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Alternative end-joining of DNA breaks

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Stellingen behorende bij het proefschrift:

Alternative end-joining of DNA breaks

1. DNA double-strand breaks in *C. elegans* germ cells are not repaired by NHEJ, but by POLQ-mediated end joining. (this thesis)
2. The A-family polymerase POLQ has the unique ability to join two break-ends by extending from single nucleotide homology, minimizing the loss of genetic information. (this thesis)
3. Overcoming replication blocking lesions by translesion synthesis prevents large genomic rearrangements. (this thesis)
4. POLQ-mediated repair allows for genome diversification. (this thesis)
5. POLQ-mediated alt-EJ is an important pathway to repair DNA damage generated during the rapid cleavage divisions of early embryogenesis. (Thyme et al., Cell reports, 2016)
6. POLQ is upregulated in HR-deficient ovarian and breast cancers, suggesting that alt-EJ can serve as a backup pathway for the repair of DSBs when HR is defective. (Ceccaldi et al., Trends in Cell Biology, 2016)
7. The location of a DSB within the cellular genome and the chromatin context are suspected to influence the facility with which the cell will process a given break and the repair pathway it will choose for this purpose. (Mladenov et al., Seminars in Cancer Biology, 2016)
8. Mutational signatures can be used as a physiological readout of the biological history of a cancer and also have potential use for discerning ongoing mutational processes from historical ones, thus possibly revealing new targets for anticancer therapies. (Helleday et al., Nature Review Genetics, 2014)
9. Three things cannot be long hidden: the sun, the moon, and the truth. (Buddha, 450 BC)
10. We have evolved from worm to man, but much within us is still worm. (Friedrich Nietzsche, Thus Spoke Zarathustra, 1885)
11. You fall down. You get up. Life goes on.
12. Understanding computers is easy: if you rule out 1, it has to be 0, understanding biology is hard: if you rule out 1, it can be any of the other 1000 ways you did not think of.