Sexually Transmitted Infections (STIs) are a widespread healthcare concern, affecting 1 in 5 individuals worldwide. Diagnosing STIs is challenging due to their asymptomatic nature and the limitations of current testing methodologies, which makes an accessible testing method a priority in modern healthcare. Trichomoniasis, caused by the parasite *Trichomonas vaginalis,* is especially difficult to detect. We designed an at-home urinary strip test for Trichomoniasis, utilizing *T. vaginalis* transcription factors to trigger a color change in responsive genes. Using the *T. vaginalis-*specific protein IBP39, we aim to bind it to the DNA initiator and M5 motif for transcription activation. The IBP39 protein should be present and available to transcribe due to lysed *T. vaginalis* appearing in urine. The genetic construct will be subsequently cloned into a plasmid and introduced into *Escherichia coli* through transformation. The project’s modified *E. coli* and supportive growth media will be in a test tube, to be used with a urine sample. If the media, originally a pale yellow color, undergoes a change to a blue color, that is an indication of the parasitic infection. In the case of this, it is strongly recommended to reach out to a doctor for further evaluation and treatment. Offering a private and accessible alternative to conventional testing, this method aims to streamline sexual health screenings, ensuring earlier detection and treatment.