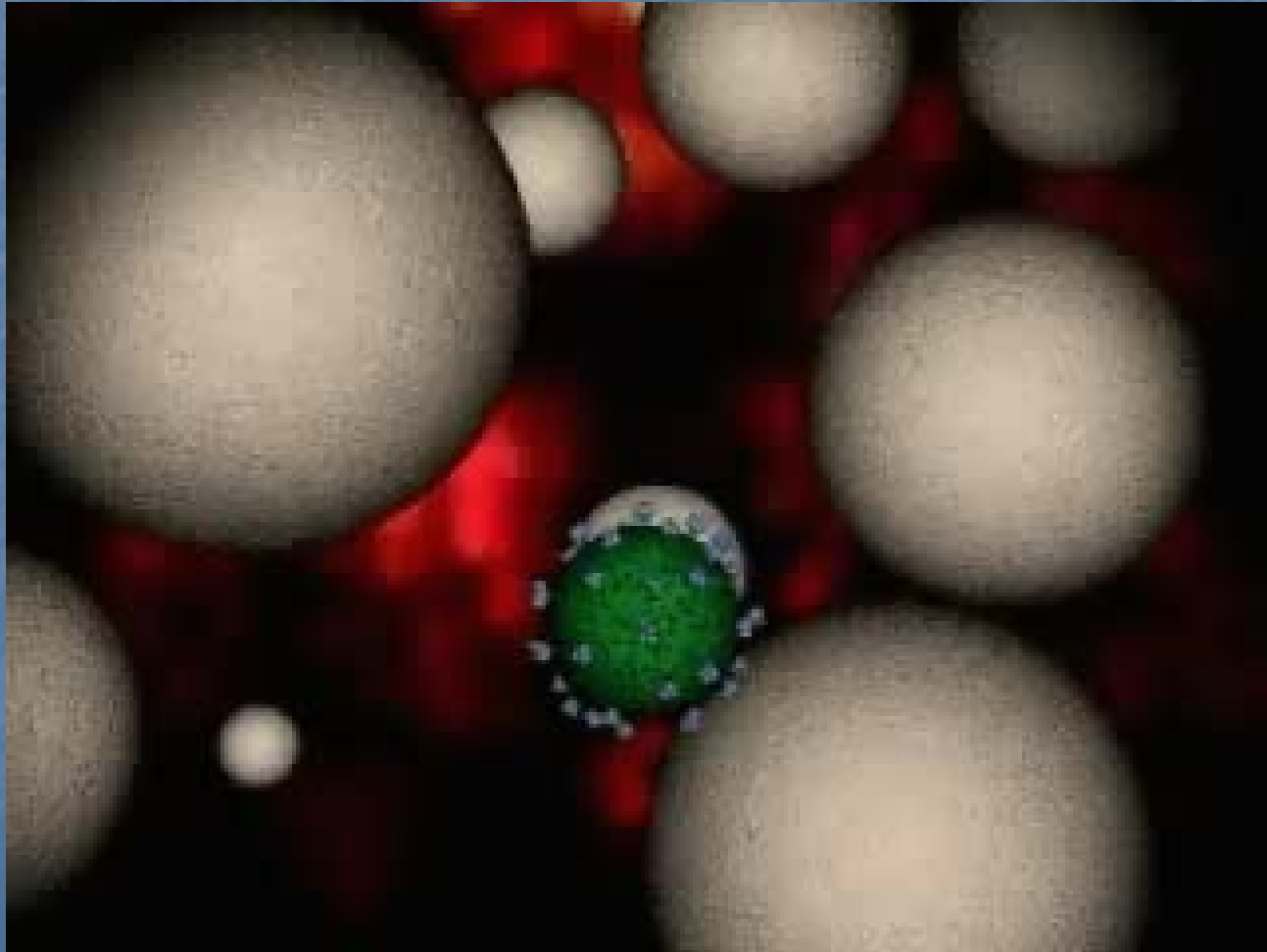
# HIV Transmission

- Found in blood, semen and vaginal fluids
- Transmitted while having unprotected sex
- Transmitted while sharing needles
- Transmitted through occupational exposures
- HIV can cross the placental barrier
- HIV is a communicable disease

# HIV in the Body

- HIV invade the blood stream
- Attaches to cd-4 immune cells (T-cells)
- Integrates into that cells genome
- Renders that cell useless to fight disease
- Infected cell now only makes HIV viruses
- Which in turn seeks and infects T-cells
- Cycle keeps going

# HIV Life Cycle





# HIV Leads to AIDS

- Acquired Immunodeficiency Syndrome
- This is not a disease in itself
- This is a "state of Being"
- This is having a severely compromised immune system unable to fight off disease
- Two diagnostic tests are used to determine this state

