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Sommario/riassunto

Legionella pneumophila was first isolated as the causative agent of a deadly infectious pneumonia at a convention of the American Legion forty years ago. Since then, Legionnaires' disease continues to be a significant public health concern. Today, our understanding of the Legionella genus, comprising environmental bacteria and opportunistic human pathogens, has dramatically increased. The study of how pathogenic Legionella interact with host cells, both protozoan and mammalian, has not only taught us about host-pathogen interactions but has revealed novel and unexpected insights into human cell biology and immunology. The capacity of pathogenic Legionella to commandeer cellular processes such as eukaryotic vesicular trafficking to establish an ER-like replicative niche, reflects the exquisite ability of this pathogen to manipulate eukaryotic cell biology in order to replicate in an intracellular compartment. This requires the specific and targeted action of a cohort of translocated bacterial effector proteins. In addition, we have learnt much about cell autonomous innate immune sensing of intracellular bacteria through the inability of L. pneumophila to avoid intracellular mammalian defense mechanisms. Now, in the age of large-scale comparative "omics", it is clear that different Legionella species utilize different cohorts of effectors to replicate inside eukaryotic cells. While we understand some of the strategies employed by L. pneumophila and L. longbeachae to replicate within eukaryotic cells, there is still much to learn about many aspects of the Legionella

life cycle. This Research Topic highlights the latest findings regarding the biology of Legionella species, their interactions with eukaryotic host cells, and how the application of various technologies has increased our understanding of this important pathogen.