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**MAJOR URINARY PROTEINS AS A SIGNAL OF GENETIC QUALITY AND
INFECTION STATUS**

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The Hamilton-Zuk hypothesis suggests that susceptibility to infectious disease is so important that many physical traits, particularly secondary sexual characters, will evolve to signal genetic quality for resistance to prospective mates. We expanded upon this theory using the house mouse (*Mus musculus*) to determine if an olfactory cue caused by Major Urinary Proteins (MUPs) honestly signal infection status. MUPs are released in mg/mL quantities in the urine of males—a notable expenditure of valuable protein. Previous work has shown that females prefer to mate with males that have higher levels of MUPs, which is proposed to be an extravagant olfactory sexual character that is an honest signal of genetic quality. We hypothesized that MUPs are an honest signal of health and that mice infected by a pathogen will decrease MUP expression due to physiological and energetic constraints. To test this hypothesis, we used three strains of Friend Virus Complex (FVC), two of high virulence (HVA and HVB) and one of low virulence (LVS), to determine the relationship between MUP expression and severity of infection. MUPs were measured every six days during a twelve-day period. We observed a significant difference in virulence between the HVB and the other infection groups with an uninfected control. In HVB-infected mice, significantly decreased MUP levels from pre to post time points were observed. Control mice did not show significantly decreased MUPs. These rates of change in MUPs over time when compared to each other are not significantly different. These data indicate that active infections can reduce the level of MUP signaling, but only when the infection is severe. Further investigations of the role that MUPs play in signaling

individual quality and the impact of ongoing infections should be conducted with other pathogens to determine the generality of these results.