# Cd-4 Cell Count

- Cd-4 cell count tests
- Non HIV infected persons have a normal cd-4 cell count of 700-1000 in a drop of blood
- HIV infected persons have a normal cd-4 cell count above 500
- Below 200, this is AIDS defining

# HIV Viral Load Tests

- This is used to see how many copies of the virus is in the body
- Determines if the virus is progressing, regressing or stabilizing
- Mainly used in the management of the disease
- Individual results widely vary

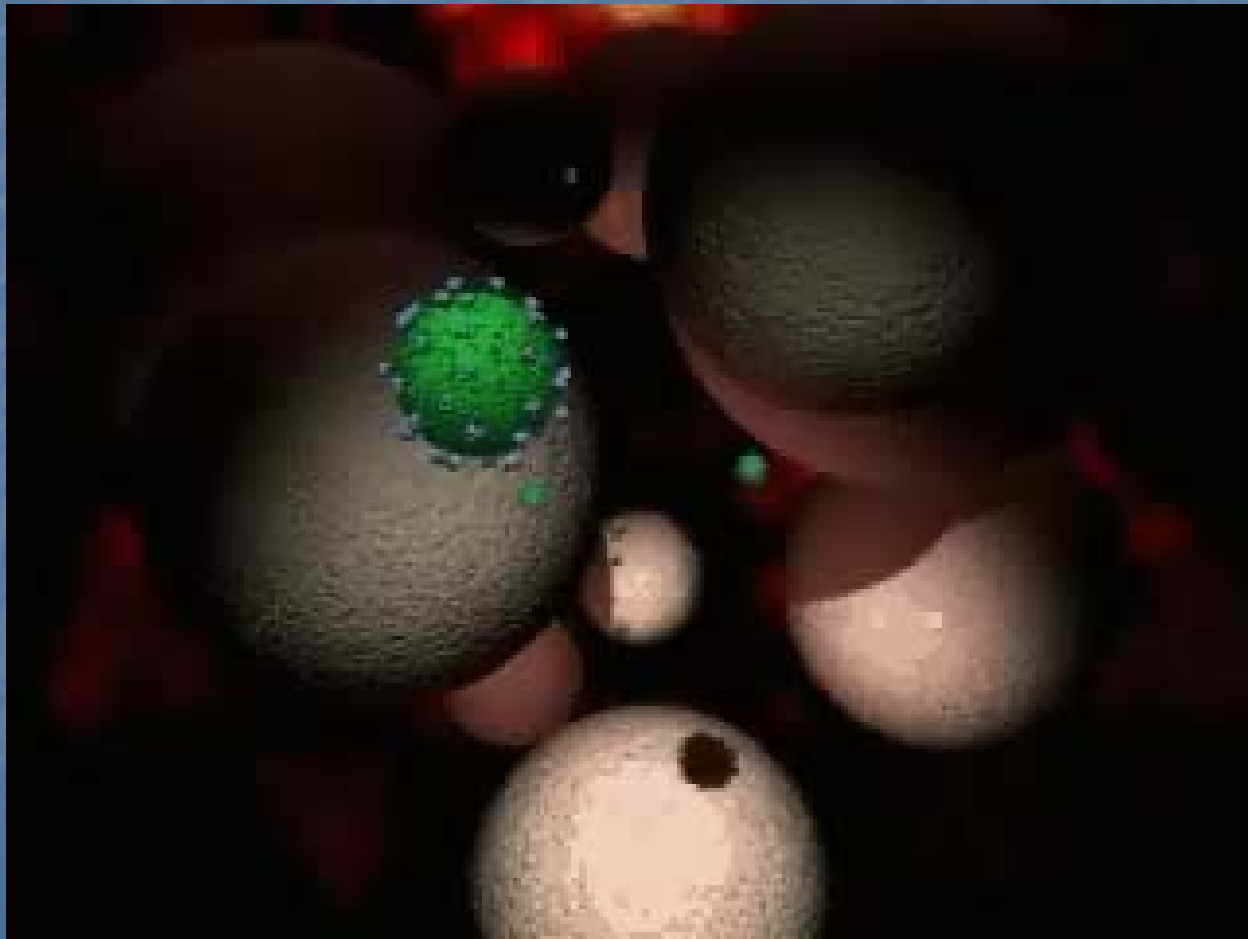
# How to Slow the Progression

- There are different classes of drugs used to hinder the progression of HIV into AIDS
- Focused at different stages in the HIV Life Cycle
- These can reduce the time it takes for HIV to progress into AIDS

