

Johns Hopkins University

Department of Biology Special Seminar

Monday, 1:30pm

For more information go to: <https://bio.jhu.edu/events>

Zoom link: <https://zoom.us/j/97925356454?pwd=bjNuTlY1dU9BcXcrRFdleis2TVNadz09>

March 25th, 2024 - Mudd 100



Will Ludington

Staff Scientist

Department of Embryology at the
Carnegie Institution of Washington

Adjunct Assistant Professor
Department of Biology at Johns Hopkins
University

Host: Nichole Broderick

"Host-microbiome specificity in colonization of the gut"

Animals throughout the metazoa selectively acquire specific symbiotic gut bacteria from their environment to aid host fitness. Current models of colonization suggest these bacteria use weakly specific receptors to stick to host tissues and that colonization results when they stick in a region of the host gut that overlaps with their nutritional niche. An alternative model is that unique receptor-ligand binding interactions provide specificity for target niches. I will present live imaging data of individual symbiotic bacterial cells colonizing the gut of living *Drosophila melanogaster* to show that symbionts specifically recognize a distinct physical niche in their host's gut. Using experimental evolution, we find that recognition is controlled by a colonization island that is widely conserved in commensals and pathogens. Our findings indicate a genetic mechanism of host specificity that is broadly conserved. By developing fly genetics tools for the niche region, we are now beginning to study the host mechanisms of colonization specificity regulation.