Mucosal vaccines: modern concepts, strategies, and challenges

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This volume is focused on the development of vaccines which generate immune effectors capable of blocking mucosal entry or peripheral pathogen spread. Other chapters describe strategies for enhancing uptake of mucosal vaccines, for instance through targeted delivery to antigen-sampling M cells, construction of virus-like particles which mimic natural pathogens, addition of mucoadhesives or formulation as nanoparticles. Topics include edible vaccines as well as plant-based production of subunit or particulate vaccines that could be administered by any route. Dry powder vaccines that could be insufflated or directly applied to mucosal surfaces may be particularly ideal for mass vaccination in developing countries. The manufacture, stability and efficacy of powder formulations is comprehensively reviewed. We conclude with chapters on two of the greatest challenges facing mucosal vaccine development : human immunodeficiency virus and bioterrorist agents. This monograph highlights progress and information that should prove invaluable for the development of contemporary vaccines that prevent infection by these and other mucosal pathogens.