



ICGEB International SEMINAR PROGRAMME 2018

Monday, 2 July 2018 | 12:00 noon | ICGEB Seminar Room, W building | Padriciano, 99, Trieste, ITALY



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Our research aims at understanding the role of microRNAs in infection by bacterial pathogens. Regulation of microRNA expression is increasingly recognized as a crucial part of the host response to infection by bacterial pathogens, as well as a molecular strategy exploited by bacteria to manipulate host cell pathways. We have applied unbiased, genome-wide systems biology approaches, particularly high-throughput functional screenings and deep-sequencing to study the role of microRNAs during infection by different bacterial pathogens, including *Salmonella Typhimurium* and *Shigella flexneri*. Using these approaches, we discovered that *Salmonella* and *Shigella* infections induce distinct miRNome changes and, in turn, are regulated by distinct subsets of host microRNAs.

Beyond the microRNA pathway, we have also been investigating the impact of the general stress response of epithelial cells to the infection by bacterial pathogens. We found that induction of stress in epithelial cells by inflammatory cues and oxidative insults prevents the binding of *Shigella* to host cells. Mechanistically, this inhibition results from extensive remodeling of the host plasma membrane, which results in the depletion of permissive bacterial binding sites. These findings reveal host membrane remodeling as a novel stress-responsive cell-autonomous defense mechanism that protects epithelial cells from infection by non-motile bacterial pathogens.

***“Insights into host – bacterial pathogen interactions:
from microRNAs to host stress response”***

Host: M. Giacca

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