Unwinding the Helicase Activity of *Thermus aquaticus* UvrD
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Dysfunctions in DNA mismatch repair pathways (MMR), the process in which naturally occurring base-pairing errors in DNA replication are corrected, has been linked to cancers such as hereditary nonpolyposis colon cancers1. Prior studies have investigated the MMR pathway in humans and *Escherichia Coli* (*E. Coli*) including many of the proteins involved such as MutL and MutH. One MMR protein not fully understood in a eukaryotic setting is the helicase, UvrD. The activity of this helicase and its unwinding efficiency in a prokaryotic system was assessed in *E.Coli*. *Thermus aquaticus (Taq)* UvrD, a thermal stable eukaryotic helicase, will be used in our project to better describe a eukaryotic MMR system. We seek to identify and characterize the directionality of DNA unwinding, substrate preference, and ATPase activity of *Taq* UvrD. This study will be used to promote research in the field of DNA repair to encourage drug specificity and other clinical treatments to minimize the development of cancers caused by MMR errors such as nonpolyposis colon cancers.