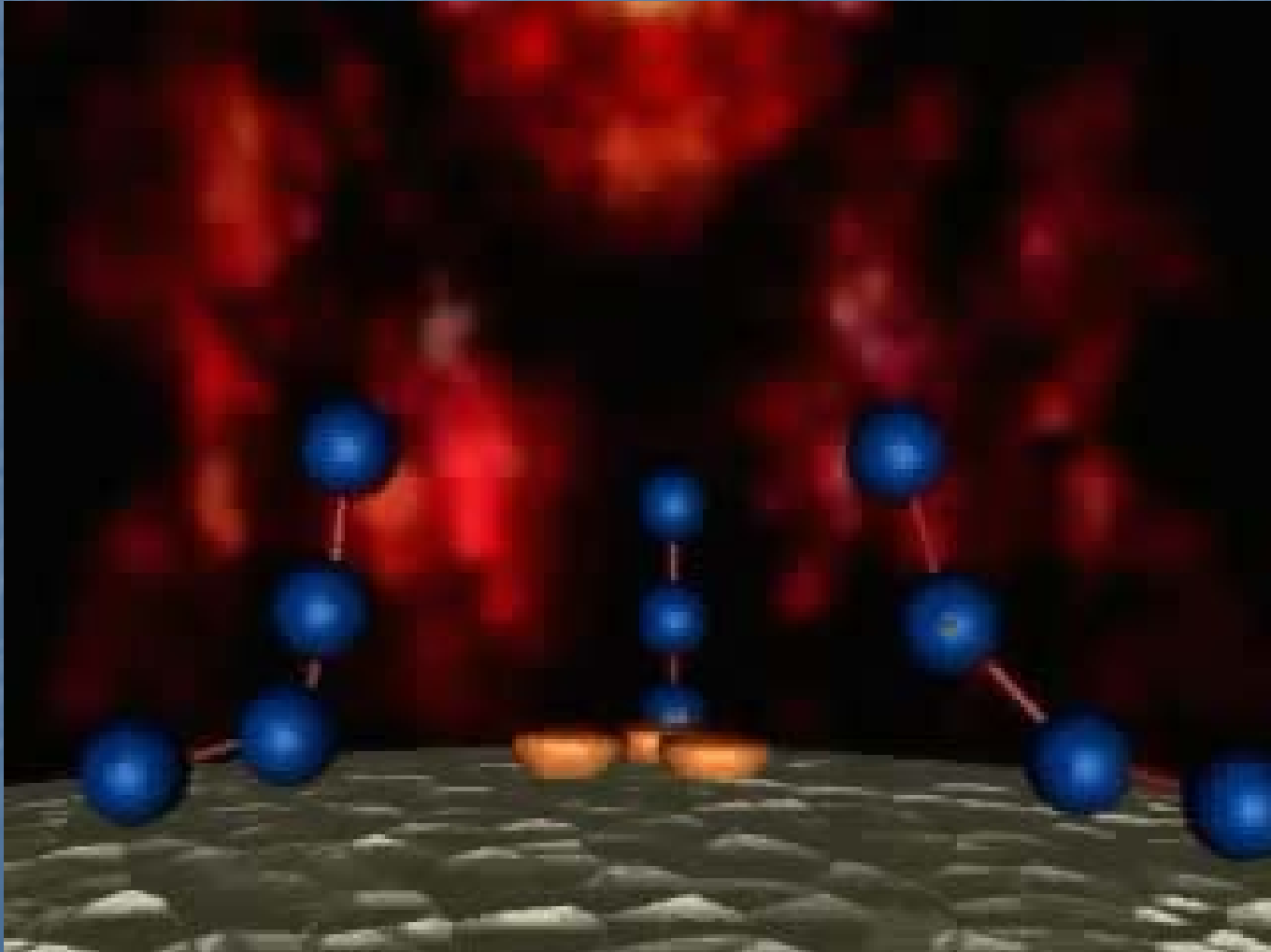
# Drugs

- Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)
- Nonnucleoside Reverse Transcriptase Inhibitors (NNRTI)
- Protease Inhibitors
- Entry Inhibitors or Fusion Inhibitors
- Integrase Inhibitors

