

*Herpes virus*

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# Herpesviruses group:

- HSV-1
- HSV-2
- VZV
- CMV
- EBV
- HHV-6
- HHV-7
- HHV-8

# Latency

- Latent infection:

a type of persistent infection in which the viral genome is present but infectious virus is not produced except during intermittent episodes of reactivation.

- Reactivation:

Asymptomatic virus shedding.

- Recurrence:

Clinical obvious disease due to reactivation.

# *Structure*

- DNA :LARGE double stranded
- Viral capsid: icosahedral
- Tegument: unique / amorphous proteinaceous layer
- Envelope: from cell membrane

# Subgroups

- 1)alpha-herpes viruses :HSV-1 , HSV-2 , VZV

-Rapid growth

Neurotropic



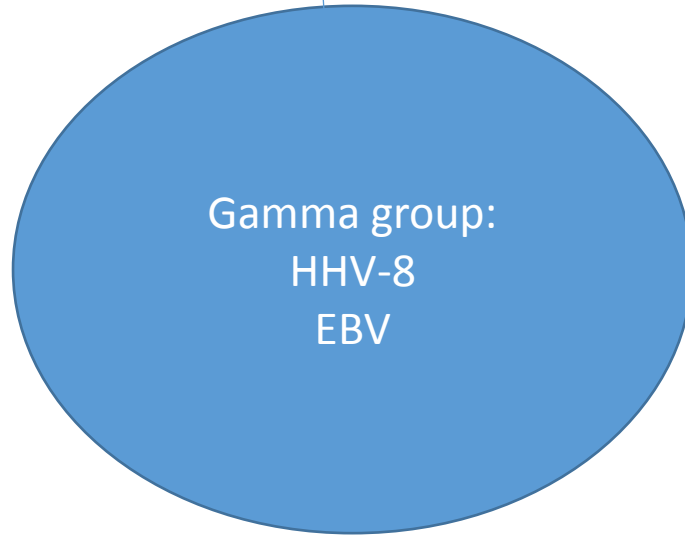
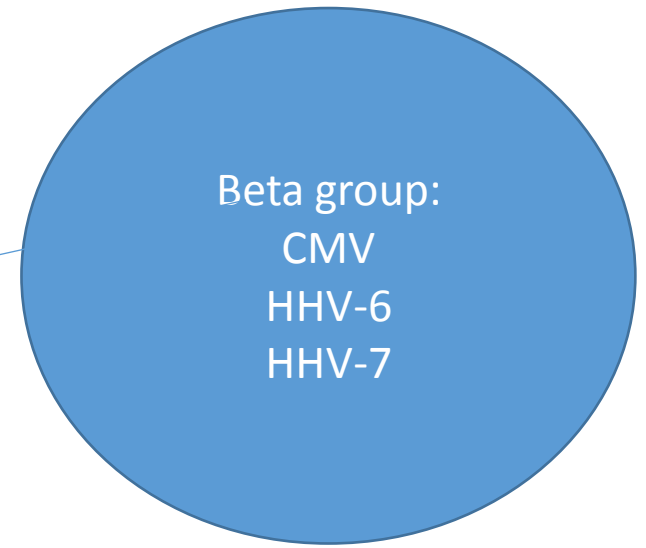
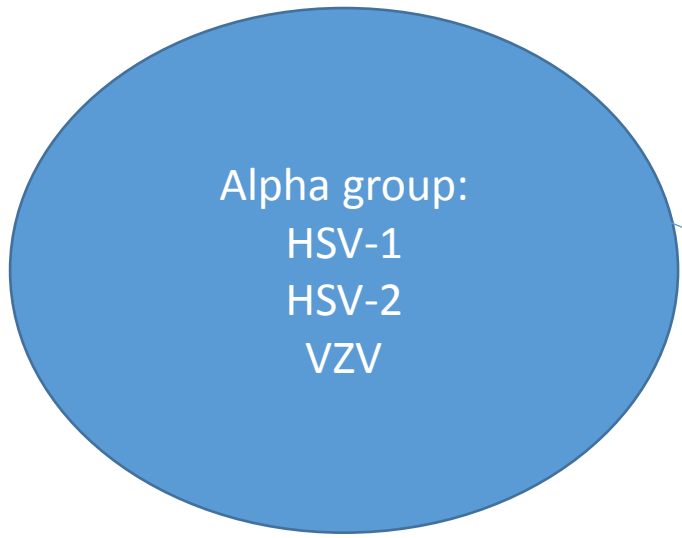
- 2)Beta-herpes viruses: CMV, HHV-6,HHV-7

