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SÉMINAIRE

Host-microbe mutualism: "learning on the fly"

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There is growing evidence that intestinal bacteria are important beneficial partners of their metazoan hosts. Recent observations suggest a strong link between commensal bacteria, host energy metabolism and metabolic diseases such as diabetes and obesity. As a consequence, the gut microbiota is now considered as a "host" factor that influences energy uptake. However, the impact of intestinal bacteria on other systemic physiological parameters still remains unclear. In this context, we have recently demonstrated that Drosophila microbiota promotes larval growth upon nutrient scarcity. We revealed that Lactobacillus plantarum, a commensal bacteria of the Drosophila intestine is sufficient on its own to recapitulate the natural microbiota growth promoting effect. Using this simple gnotobiotic model we have shown thatL.plantarum exerts its benefit by acting genetically upstream of the TOR-dependent host nutrient sensing system controlling hormonal growth signaling in Drosophila. Our results therefore indicate that the intestinal microbiota should also be envisaged as a factor that influences the systemic growth of its host. We will present and discuss our recent progresses and research perspectives in the understanding of the molecular mechanisms underlying the mutualistic association between Drosophila melanogaster on its commensal Lactobacillus plant arum.