



VIROLOGIA

GENOMAS VIRAIS

(Características)



Estrutura e complexidade dos genomas virais

- DNA ou RNA
- DNA c/segmento RNA
- DNA ou RNA c/proteína ligada
- Cadeia simples
 - Positiva (+), negativa (-), ambisenso
- Dupla cadeia
- Linear / circular / segmentado / c/gap



Funções codificadas no genoma viral

- Replicação do genoma
- Montagem e empacotamento
- Regulação do ciclo celular / viral
- Evasão às defesas do hospedeiro
- Infecção de outros hospedeiros



Funções não codificadas no genoma viral

- Síntese proteica
rRNA, tRNA, fatores, etc.
- Metabolismo energético
- Biogénese de lípidos
- Telómeros e centrómeros

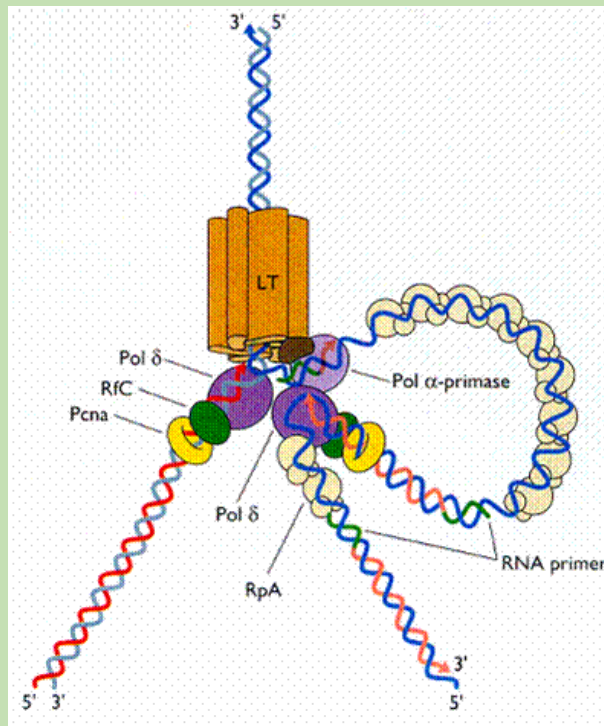


Características “funcionais”

- Estabilidade
 - Circularização
- Replicação
 - Primer (DNA)
 - Polimerase viral (RNA)
- Tradução
 - Cap (RNA +)

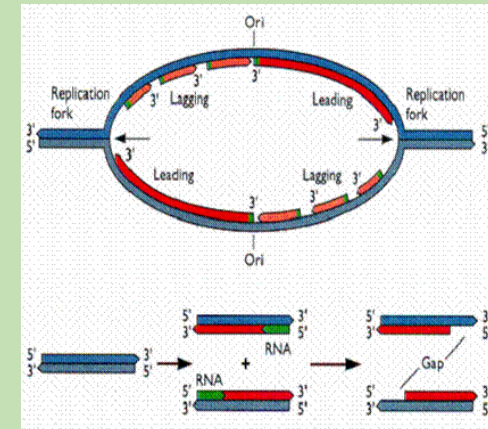
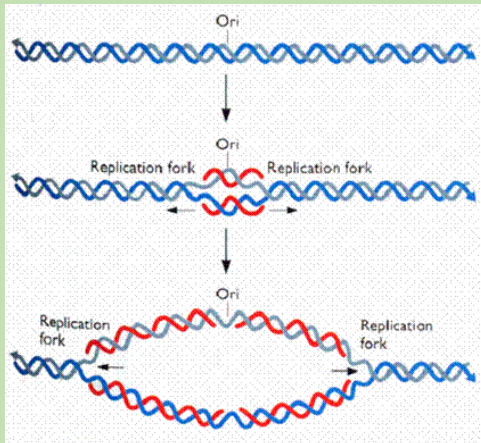


Forquilha de replicação (SV40)



