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Kinases and phosphatases act together to regulate Salmonella enterica serovar Typhimurium infection

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The ABL1 tyrosine kinase previously identified by our group as one of the kinases controlling the intracellular growth of *Salmonella typhimurium* (Kuijl et al., 2007), has been recently shown to facilitate the Salmonella entry into epithelial cells (Ly and Casanova, 2009).

In agreement with these studies we show how impairment of ABL1 tyrosine kinase activity by using a specific ABL-inhibitor Gleevec (also called Imatinib; Khorashad et al. 2009) and other Gleevec-like inhibitors (H. Ovaa, personal communication) affects Salmonella uptake in Hela cells.

By using siRNA to knock down some tyrosine phosphatases that we previously identified as proteins impairing Salmonella infection (C. Kuijl, personal communication), and treating the same cells with Gleevec before their infection with the pathogen, we identified MTMR7 (Mochizuki and Majerus, 2003), as a tyrosine phosphatase having an important role in Salmonella internalization.

Specifically, the silencing of MTMR7 together with inactivation of ABL1 by Gleevec treatment resulted in a strong synergistic decrease of Salmonella internalization, suggesting that these two proteins act together in regulating Salmonella infection.

Our results show that the tyrosine kinase ABL1 acts together the tyrosine phosphatase MTMR7 in affecting the Salmonella uptake, illustrating of how kinases and phosphatases regulate the pathogen infection process.

Keywords: salmonella typhimurium, phosphatases, kinases, ABL1