



ABSTRACT

“Roles and mechanisms of recombination in meiosis and mitiosis”

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Working with *Arabidopsis thaliana*, we are studying the roles and mechanisms of genetic recombination - indispensable to the maintenance of genome integrity and an essential source of genetic diversity. Recombination acts to repair DNA damage and in particular, DNA double-strand breaks (DSB). In addition to arising by accident (replication, radiation, mutagens ...), DSB are naturally present at the ends of linear eukaryotic chromosomes (telomeres) and also produced in a programmed manner in order to induce recombination and genetic exchange (meiosis). DSB are efficiently repaired through multiple individual pathways of homologous or non-homologous recombination and although knowledge of recombination mechanisms has considerably advanced, the complex interrelationships and regulation of these pathways are far from being fully understood. A particularly striking example of the danger of inappropriate recombination is seen in the severe karyotypic and genomic instability in the presence of telomere dysfunction.

Current knowledge of roles and mechanisms of recombination in plants will be presented through discussion of our recent results on somatic recombination pathways, responses to telomere dysfunction and the differing requirements for proteins of the Rad51 family in pairing of meiotic centromeric regions and chromosome arms.

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