Glycerol-3-phosphate dehydrogenase 2 is a novel factor H-, factor H-like protein 1-, and plasminogen-binding surface protein of *Candida albicans*.

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Abstract

Candida albicans uses human complement regulators such as factor H and factor H-like protein 1 (FHL-1) for immune evasion. To define the whole panel of fungal complement-evasion molecules, C. albicans cell extract was absorbed to a factor H-coupled matrix. One 52-kDa protein was eluted and identified by mass spectrometry as glycerol-3-phosphate dehydrogenase 2 (Gpd2). Consequently, Gpd2 was recombinantly expressed and purified. Recombinant Gpd2 binds factor Hand and FHL-1, mainly via short consensus repeat 7; and binds plasminogen, via lysine residues. The 3 human complement regulators, when attached to candida Gpd2, became functionally active, and the attached host proteins assist in inactivation of the complement cascade or cleave fibrinogen in the extracellular matrix component fibrinogen. Polyclonal Gpd2 antiserum was generated and localized Gpd2 at the surface of C. albicans. In addition, candida Gpd2 bound to human nonphagocytic cells but not to phagocytic U937 cells. Thus, candida Gpd2 is a novel fungal immune evasion protein that binds several human complement regulators and, in addition, binds human cells.

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