

P019 Sgs1p and Msh6p prevent inappropriate recombination in *Saccharomyces cerevisiae*

Alexandre Chaix and Rhona H. Borts

*Department of Genetics, University of Leicester,
Leicester, LE1 7RH*

SGS1 is a homologue of the *Escherichia coli RecQ* helicase. It is essential for genomic stability. When mutated, the human RecQ homologues, *BLM*, *WRN* and *RECQL4* all display genetic instability. In particular, cells from Bloom patients show an elevated rate of sister chromatid exchange. We, and others, have proposed that Sgs1p plays a role in unwinding meiotic recombination intermediates. As Sgs1p has been shown to interact with mismatch repair proteins such as Msh6p we hypothesized that Sgs1p might have a role in meiotic homeologous recombination. We tested the hypothesis that Sgs1p and Msh6p influence recombination between diverged sequences by analysing meiotic crossing-over and segregation in $\Delta sgs1$, $\Delta msh6$ and $\Delta sgs1\Delta msh6$ mutant strains carrying a homeologous pair of chromosomes. Cross-overs between the homeologous chromosomes were elevated 5-20 fold in both *SGS1* and *MSH6* mutant strains. We then showed that Sgs1p was epistatic to Msh6p. We have also determined that the frequency of meiotic sister chromatid exchange in *SGS1* mutant strains is elevated compared to that of WT and *MSH6* mutant strains. Both unequal sister chromatid exchanges and intrachromosomal deletions were found. We propose that Sgs1p along with Msh6p remove intermediates that lead to detrimental or inappropriate recombination.