Johanne Murray

Genome Damage and Stability Centre, University of Sussex, UK

Email: j.m.murray@sussex.ac.uk

Selected Publication

Irmisch A, Ampatzidou E, Mizuno K, O'Connell MJ, Murray JM. Smc5/6 maintains stalled replication forks in a recombination-competent conformation. *EMBO J.* 2009 Jan 21;28(2):144-55.

Research Aims and Interests

My lab studies how recombination is regulated and particularly how it is coordinated with replication. This is critical for genome stability and cell survival. We focus on the Smc5/6 complex, which is an essential complex, related to cohesin and condensin, and required to regulate recombination and for accurate chromosome segregation. We use a combination of cell biology and genetics (mainly in the model organism *S.pombe*) to investigate how the Smc5/6 complex coordinates recombination events. We have developed site-specific tools in fission yeast to dissect the requirements for recombination regulators and mechanisms of replication restart. We showed (in collaboration with the Carr lab) that chromosome rearrangements occur as a result of replication restart and have developed systems to visualise these rearrangements in live cells and analyze the fate of acentric and dicentric chromosomes in real time. In collaboration with the Pearl/Oliver lab we investigate Smc5/6 structure to inform on the mechanism of regulation of recombination. We have recently extended our Smc5/6 analysis into human cells and study how defects in Smc5/6 lead to a novel chromosome breakage syndrome. We are also investigating Smc5/6 complex as a possible drug target in cancer therapy.