Legionnaire’s disease is a severe pneumonia caused by the bacteria Legionella pneumophila. In order to evade the defence mechanisms of the host cell, this pathogen creates a membrane-bound vacuole where it hides and replicates in high numbers. To generate this specialized organelle, Legionella injects effectors that take command of small GTPases of the Arf and Rab families, which are major regulators of membrane traffic in eukaryotes. We investigated the structures and mechanisms of two of these effectors: AnkX which adds a covalently-bound compound to small GTPases of the Rab family to alter their cellular functions [1] and RalF, which uses a novel membrane sensor to activate cellular Arf at the surface of the vacuole [2].


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