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Time: 12:10am

Antiviral immunity and virus discovery by deep sequencing and computational algorithms

Abstract:
Jules Hoffmann and his co-workers reported in 1996 that the Toll receptor pathway mediates an essential antifungal defense in the fruit fly Drosophila melanogaster. This discovery triggered an explosion of research in innate immunity and was awarded with Nobel Prize in Medicine this week. However, it had been unclear if the same or related mechanisms are also active against viral pathogens in fruit flies. Studies from my lab show that a distinct RNA-based immunity provides protection against viral infection in fruit flies, mosquitoes and nematodes. In this antiviral immunity, small interfering RNAs (siRNAs) 21 to 24 nucleotides in length are processed from the infecting viral RNA to guide specific virus clearance by RNA interference (RNAi). In this seminar, I shall describe the main framework of the RNA-based antiviral immunity and how deep sequencing and computational algorithms facilitate discovery of new viruses and viroids.