SHELBY SHAJIMON Department of Biology, Shepherd University, Shepherdstown, WV 25443, JACKIE HUHN, RACHEL WERNER The Fels Institute For Cancer Research and Molecular Biology, Temple University, Philadelphia, PA 19140, ROBERT WARBURTON, Department of Chemistry, Shepherd University, Shepherdstown, WV 25443 and NORA ENGEL The Fels Institute For Cancer Research and Molecular Biology, Temple University, Philadelphia, PA 19140. Differential Gene Expression of Prdm14 That Could Contribute to Sexual Dimorphisms

Sexual dimorphisms are apparent in differences in disease susceptibilities, types, onset and response to therapy. Previous studies in mouse embryonic stem (ES) cells as models of early embryogenesis showed that there were many genes that were differentially expressed in male and female cells. One of these genes codes for *Prdm14*, a gene involved in the pluripotency state of embryonic stem cells. This study explores the regulatory differences that lead to higher expression of *Prdm14* in female ES cells with a dual luciferase reporter assay. The enhancer of *Prdm14* harbors motifs responsive to *Prdm14* itself, thus establishing an auto-regulatory loop. These motifs were studied, either by deletion or scrambling of the sequence using site-directed mutagenesis. Our data shows that there are significant differences in expression of *Prdm14* in XX ESC when compared to XY and XO lines. Thus, it can be concluded that the activity of the *Prdm14* enhancer is dosage-sensitive. We also report on experiments designed to detect methylation differences in XX, XY, and XO ES cell lines.

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