Protection of pigs against genital *Chlamydia trachomatis* challenge by parenteral or mucosal DNA immunization.

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We have evaluated protection against a genital *Chlamydia trachomatis* infection in a pig challenge model. Protection was promoted by the porcine granulocyte macrophage-colony stimulating factor (GM-CSF), the *Escherichia coli* thermo-labile enterotoxin LT as an exceptionally potent mucosa-binding molecule and by a major outer membrane protein (MOMP)-based DNA vaccine carrying CpG motifs incorporated in the plasmid backbone. Protection achieved by mucosal (vaginal and nasal) immunization will be compared to systemic (intradermal) immunization. We could demonstrate that mucosal administration leads to significant protection against genital *C. trachomatis* challenge as significantly less severe macroscopic lesions, less chlamydial shedding and replication in the urogenital tract was demonstrated in the vaccinated animals. Also, significantly higher proliferative responses of peripheral blood lymphocytes were observed. Furthermore, the combination of nasal and vaginal immunization could induce serum antibody titers upon immunization and early upon challenge with *C. trachomatis* serovar E. However, the infection could not be eradicated. Systemic immunization was significantly less efficient at eliciting protection, which emphasizes the need for a mucosal vaccine in order to obtain significant protection against genital *C. trachomatis* infection.