

## The TLR2 agonist, neisserial outer membrane protein PorB, is a potent and unique immune adjuvant

Lee M. Wetzler

Boston University School of Medicine, USA

Over the past decade our understanding of innate immunity has grown exponentially. This occurred with the discovery of TOLL-like receptors (TLRs) followed by a set of intracellular pattern recognition receptors termed NODS or NOD-like receptors (NLRs). For many years, it has been known that the most potent immune adjuvants have been derived from microbial products, followed by an understanding that these products enhanced antigen presentation by increasing T cell costimulation through an up regulation of various APC costimulatory molecules, especially CD86. Vaccines components that were not entirely “clean” always appeared to be more immunogenic, and Charles Janeway termed this the “immunologist’s dirty little secret”. We now know that a majority of these vaccine adjuvants are some type of TLR or NLR ligand and/or stimulate APCs indirectly or directly through these pathways. We have found that the Neisserial major outer membrane protein PorB, has significant immune activating activity, can act as a potent vaccine adjuvant and that the mechanism of this activity is mediated by its interaction with TLR2. PorB can enhance immune responses to both T-cell independent or dependent antigens that are associated with protection from microbial pathogens, including encapsulated bacteria or *Francisella tularensis*. Experiments are ongoing comparing the adjuvant activity of PorB to other adjuvants that are currently being used or are being developed to better understand their effects, which may allow for a more effective use of these adjuvants in future vaccines.

### Biography

Lee M. Wetzler is currently a Professor of Medicine and an Associate Professor of Microbiology at the Boston University School of Medicine and an Attending Physician at the Boston Medical Center. He has a long standing interest in vaccinology and vaccine adjuvants since his postdoctoral fellowship at the Rockefeller University in NY, in the laboratory of Dr. Emil Gotschlich, the original developer of the meningococcal polysaccharide vaccines. He did his residency at the University of Michigan, his Infectious Diseases fellowship at the Boston University School of Medicine and has been on faculty at this institution for almost two decades.

lwetzler@bu.edu