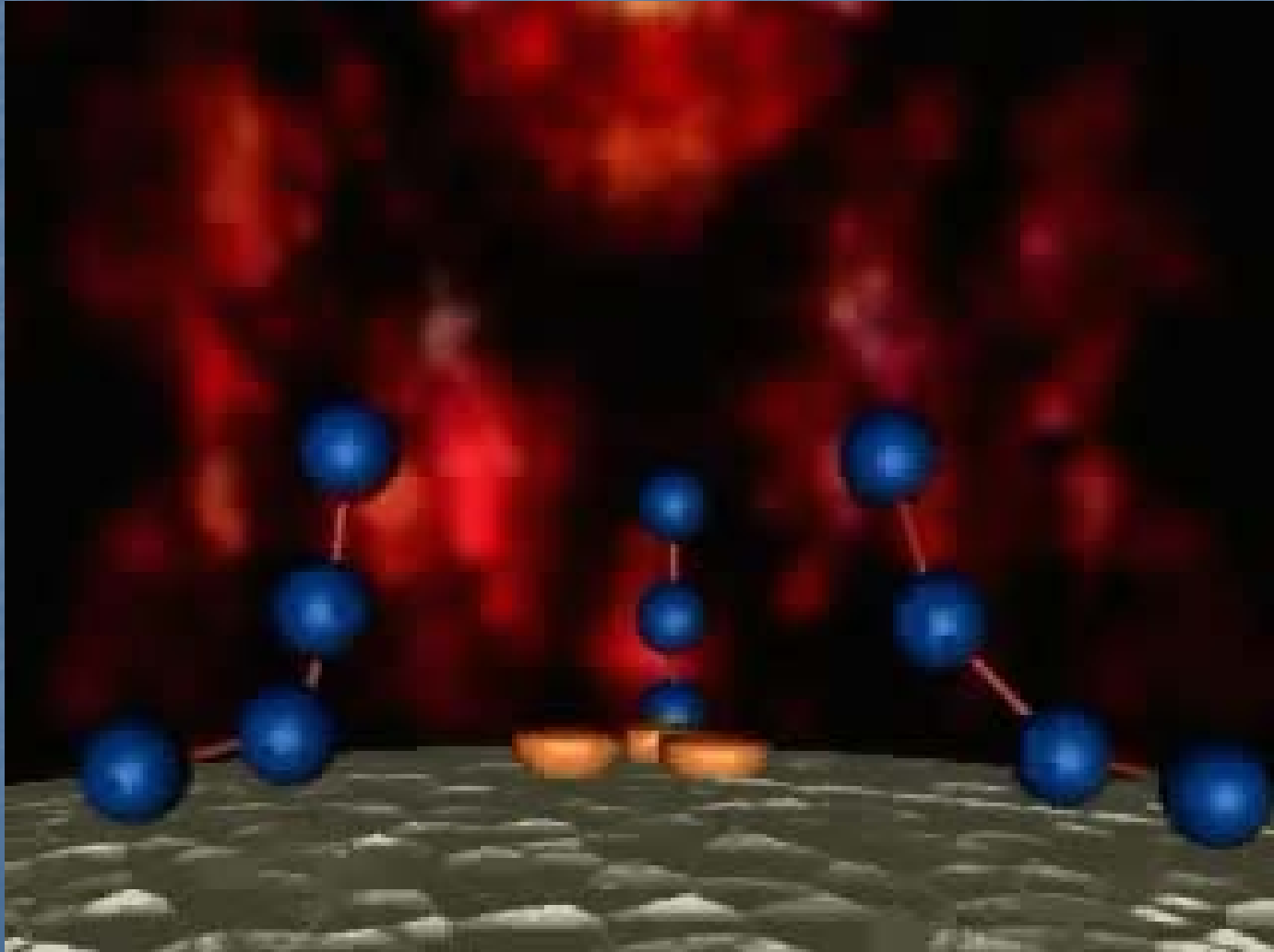
# Fusion Inhibitors



# Attachment Inhibitors



# Cellular Inhibitors





# Drug Effects

- There are many side effects to these drugs
- Some of these side effects may impact a persons day to day life
- Some may produce false positive results on drug screens

# Why Drugs Fail

- HIV is designed to survive and kill its host
- HIV frequently and randomly mutates
- This mutation can code for drug resistance
- Individuals contracting new strains of HIV
- Individuals co-infected with other diseases
- Resistant strains being transmitted
- Starting, stopping and restarting drugs

# What Happens in AIDS

- In AIDS, the person has a severely compromised immune system
- People do not die from AIDS but from an opportunistic infection.
- A simple cold can be life threatening for someone in AIDS

# Precautions

- HIV cannot survive out in the open.
- HIV in the blood dropped on the desk or floor rapidly oxidized
- Standard Personal Protection Equipment (PPE) is recommended when handling blood and or bodily fluids
- 10% bleach solution to disinfect area

# Precautions

- In the event of occupational exposure, those involved would be tested.
- Prophylaxis medication would be offered depending on the severity of the exposure
- Follow-up testing would be administered to cover possible incubation period
- Sharps injury are a reportable incident

# Facts

- No documented cases of HIV from kissing
- No documented cases from drinking or eating after another
- HIV is not transmitted from toilet seats
- HIV is a blood-borne pathogen and found in bodily fluids
- HIV has to get in the bloodstream

# Facts

- HIV / AIDS cases in the US are on the rise
- HIV medications are allowing those infected to live longer
- The Ryan White Act provides assistance to those with HIV / AIDS

# Questions

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