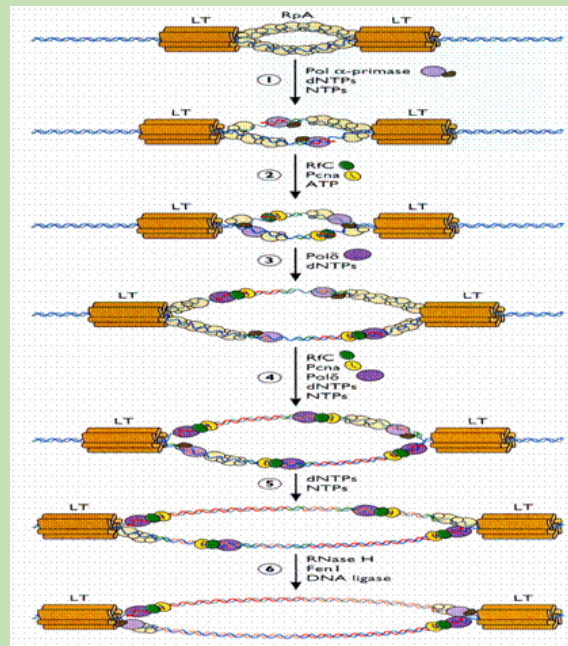


Replicação bidireccional



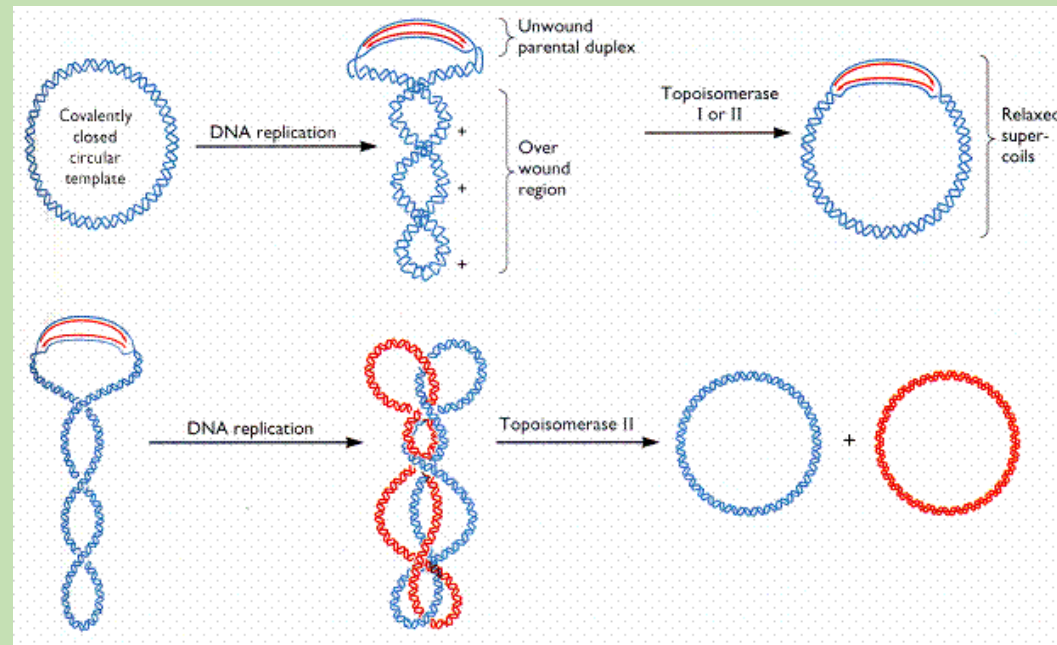


Replicação (SV40)





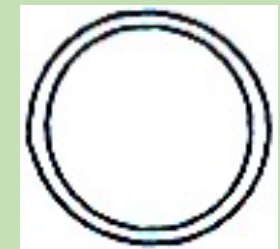
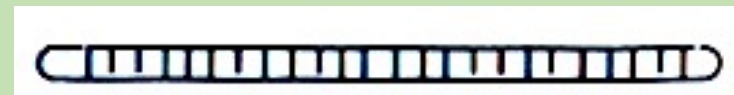
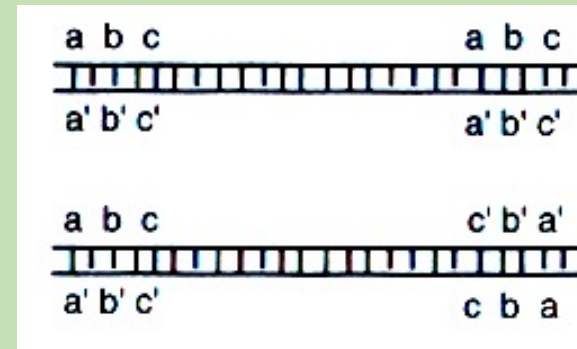
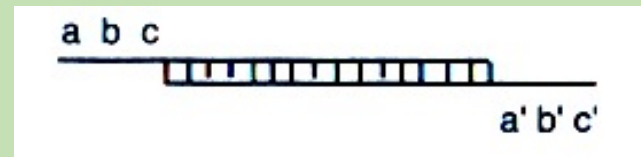
Topoisomerases (SV40)





