The Antimicrobial Host Defense of Drosophila : A Paradigm for Innate Immunity

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The fruitfly Drosophila mounts a potent defense reaction during fungal, bacterial and viral infections. We have investigated this defense and have asked three types of questions : (1) how does Drosophila recognize the invading microorganisms; (2) how does recognition lead to activation of intracellular signaling cascades and gene reprogramming; (3) which effector molecules are produced to oppose the microorganisms. Our results point to a sophisticated defense mechanism which is based on several circulating, transmembrane or cytosolic receptors of microbial ligands. Bound receptors trigger several distinct signaling cascades which culminate in the activation of NF-κB family members, which in turn control the expression of hundreds of immune-response genes, some of which have potent antimicrobial activities. Stringent parallels with innate immune mechanisms of mammals point to a common ancestry of this defense and will be discussed in the presentation.

Recent Reviews :

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