

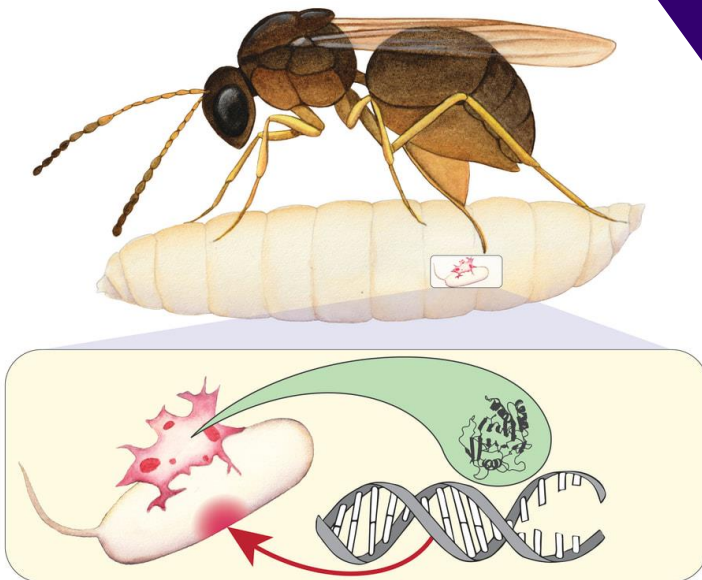
Biology Seminar

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A tale of two toxins: The acquisition of defensive toxins by animals through horizontal gene transfer



Monday May 15, 2023
12:00PM PST | HCK 132

Several disease-causing bacteria produce toxins that damage host cells by triggering preprogrammed cell death. Two such bacterial toxins are called cytolethal distending toxin B and apoptosis-inducing protein of 56 kDa. We discovered that diverse insect species co-opted

the two bacterial genes encoding each cytotoxin through a phenomenon called horizontal gene transfer (HGT). HGT occurs when a gene from one organism is inserted into the genome of another and then is stably inherited across generations. We found that the two bacterial toxin genes were captured by an ancestral fruit fly ~21 million years ago and are important for resistance against parasitoid wasps, which are principal enemies of fruit flies. These horizontally transferred genes now contribute to the fly's immune system.

For more information see our recent paper (<https://www.pnas.org/doi/10.1073/pnas.2218334120>) and a commentary on this work (<https://www.pnas.org/doi/10.1073/pnas.2304493120>).

