

A Secreted Adhesin Bridges Enterotoxigenic *E. coli* Flagella and A-blood group Host Glycans

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Enterotoxigenic *Escherichia coli* (ETEC) infections are highly prevalent in low income countries where clinical presentations range from asymptomatic colonization to severe cholera-like illness; however, the molecular basis for these varied clinical presentations, that may involve strain-specific virulence features as well as host factors, have not been elucidated. A diverse population of ETEC, including isolates from severe cholera-like diarrhea, have recently been shown to secrete a novel adhesin molecule, EtpA. Here we demonstrate that EtpA, previously shown to serve as a molecular bridge between ETEC flagella and host cell surfaces, is a blood group A (bgA) specific lectin which preferentially targets intestinal epithelia from bgA individuals thereby enhancing effective bacterial adhesion and toxin delivery. Additionally, we found that naïve bgA human volunteers challenged with H10407 developed diarrhea with greater frequency and severity than other blood groups. Collectively, these data provide additional insight into the complex molecular basis of ETEC diarrheal illness, that may inform rational approaches to development of vaccines designed to protect those at highest risk.