



In Eukaryotes (continued)

Stiles of replication: At each fork, independent polymerases (WRONG). Tombone model (RIGHT). Independent replicomes. Both forks are at one point and dealt with by one replicome. Coordination of both forks. Factory model (probably right). Resultant DNA strands extend in opposite directions.

Other method - rather uncommon: For example, when DNA is transferred straight into another cell. One of the two strands of circular DNA is "nicked". DNA one strand rolls off. Complementary strands are synthesized on both original and freed DNA.

ROLLING CIRCLE:

General principles (continued)

Bi-directional: Once replication starts at a point, does it go both ways or just one? CAIRNS used autoradiography to visualise radiolabelled chromosomes. The E-Coli chromosome is circular, and forms a THETA STRUCTURE when it replicates (two copies of replication). Two replication forks. Label DNA with LOW specific activity (not v. radioactive) 3H-thymidine for a few generations. Pulse with HIGH specific activity 3H-thymidine (only taken up by growing parts of the DNA). Rapidly quench. Proving that replication occurs at BOTH forks. It is clear from the autoradiograph of the resulting DNA that replication occurs in BOTH directions.

In E. Coli: there is a single origin of replication. Use generalised transducing phage. Transfers a random bit of lysed DNA from one cell to another. Use it on an actively replicating cell. Then look at the frequency of uptake of the genes in the cells genome by other cells around. Single-origin in E. Coli. It's found that the frequency goes like this. Therefore, it's bi-directional with a single origin.