31/01/2024

DNA replication

DNA polymerase
- → Arthur Kornberg
- → 5′ → 3′ only
- → functions without RNA and DNA primer in Test tube.

Okazaki fragments

Replication fork is asymmetrical.

Main reason → ATP requirement for DNA helicase

The 3′ nucleotide has ~~e~~ triphosphate, that can be broken to release energy. In 5′ end if there is triphoshate, where does the primer sit? → Why 5′ → 3′

Fact: only one polymerase acts / two? X

Looping of ~~5′~~ lagging strand in replisome helps in coordinated movement. of two strands

Joining of Okazaki Fragments

Why RNA as primer! (and not DNA)

RNase H → 5′ exonuclease

↳ does it recognise 2′ OH RNA.

- Yes

DNA polymerase III → elongation.

DNA polymerase I → filling of gaps.

↳ does this remove the primers?

↳ how can it sit without something

Fidelity of replication

→ does not allow incorrect base pairs

→ can recognise unpaired end.

→ can also reognise RNAs due to steric hindrance

Tautomers & incorrect base pairing

Structural isomers of chemical compounds that readily interconvert.

Thymine (enol), Cytosine (imino)

Transient → unpairs → recognised again

↳ as DNA pol moves slower than this change.

How does it slide back? → source of energy is ATP.

We should print pictures of DNA pol III.

CT on Monday HEHE