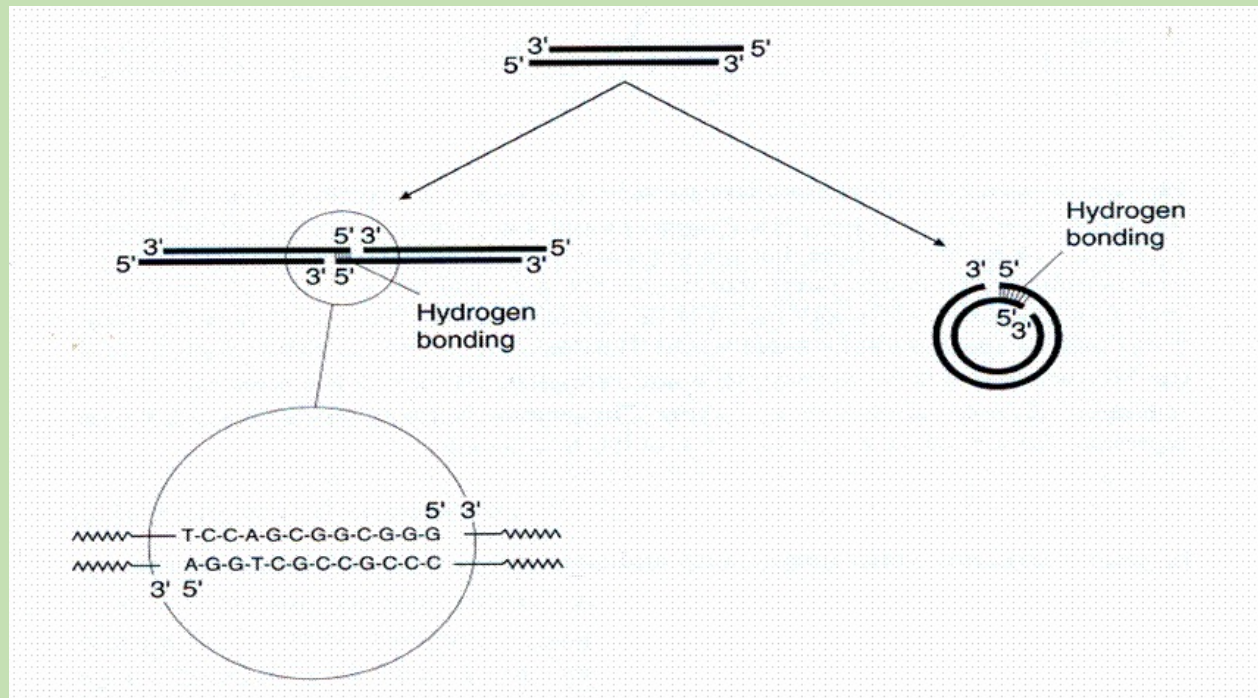
Particularidades de genomas

- Extremidades coesivas
 - “sticky ends”
- Redundância nas extremidades
 - Normal e invertida
- Moléculas circulares
 - ds e ss



