

Cover Page



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Title: Translesion synthesis : cellular and organismal functions

Issue Date: 2014-04-10

PROPOSITIONS

Belonging to the thesis

TRANSLESION SYNTHESIS: CELLULAR AND ORGANISMAL FUNCTIONS

1. Single-stranded DNA harboring unrepligated DNA lesions is a major source for micronuclei in mouse cells, after its passage through the ensuing S-phase (this thesis).
2. To avoid false-negative outcomes, the genotoxicity evaluation of bulky DNA adduct-inducing chemicals by the micronucleus assay must include two cell divisions (this thesis).
3. While Polymerase Iota (Pol_I) promotes UV-induced mutations, Pol_k may suppress genome instability in XP-V patients (Wang Y et al., *Cancer research*. 2007, Apr 1;67(7):3018-26 and this thesis).
4. Rev1 prevents premature aging in mice (this thesis).
5. Although genes encoding TLS polymerases have been discovered for more than 40 years, it still remains mechanistically obscure how TLS polymerases bypass different types of DNA lesions: by direct bypass or by post-replicative gap-filling (Waters LS et al., *Microbiology and molecular biology reviews*. 2009, Mar;73(1):134-54).
6. TLS polymerases are required for replication of undamaged DNA sequences that pose problems to the replication machinery (Collins NS et al., *DNA repair*. 2007, 1:38-44, Bhat A et al., *Nucleic acids research*. 2013, Feb 1;41(4):2328-39).
7. Additional replication assays are required to correctly interpret results obtained by DNA fiber analysis of UV-exposed cells (Elders I et al., *Nucleic acids research*. 2011, Sep 1;39(16):7049-57).
8. Formation of micronuclei contributes to oncogenesis (Maher CA et al., *Cell*. 2012, Jan 20;148(1-2):29-32).
9. "Science never solves a problem without creating ten more." George Bernard Shaw (1856-1950)
10. "Behold the rain which descends from heaven upon our vineyards; there it enters the roots of the vines, to be changed into wine; a constant proof that God loves us, and loves to see us happy." Benjamin Franklin (1706-1790)
11. "When you go in search of honey, you must expect to be stung by bees." Joseph Joubert (1754-1824)
12. "Sometimes, we need the courage to face life like a worm that invades an apple. Not knowing where to go makes the trip so extraordinary." (Win Lyovarin 1956, quote from "*Roi Thao Lek Lek Khong Rao Eng*", 2005)