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Mechanisms underlying mutational outcomes of DNA double-strand break repair

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Stellingen behorende bij het proefschrift "Mechanisms underlying mutational outcomes of DNA double-strand break repair"

1. Polymerase theta enables repair of DNA breaks with resected ends when homologous recombination cannot be completed (this thesis).

2. Helicase Q mediates annealing of complementary nucleotides of resected break ends. Therefore, it plays a role in multiple break repair mechanisms, including homologous recombination (this thesis).

3. Large tandem duplications are a result of disturbed homologous recombination (this thesis).

4. The mutational outcome of a double strand break depends on the context in which it occurs (this thesis).

5. It is possible that no pathway-specific theta-mediated end-joining (TMEJ) factors exist besides polymerase theta itself: TMEJ may instead rely on processing of breaks using factors described to be involved in homologous recombination.

6. Although most non-homologous end-joining reporter assays depend on erroneous repair outcomes, NHEJ may repair most physiological breaks in an error-free manner.

7. The possibility of a double strand break intermediate after a second round of replication is generally overlooked when proposing models depicting resolving of replication stress.

8. Because genome instability is a hallmark of cancer, it is wise to be conservative with interpreting DNA repair findings from human cancer cell lines as generalizable for healthy human cells.

9. "If you are neutral in situations of injustice, you have chosen the side of the oppressor" (Desmond Tutu, 1984): As a researcher, you have a duty to speak up when witnessing bad research practice.

10. "Courage is the most important of all the virtues because without courage, you can't practice any other virtue consistently" (Maya Angelou): without courage, it is difficult to complete anything, such as a PhD in DNA repair.