

Figure 1:

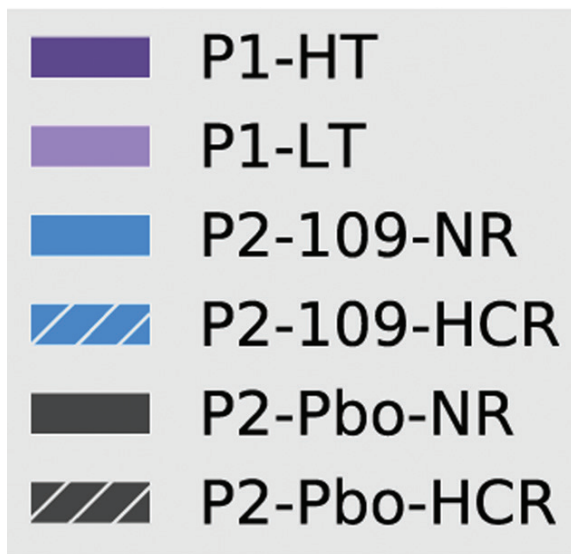
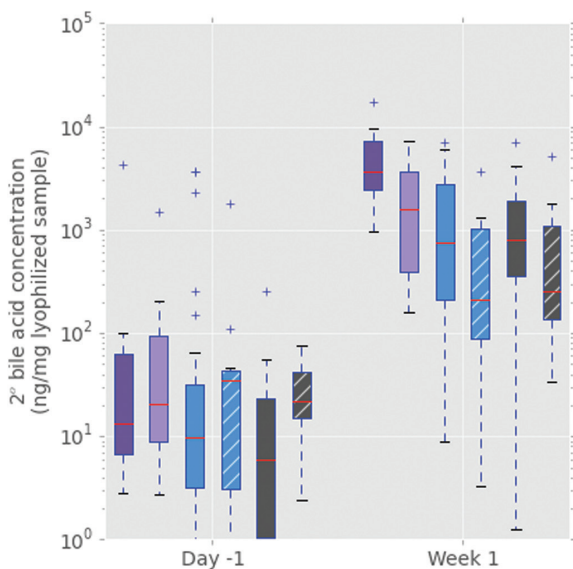


Figure 2:



Disclosures. M. Henn, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. C. Ford, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. E. O'Brien, Seres: Employee and Shareholder, Salary. J. Wortman, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. L. Diao, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. C. Desjardins, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. A. Tomlinson, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. K. Litcofsky, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. M. Wilcox, Seres Therapeutics, Inc.: Consultant, Research Contractor, Scientific Advisor and Shareholder, Research support. A. Buckley, Seres Therapeutics, Inc.: Research Contractor, Research support. P. Bernardo, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. B. McGovern, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. J. G. Aunins, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. D. N. Cook, Seres Therapeutics, Inc.: Employee and Shareholder, Salary. M. Trucksis, Seres Therapeutics, Inc.: Employee and Shareholder, Salary.

622. Increased IgA Coating of Gut Microbes After Administration of Killed, Whole-Cell Oral Cholera Vaccine

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Background. Cholera vaccines are recommended for use in outbreaks to prevent infections and reduce severity of disease. Variable immune responses are observed after administration of killed, whole-cell cholera vaccines, and limited data suggest that the gut microbiome may be one factor influencing immune responses to vaccination.

Methods. We used microbial DNA sequencing of stool and serum vibriocidal titers to examine the gut microbiome and immune responses to vaccination at day 0, 7, 17 and 44 in adult vaccine recipients in Dhaka, Bangladesh. Using flow cytometry-based bacterial cell sorting, we identified IgA-coated gut microbes in stool before and after vaccination in a subset of patients.

Results. Vibriocidal titer magnitude and kinetics were used to classify participants. Within 17 days of vaccination, 86/89 (96%) adults developed a four-fold rise in vibriocidal titer. Gut microbial diversity was not significantly changed after vaccination. Rate of seroconversion (four-fold increase in vibriocidal titer by Day 3 after vaccination) was faster in participants with increased bacteria from the genus *Prevotella* (multivariate analysis using linear models, q value 0.04). The gut microbes of participants with higher peak vibriocidal titers was characterized by increased *Prevotella* (3% vs. <0.1% of the total microbiome, $P < 0.001$ unpaired t -test, linear discriminant analysis score >3.5), particularly the species *Prevotella copri* ($P < 0.001$, unpaired t -test, linear discriminant analysis score >3.5). Lipopolysaccharide from *Prevotella* species is known to increase vaccination-associated antigen-specific antibody titers in animal models. Additionally, IgA coating of gut microbes in stool increased after vaccination, from 8.9% IgA coated at baseline to a peak level of 19% during follow-up (Wilcoxon signed rank test, $P < 0.01$).

Conclusion. Certain microbiome profiles are correlated with greater immune responses to cholera vaccination, and IgA coating of gut bacteria indicates which commensal species may be participating in the mucosal immune response. The potential for modulation of mucosal immune responses based on gut microbial species warrants further study.

Disclosures. All authors: No reported disclosures.

623. Dynamic Nature of the Gut Resistome Among Infants in Singapore

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Background. The gut microbiome harbors antibiotic resistance genes (ARGs), known as the resistome, that has the potential to spread and contribute to the global