



# Keynote Lecture I

## Battling the Bugs: Confronting the Microbial Menace

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Dr B Brett Finlay is a Professor in the Michael Smith Laboratories, and the Departments of Biochemistry and Molecular Biology, and Microbiology and Immunology at the University of British Columbia. He obtained a BSc (Honors) in Biochemistry at the University of Alberta, where he also did his PhD (1986) in Biochemistry under Dr William Paranchych, studying F-like plasmid conjugation. His post-doctoral studies were performed with Dr Stanley Falkow at the Department of Medical Microbiology and Immunology at Stanford University School of Medicine, where he studied *Salmonella* invasion into host cells. In 1989, he joined UBC as an Assistant Professor in the Biotechnology Laboratory. Dr Finlay's research interests are focussed on host-pathogen interactions, at the molecular level. By combining cell biology with microbiology, he has been at the forefront of the emerging field called Cellular Microbiology, making several fundamental discoveries in this field, and publishing over 250 papers. His laboratory studies several pathogenic bacteria, with *Salmonella* and pathogenic *E. coli* interactions with host cells being the primary focus. He is well recognized internationally for his work, and has won several prestigious awards including the EWR Steacie Prize, the CSM Fisher Scientific Award, a MRC Scientist, four Howard Hughes International Research Scholar Awards, a CIHR Distinguished Investigator, BC Biotech Innovation Award, the Michael Smith Health Research Prize, the IDSA Squibb award, is a Fellow of the Royal Society of Canada and the UBC Peter Wall Distinguished Professor. He is a cofounder of Inimex Pharmaceuticals, Inc, and Director of the SARS Accelerated Vaccine Initiative. He also serves on several editorial and advisory boards, and is a strong supporter of communicating science to the public.

Microbial diseases continue to cause significant morbidity and mortality worldwide, and drug resistance is increasing in many pathogens. By understanding basic pathogenic mechanisms, this information can be exploited to develop novel therapeutics and preventatives. Work in our lab has been focused on understanding the molecular mechanisms of pathogenic *E. coli* and *Salmonella*. These pathogens have sophisticated mechanisms to drive bacterial molecules into host cells to reprogram infected cells and neutralize host defenses. A general overview of the mechanisms used by these pathogens will be presented, as will two approaches that have been developed to counter them. These include attempts to alter innate immune mechanisms, and developing an agricultural vaccine to decrease transmission to humans.