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Hacking the host: exploitation of macrophage polarization by intracellular bacterial pathogens

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Abstract

Macrophages play an integral role in host defenses against intracellular bacterial pathogens. A remarkable plasticity allows for adaptation to the needs of the host to orchestrate versatile innate immune responses to a variety of microbial threats. Several bacterial pathogens have adapted to macrophage plasticity and modulate the classical (M1) or alternative (M2) activation bias towards a polarization state that increases fitness for intracellular survival. Here, we summarize the current understanding of the host macrophage and intracellular bacterial interface; highlighting the roles of M1/M2 polarization in host defense and the mechanisms employed by several important intracellular pathogens to modulate macrophage polarization to favor persistence or proliferation. Understanding macrophage polarization in the context of disease caused by different bacterial pathogens is important for the identification of targets for therapeutic intervention.

Keywords: M1 polarization; M2 polarization; Macrophages; bacteria; intracellular pathogens.

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