

2007 Ohio Student Research Forum

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RESEARCH ABSTRACT FORM

TITLE: Identification of Mutants Required For Meiosis**AUTHOR:** Jude Odafe**MENTOR(S):** Dr. Valentin Boerner, Cleveland State University**INSTITUTION:** University of Dayton

Meiosis is a specialized cell division that occurs during sexual reproduction. It results in the formation of haploid gametes from diploid precursor cells. Homologous chromosomes undergo a process which is required for accurate homologue segregation. In addition, meiotic recombination results in offspring with recombined DNA. Not all components of the machinery for crossovers are known. Previous work has identified certain genes coding for proteins with functions in recombination. The gene products are responsible only for meiotic processes, usually recombination and chromosomal segregation. One peculiar feature of the meiotic machinery is that at high temperatures this machinery is necessary to complete the meiotic cell cycle. This feature was used to genetically identify novel components of the meiotic machinery. A genome wide screen identified 40 new temperature sensitive mutants. In order to test the validity of the mutants, I tested these mutants for spore viability and for their role in recombination. I report here that the lariat debranching enzyme, *dbr1*, and the unknown gene, *yol407c*, are indeed required for the completion of meiosis, but are not limited to a role in recombination. The transcriptional activator, *Swi5* mutants have an increased rate of recombination and unexpected gain or loss of gene sequences. The remaining mutant candidates' spore viability test provided quick analysis of chromosome segregation to confirm their validity as temperature sensitive meiotic mutants.