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Silencing and Localization of EhMSP-1 activity in *Entamoeba histolytica*

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Entamoeba histolytica infection is a significant cause of morbidity and mortality in developing countries. A resulting infection can cause amebiasis, which is characterized by chronic dysentery, liver abscesses and lesions in the intestine. Previous research has shown that the *E. histolytica* metallosurface protease 1 (EhMSP-1) in G3 strain trophozoites is involved in regulating amebic adherence and and motility. While the abilities to adhere and then to release from host substrates and migrate are important in the ability of the amoeba to cause severe infection, neither the mechanism of how EhMSP-1 regulates these processes nor where the EhMSP-1 protein localizes are known. Since tissue invasion requires membrane protrusions called invadopodia, it is hypothesized that the EhMSP-1 protein is localized to these protrusions and then activated within these structures in order to directly regulate adherence. To test this hypothesis, I hope to first replicate previous silencing results of EhMSP-1 in the more virulent HM-1: IMSS strain. I have already constructed the proper silencing plasmid for EhMSP-1, which was just recently successfully transfected into *E. histolytica.* Over the summer, I intend to label the EhMSP-1 protein in *E. histolytica* with two protein visualization tags, which will enable us to observe EhMSP-1 cleavage/activation within living *E. histolytica* trophozoites. Once properly labeled I will follow up with a series of live-microscopy experiments to image the localization of EhMSP-1 activation during *E. histolytica* invasion of a monolayer of cells grown on matrigel.