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DNA repair and gene targeting in plant end-joining mutants

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Citation

Jia, Q. (2011, April 21). *DNA repair and gene targeting in plant end-joining mutants*. Retrieved from <https://hdl.handle.net/1887/17582>

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Stellingen (Propositions)

Behorende bij het proefschrift

DNA repair and gene targeting in plant end-joining mutants

1. In plants, NHEJ is a critical pathway for DSB repair and most NHEJ factors are important for T-DNA integration, except AtLig4. --This thesis
2. Parp1 and Parp2 are involved not only in SSB repair, but also in B-NHEJ for DSB repair in plants like in mammals. --This thesis
3. The C-NHEJ factor Ku plays a role in end protection to maintain chromosome integrity, whereas the Parp-mediated B-NHEJ prefers to utilize areas of micro-homology and thus leads to deletions. --This thesis
4. A third NHEJ pathway must exist in plants, which is probably suppressed by Ku and Parp proteins under normal conditions. --This thesis; Charbonnel et al., *Plant J.*, 2010
5. The cell cycle stage determines which DSB repair pathway is selected by the cell. --Branzei et al., *Nat. Rev. Mol. Cell Biol.*, 2008; Iliakis, *Radiother. Oncol.*, 2009; Wu et al., *DNA Repair (Amst)*, 2008
6. Though different DNA ligases are associated with specific functions, they may also function redundantly. --Windhofer et al., *J. Cell Physiol*, 2007; Liang, *Nucleic Acids Res.*, 2008
7. A deficiency in the NHEJ pathway may cause a decrease in the efficiency of transformation, but is no guarantee for improved gene targeting. --This thesis; Tanaka et al., *BBRC*, 2010; Iizumi et al., *Nucleic Acids Res.*, 2008
8. In spite of all the positive news, both the efficiency and precision of gene targeting need further improvement. --Hanin et al., *Plant J.*, 2001; Shaked et al., *PNAS*, 2005; Porteus et al., *Nature Biotechnology*, 2005; de Pater et al., *Plant Biotechnology J.*, 2009
9. Primary feelings are universal, in the west and east, in the past and in the future.
10. We can get close to the truth, but never get it, for there are a thousand Hamlets in a thousand people's eyes.

Qi Jia

21 April, 2011