-slow growth

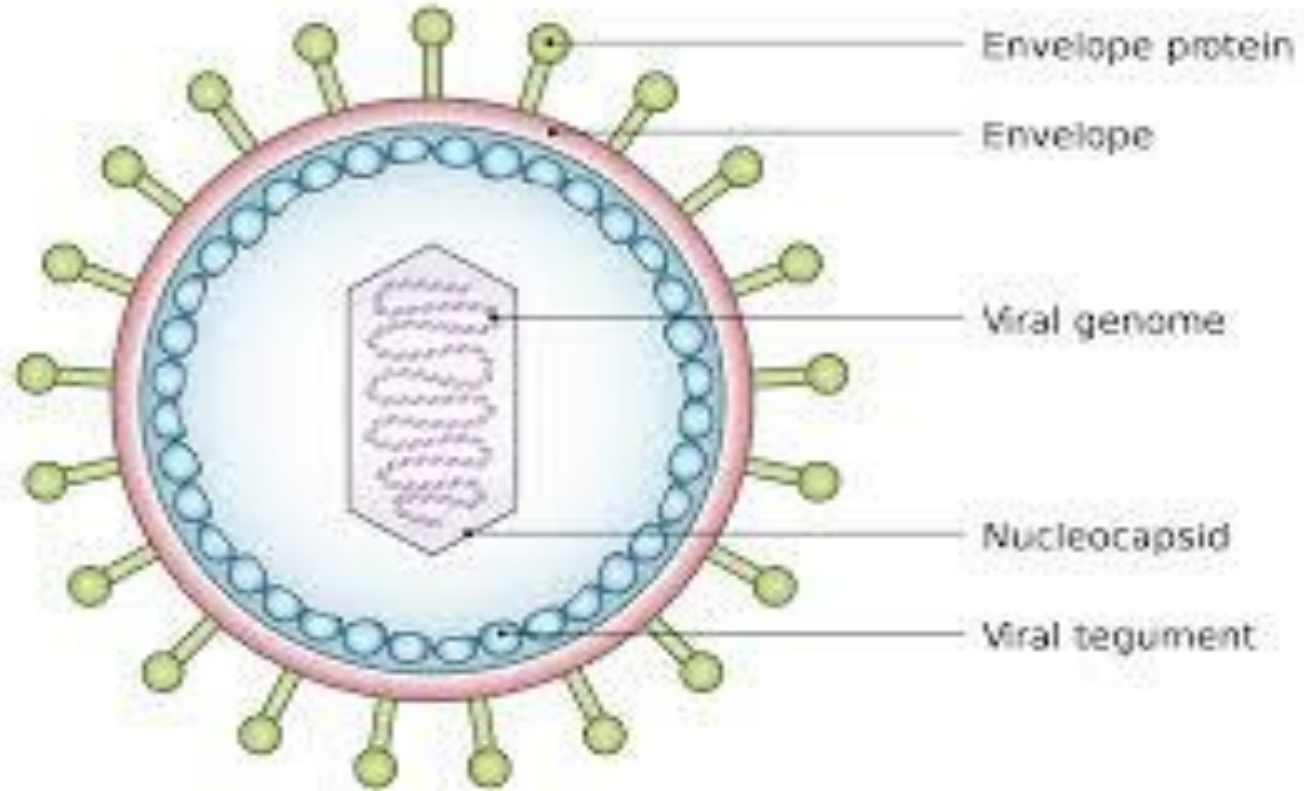
- 3)Gamma herpes virus: EBV , HHV-8

