

## Carl Nathan Biography



Over 4 decades Nathan and his colleagues established that lymphocyte products activate macrophages, that interferon-gamma is a major macrophage activating factor in mice and humans, and that mechanisms of macrophage antimicrobial activity include induction of the respiratory burst and inducible nitric oxide synthase. Although iNOS helps the host control *Mycobacterium tuberculosis*, Mtb resists sterilization by host immunity. The biochemical basis of Mtb's persistence is the lab's present focus. Genetic and chemical screens have identified enzymes that Mtb requires to survive during non-replicative persistence, including the proteasome, a serine protease that controls intrabacterial pH, and components of pyruvate dehydrogenase and nucleotide excision repair, along with inhibitors of each.

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