

P045 RAD51C functions downstream of RPA in checkpoint signalling

**Sophie Badie, Maria Thanasoula, Chunyan Liao,
Paul Barber and Madalena Tarsounas**

Gray Institute for Radiation Oncology & Biology, University of Oxford, UK

Abstract: Human RAD51C is a member of the RAD51 paralog family. The paralogs act in the homologous recombination (HR) pathway of DNA repair, however their precise cellular functions remain elusive. Here, we demonstrate that RAD51C assembles into nuclear foci in response to DNA damage, which partially co-localize with the RAD51 recombinase. The kinetics and numbers of RAD51 and RAD51C foci following ionizing radiation (IR) is consistent with both an early and a late role for RAD51C in HR. Furthermore, RAD51C co-localizes with the replication protein A (RPA) in response to DNA damage. This response is dependent on ATM, NBS1 and RPA, but not CHK1 or CHK2, indicative of recruitment after end resection. At low IR doses, RAD51C inhibition results in a defect in the S/G2 checkpoint, associated with a decrease in CHK2 activation.

Conclusion: These data suggest that human RAD51C contributes to protection of genome integrity by transducing DNA damage signals, in addition to engaging the HR machinery.