EBV,HHV-6,HHV-7 :Lymphotropic

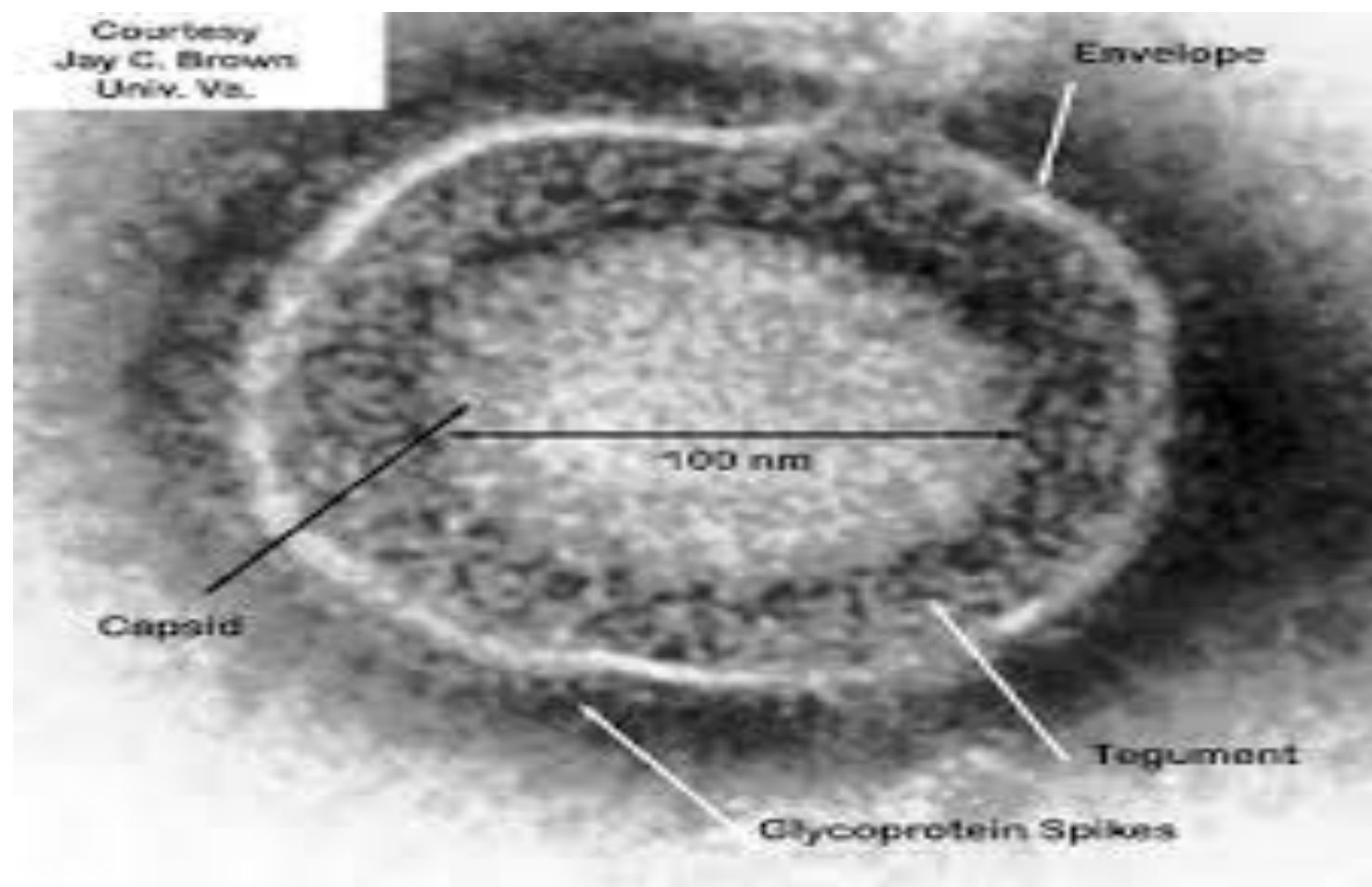




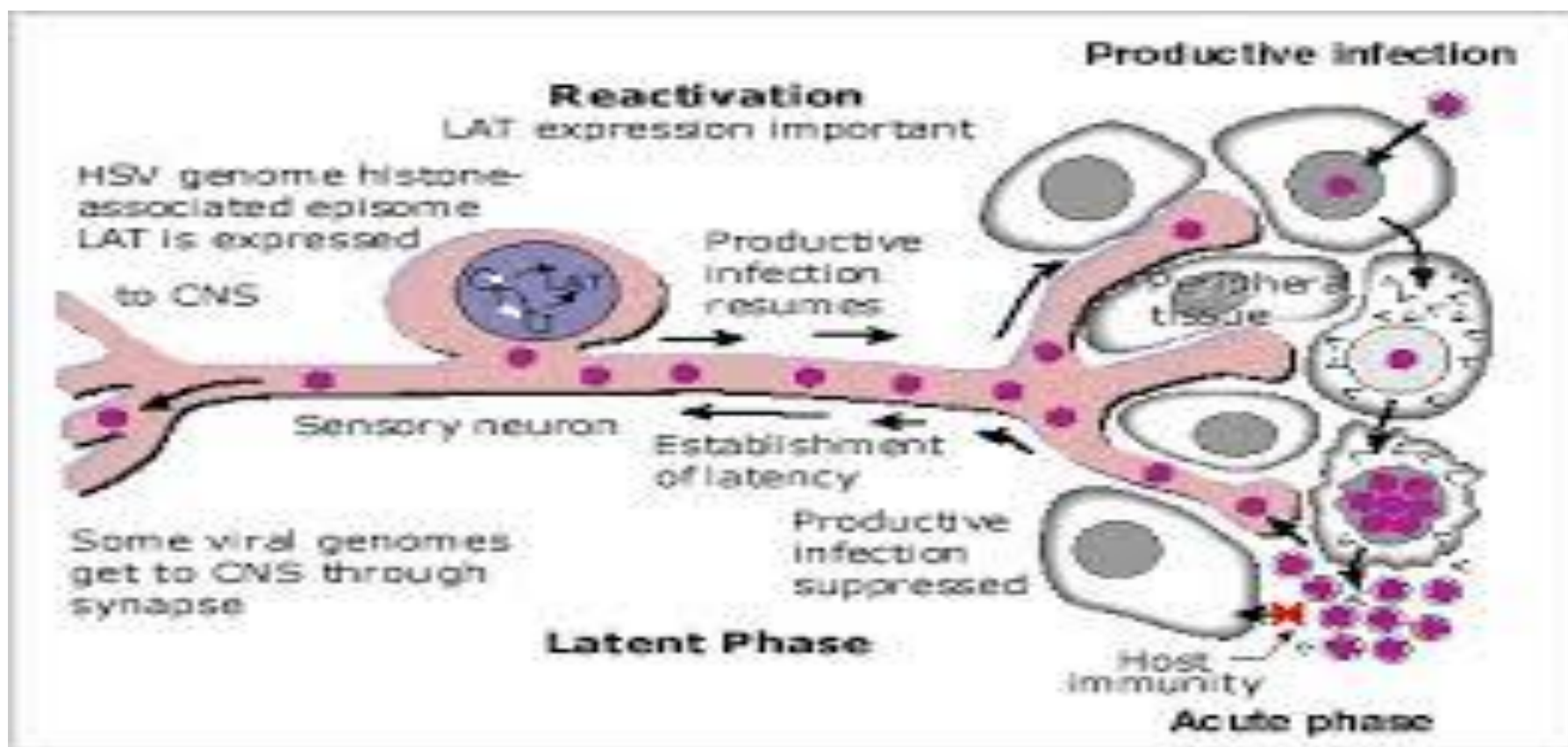
