

Genetic Dissection of Host Resistance against Bacterial Infection

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Use of invertebrate models of infection has given exciting insights into host-pathogen interaction for a number of bacteria. In particular, this has revealed important factors of the host response with remarkable parallels in higher organisms. Recently, emerging of multi-drug resistant bacteria raises a requirement of developing new therapies such as controlling host defense system. Finding host factors that can purge bacteria from human body could give us a new concept of pharmaceutical targets. Here we use *Drosophila* as a model animal for human infectious diseases, a tractable tool for identifying novel gene products that can activate host defense mechanisms. We carried out gain-of-function screen to identify resistant or susceptible fly strains against *Staphylococcus aureus*, *Shigella flexneri*, *Listeria monocytogenes*, and *Salmonella typhimurium* infection. In a gain-of-function screen, the expectation is a change in the dosage of a molecule will affect host defense system. Microinjection of these bacteria into fly abdomen will kill all flies within two weeks. From this screen, we identified 10 resistant and 2 susceptible strains. We will discuss about detail of our strategy, which could imply a useful genetically tractable model for human infectious diseases.