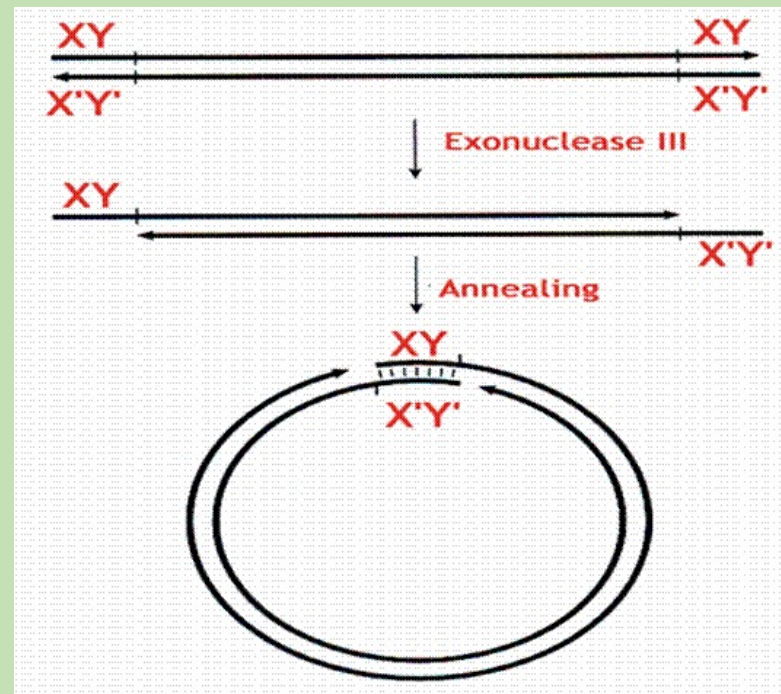


RNA (*sticky ends*)



