Regulated gene expression studies of RC and RI histone H3 variants in *Ustilago maydis*. A. Verma and J. H. Waterborg (Biological Sciences, University of Missouri-Kansas City, Kansas City, MO 64110)

Ustilago maydis shows two distinct H3 genes: one on chromosome 11 and the other gene paired with histone H4 on chromosome 6. These genes were evaluated for their expression pattern and stability characteristics. Experimental data revealed that the solitary H3 gene (U1) has all the functional characteristics of a replacement H3.1 variant and the paired H3 gene (U2) is the RC variant H3.2. We have started to exploit the homologous recombination for gene knockout and replacement to evaluate the contribution of these two distinct histone H3 variants in nucleosome assembly processes during transcription and replication. Viable transformants of U1 gene knock-out reveals that this gene is not essential for vegetative growth of haploid *U. maydis*. However, attempts to knock out the U2 gene have failed to-date to produce any viable clones. Replacement of the endogenous, constitutive promoter of U1 with constitutive o2tef promoter from *U. maydis* revealed expressing protein levels similar to wild type levels. Replacement of cell-cycle promoter of U2 with the o2tef one has produced two distinct transformants, one of which revealed up-regulation of the U1 gene, possibly to compensate for diminished H3.2 protein production. Acknowledgments: Supported by the Missouri Life Sciences Research Board, award 13254-2007 to JHW.

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