Abstract

The orchestration of DNA repair is of fundamental importance to the maintenance of genomic integrity and tumor suppression. DNA damage must be detected in the context of the varied chromatin landscape, its presence must be communicated throughout the cell to alter many ongoing processes, and the machinery that will mend the lesion must be recruited to the damage site. In my presentation, I will discuss our recent efforts in mapping genome maintenance pathways using genome-scale CRISPR/Cas9 screens in human cells. I will highlight how these screens can be used to identify new genome stability factors, characterize drug responses and provide new insights into the genetic architecture of the genome stability network. I will also present how these screens can also identify potentially actionable synthetic lethal genetic interactions that could form the basis of new oncology drug discovery efforts.