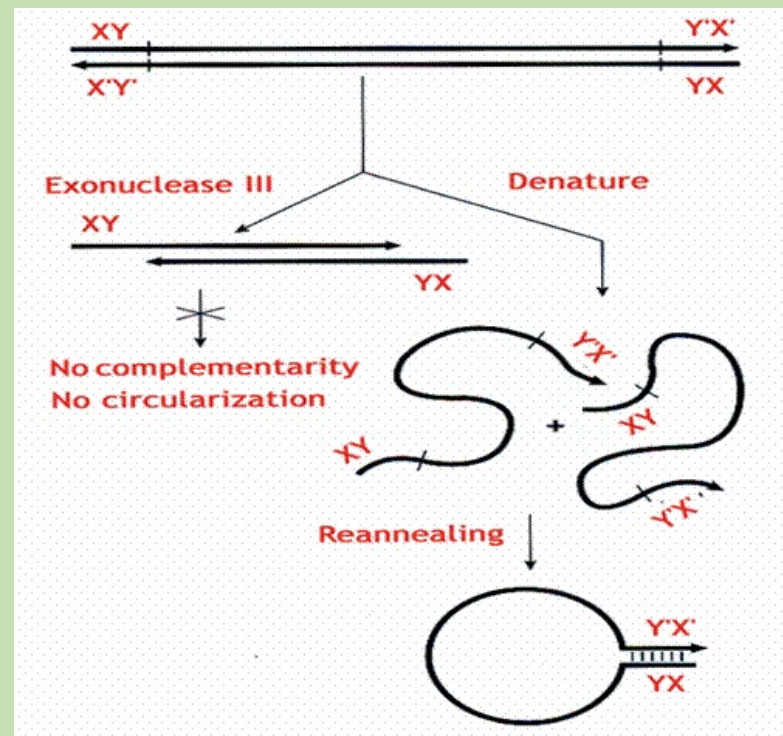


Redundância terminal



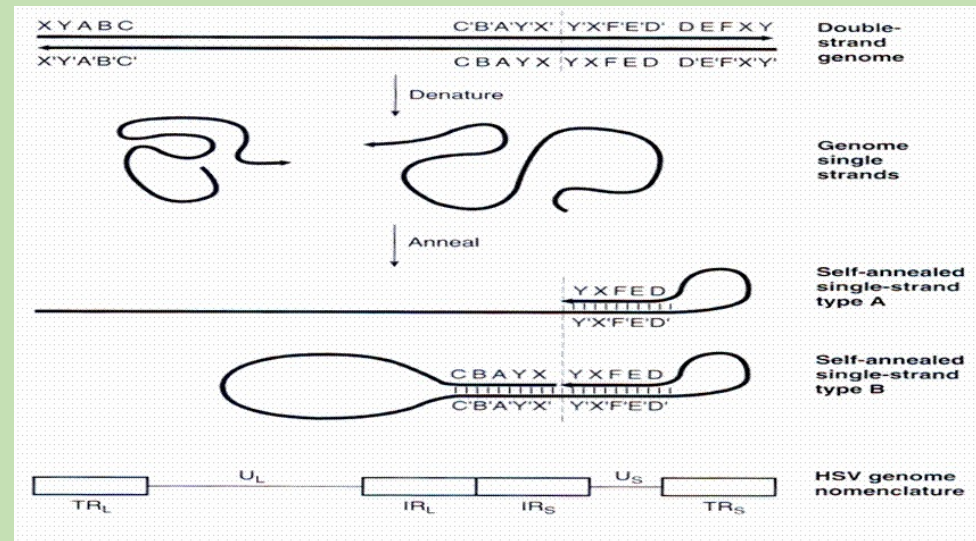


Redundância terminal invertida





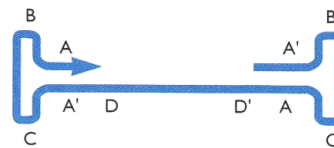
Inverted repeats (HSV)





Redundâncias terminais (parvo)

Parvoviridae (4–6 kb)



Genome configuration

- Linear with 3' and 5' hairpins; can be both (–) and (+) strands
- 3' hairpin primes DNA synthesis
- NS1 protein covalently attached to 5' end (autonomous parvoviruses)

Degree of dependence on host cell

- Genome replication by host DNA replication system

Gene expression strategies

- Two open reading frames
- Alternative mRNA splicing

Noteworthy features of the interaction with the host

- Replicate only in cells in S phase (autonomous parvoviruses) or cells infected by a helper virus (dependoviruses)



Estruturas genômicas particulares

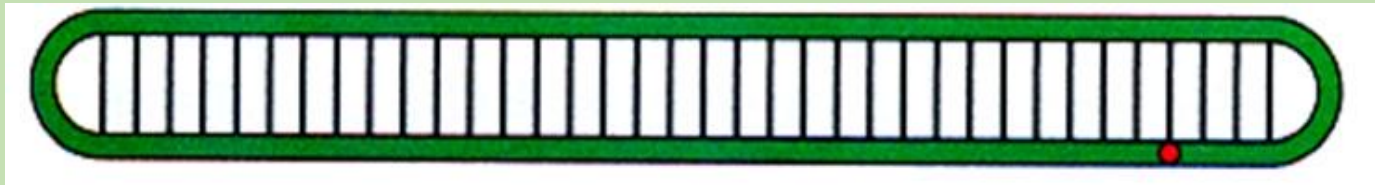
- Loops terminais (replicação)
 - poxvirus





