

## **"The Functions and Regulation of DNA/RNA helicases in DNA damage repair and genome maintenance"**

Abstract:

Homologous recombination (HR) is an evolutionarily conserved tool for the repair of DNA double-strand breaks (DSBs) and injured replication forks (RFs). Several DNA/RNA helicases have been implicated in mechanisms that affect HR outcome and DNA damage repair. Dysfunction or deregulation of these DNA/RNA helicases often causes enhanced sensitivity of cells to DNA damaging agents, genome destabilization, cancer, and other diseases. Here, I will discuss our recent biochemical and cellular studies of human ZGRF1 helicase in repairing the replication-blocking DNA damage. In addition, as sumoylation is an important regulatory means to adjust DNA repair efficiency and actions, I will also discuss our current study on the multi-faceted regulation of the sumoylation of the Sgs1 DNA helicase in genome maintenance in budding yeast.