# Structure



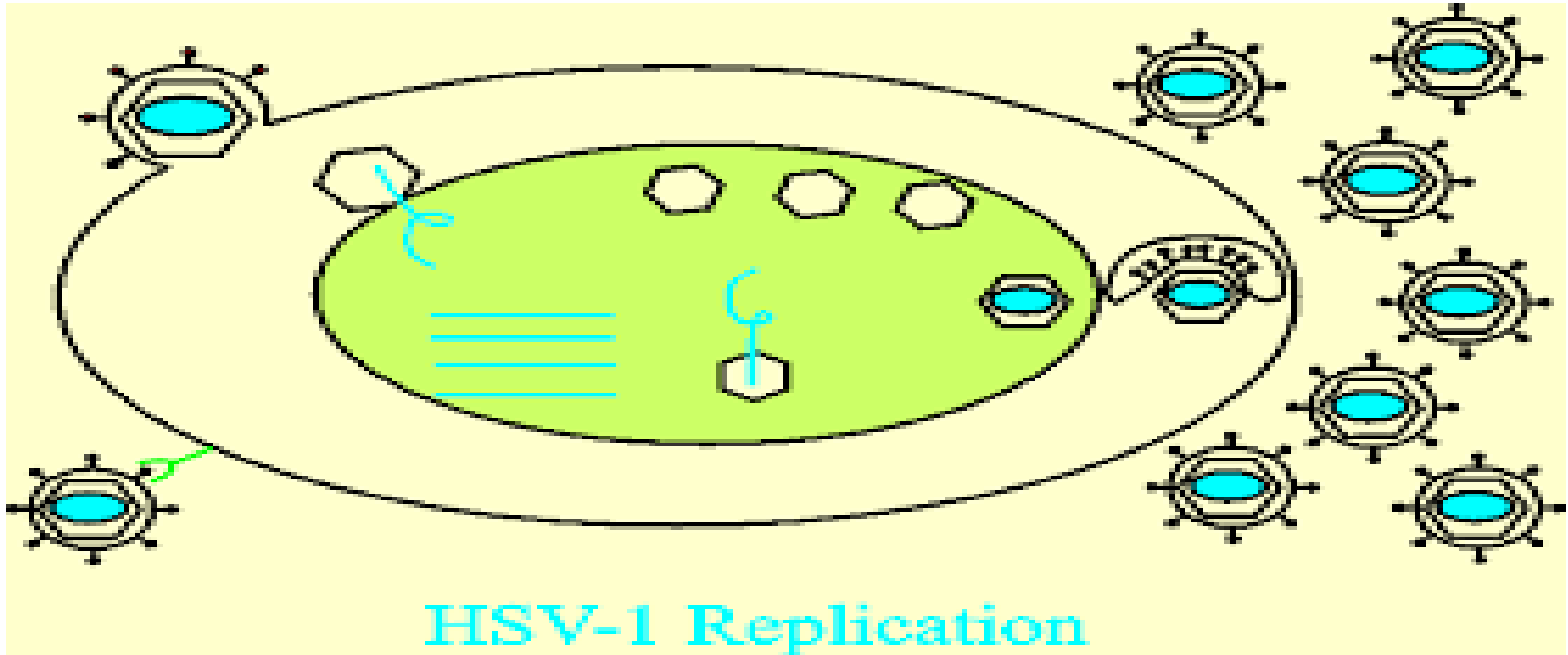
Courtesy  
Jay C. Brown  
Univ. Va.