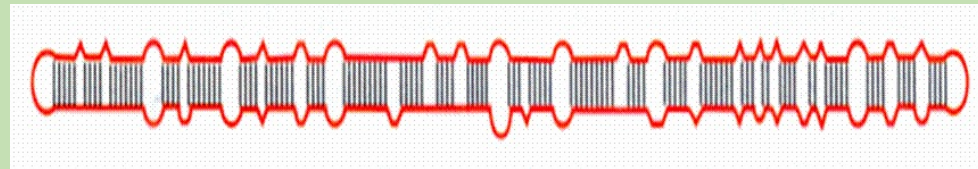
Estruturas genômicas particulares

- ssRNA autocomplementar (replicação)
 - HDV





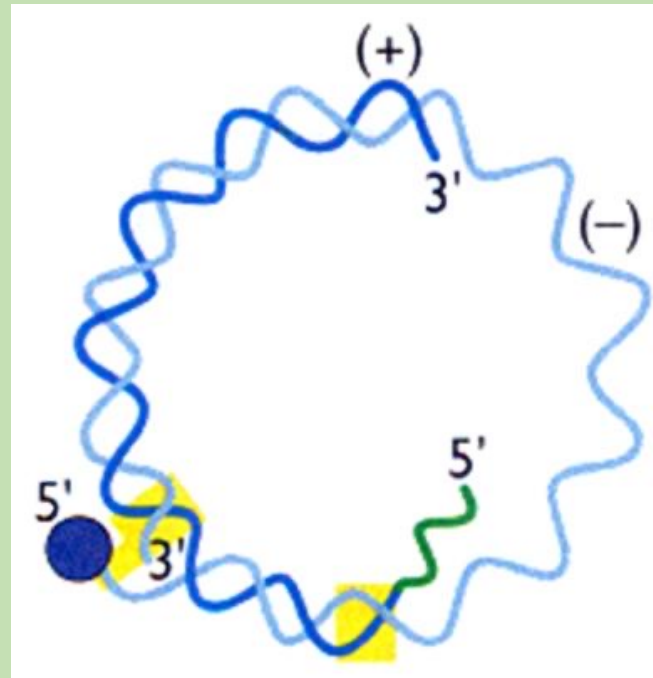
RNA de viroide





Estruturas genômicas particulares

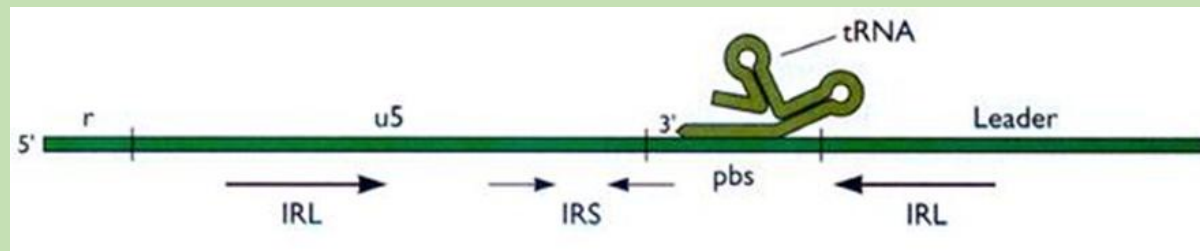
- Primer para RT (replicação)
 - HBV





Estruturas genômicas particulares

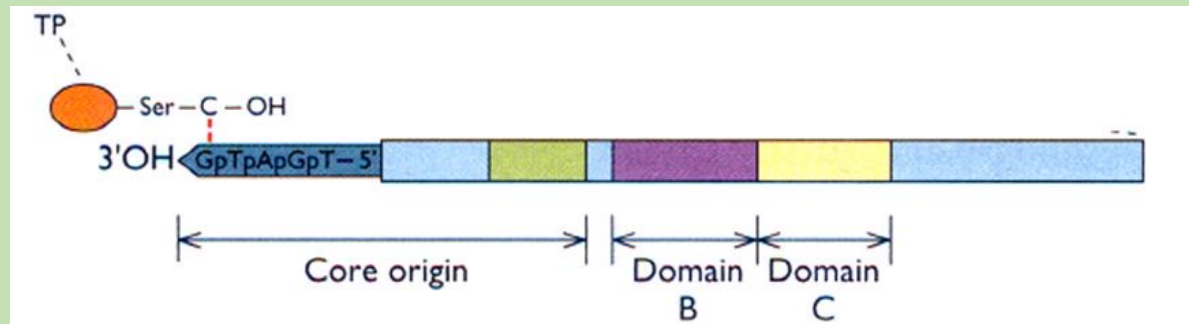
- tRNA primer para RT (replicação)
 - retrovirus





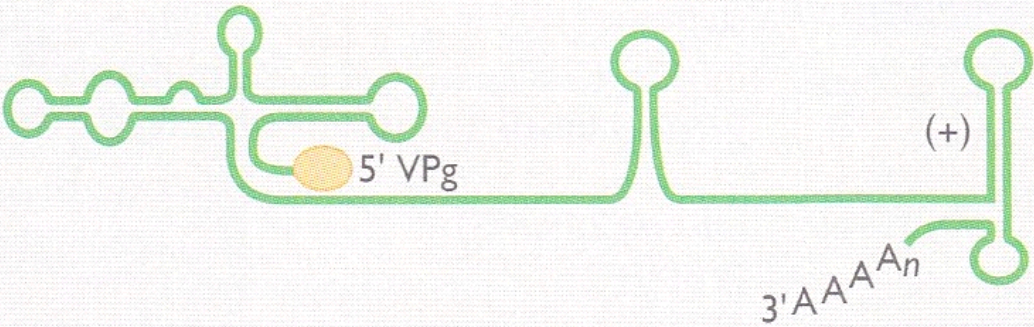
Estruturas genómicas particulares

- Proteína terminal (replicação)
 - adenovirus





Proteína terminal (polio)

Function	Genome structure
Genome replication	
Poliovirus • 5'-linked VPg primer • 5' cloverleaf • 3' pseudoknot • <i>cis</i>-acting replication element in coding region	



Estruturas genômicas particulares

- Sinal para empacotamento (montagem)
 - retrovírus

