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Investigating the Effects of Cancer Mutations on the MRN Complex Using Yeast

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Title: Investigating the effects of cancer mutations on the MRN complex using yeast

Abstract: When DNA is damaged by ultraviolet light or exposure to certain chemicals, the MRN (Mre11-Rad50-Nbs1) complex begins the repair process by identifying a double stranded break and initiating a cascade of responses. Mutations in members of this complex are associated with higher cancer risk, but the array of mutations observed in human tumors have not been individually tested for negative effects on the DNA repair process. This complex is highly conserved in yeast and human cells suggesting that yeast could be used to rapidly screen cancer mutations. During the summer of 2018, several Mre11 cancer mutations were tested for effects on DNA repair in yeast. This summer, additional Mre11 mutations will be screened and these studies will be expanded to include Rad50 mutations. Collectively, this work will provide a better understanding of the effects of MRN cancer mutations using a screening method in yeast cells.