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Title:	Mycobacterium tuberculosis acquires iron by cell-surface sequestration and internalization of human holo-transferrin
Authors:	Sharma, Prerna (/jspui/browse?type=author&value=Sharma%2C+Prerna)
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Abstract:	Mycobacterium tuberculosis (M.tb), which requires iron for survival, acquires this element by synthesizing iron-binding molecules known as siderophores and by recruiting a host iron-transport protein, transferrin, to the phagosome. The siderophores extract iron from transferrin and transport it into the bacterium. Here we describe an additional mechanism for iron acquisition, consisting of an M.tb protein that drives transport of human holo-transferrin into M.tb cells. The pathogenic strain M.tb H37Rv expresses several proteins that can bind human holo-transferrin. One of these proteins is the glycolytic enzyme glyceraldehyde-3-phosphate dehydrogenase (GAPDH, Rv1436), which is present on the surface of M.tb and its relative Mycobacterium smegmatis. Overexpression of GAPDH results in increased transferrin binding to M.tb cells and iron uptake. Human transferrin is internalized across the mycobacterial cell wall in a GAPDH-dependent manner within infected macrophages.
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