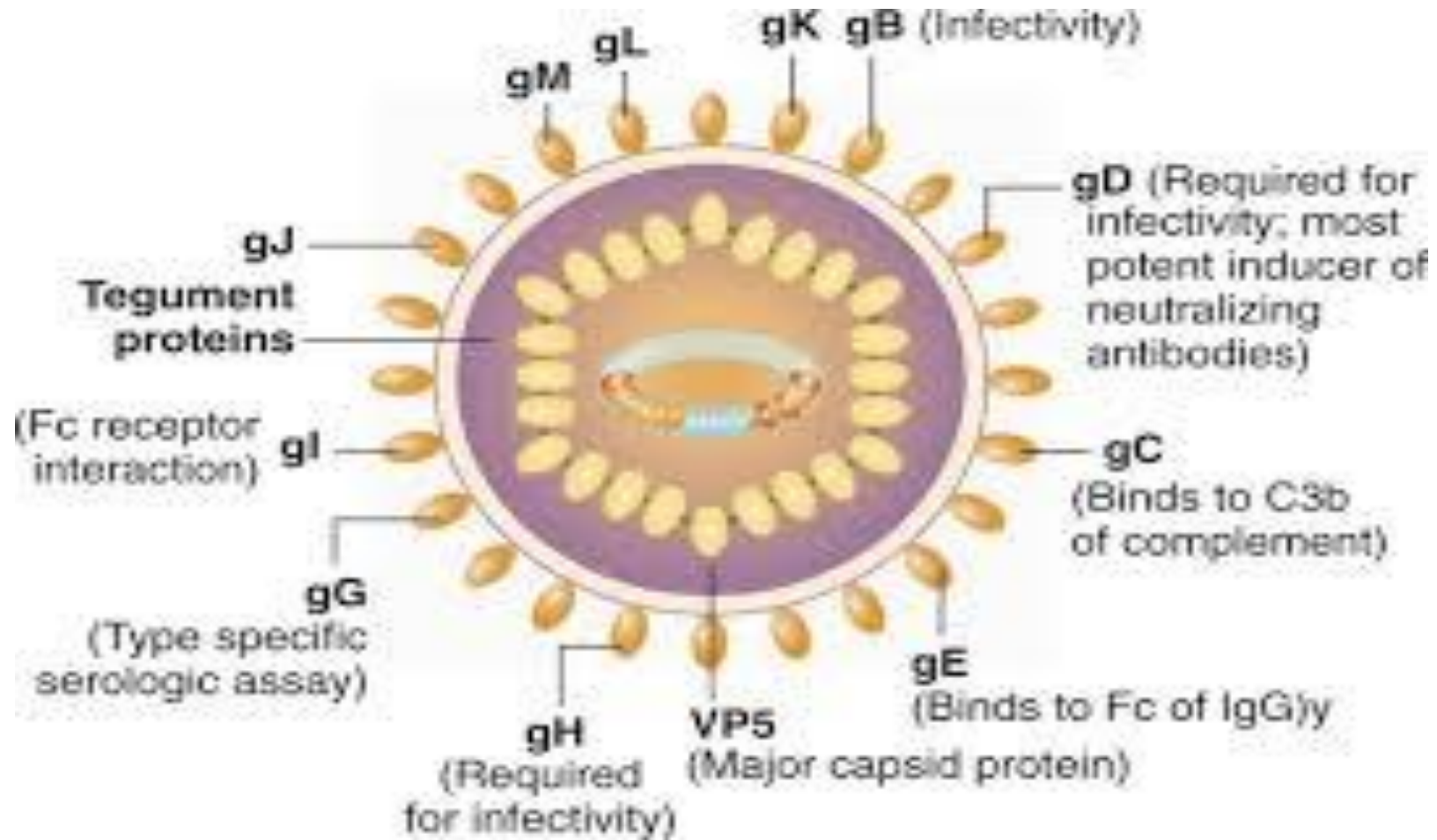




# Replication



# Glycoproteins of HSV



# Epidemiology

	Healthy children	Healthy adults
HSV-1	20%-40%	50-70%
HSV-2	0-5%	20-50%
VZV	50-75%	85-95%
EBV	10-30%	80-95%
CMV	10-30%	40-70%
HHV-6	80-100%	60-100%
HHV-7	40-80%	60-100%
HHV-8	<3%	5-10%

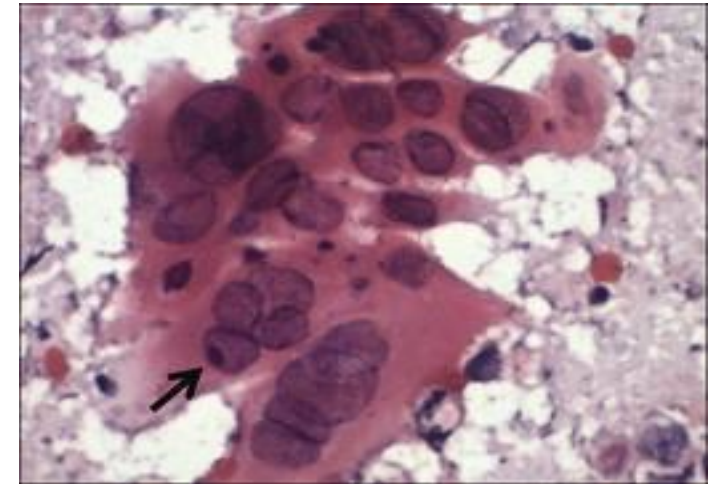
# HSV clinical syndrome

- Mucosal:
  - gingivostomatitis
  - pharyngitis
  - genital
- Eye:
  - keratitis
  - bellopharitis/conjunctivitis
- Skin:
  - Painful vesicles ,erythema multiforme
- CNS:
  - encephalitis
  - bells palsy

HSV-1: CNS,Mouth,Eye  
HSV-2:Genital

# HSV

- Primary lesion:
- vesicle → ulcer → scab → healing
- Pathology
  - tzanck smear
- Immunity
  - t cells → antibodies
- Antibodies:
  - cross protection: HSV-1 & HSV-2
  - reduce severity of disease



# HSV

- Primary infection:
  - gingivostomatitis
  - asymptomatic
  - pharyngitis
- Recurrence "cold sores , fever blisters"
- Viremia
  - Rare
  - immunocompromised

# HSV

\*not all reactivation causes symptoms “asymptomatic sheeding”

-stimuli:

1)Sunlight

2)Fever

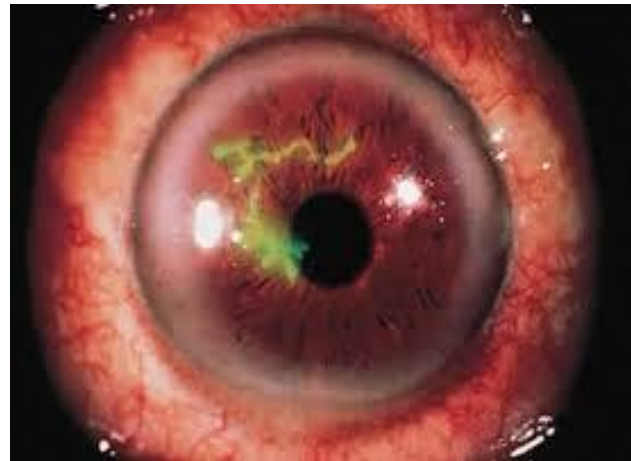
3)Trauma

4)Stress



# HSV

- Herpetic whitlow
  - Eczema herpeticum
  - Keratoconjunctivitis
- ↑ with steroids



# HSV of CNS

- Reaches brain
  - viremia
  - olfactory tract
  - trigeminal ganglia

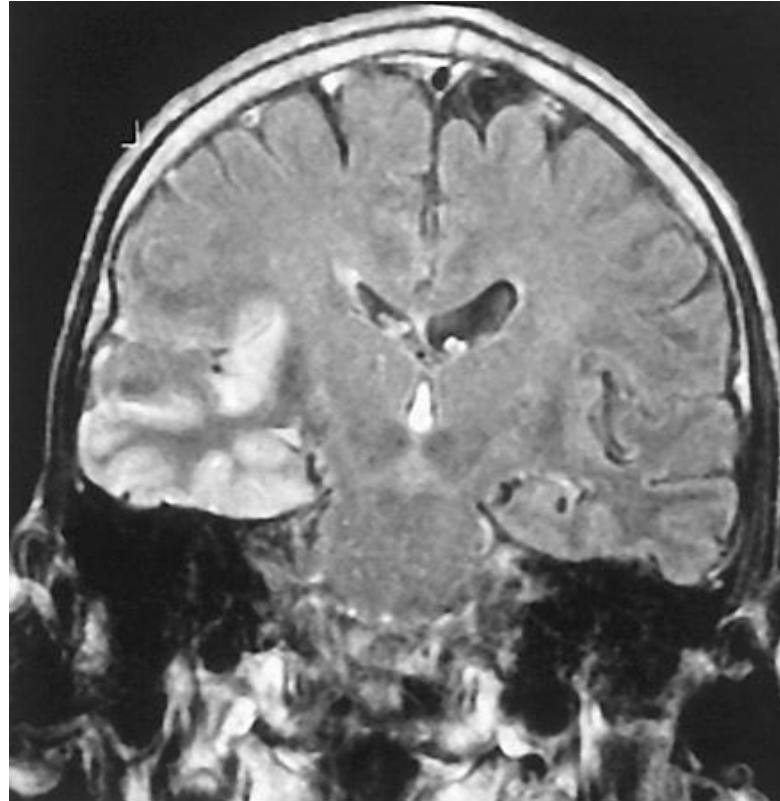
# HSV encephalitis

- Rare
- Most common cause for sporadic encephalitis
- High mortality (70%)
- Morbidity

# Signs & symptoms

- More between 50-70 years
- Fever and malaise
- Headache
- Behavioral changes
- +/- seizures
- Coma
- Death

# -Temporal lobe involvement



Source: Fauci AS, Kasper DL, Braunwald E, Hauser SL, Longo DL, Jameson JL, Loscalzo J:  
*Harrison's Principles of Internal Medicine*, 17th Edition: <http://www.accessmedicine.com>  
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- TREAT AS SOON AS POSSIBLE.

- Dx:

- PCR CSF

- Biopsy

- HSV-1 >>>>>HSV-2

# Genital HSV

- HSV-2>>>HSV-1
- 85-90% are HSV-2
- Transmission:
  - inoculation
  - sexual contact
- Can be recurrent
- Distressing
- Asymptomatic shedding
  - 90% of seropositive people do not recognize that they are infected
- Primary/secondary prevention with antiviral medication is effective (later).

# HSV meningitis

- Less severe disease
  - HSV-2
  - From genital herpes
  - Sometimes recurrent episodes
- “Mollaret’s meningitis”