

Massachusetts Center for Agriculture

University of Massachusetts Amherst

MOMP-Based Antigen Display/Delivery System Using Recombinant Gas Vesicles

Issue

Chlamydia psittaci or *psittacosis* is one of the most common bacterial infections in companion avian species. Chlamydial infections in birds, sheep and cattle are important as they represent a biological hazard to human health as well as significant economic loss to the poultry, dairy and wool industries. This project proposes to design a recombinant MOMP (r-MOMP) vaccine display and delivery system that will be tested to determine its ability to generate neutralizing antibodies and its efficacy to interdict the entry and/or replication of *C. psittaci* organism in tissue culture. The long-term goal will be to interdict *C. psittaci* infection in domestic birds and cattle.

Impact

The fact that this organism lives with the host cell instead of on the outside of the cell, makes it difficult to diagnose and treat by veterinarians and aviculturists. In birds, *psittacosis* may present as an upper respiratory infection with nasal and ocular discharge, diarrhea or as a combination of both. In some cases, birds may be infected but show no signs. *Psittacosis* in humans can result in mild to severe disease. In severe cases, humans that are infected often have severe fever with night sweats leading to pneumonia. When the avian problem is coupled with the growing problem of herd losses through various infections and the proven

impact that chlamydial abortion can have on cattle, there is no doubt that an efficacious vaccine is needed to control the morbidity and burden of rising costs associated with debilitating chlamydial infections in animals and humans. Our work to date has resulted in the identification of important vaccine candidates from the chlamydial genome, expression of these genes of interest in our gas vesicle display/delivery system and confirmation of the presence of these proteins on recombinant gas vesicles. The next step will be to determine the efficacy of these subunit vaccine candidates to interdict infection in an animal model.

Funding sources

- Hatch

Topics

- Chlamydia
- MOMP based vaccine
- Bacterial pathogens

Contacts

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Primary impact area(s)

- Research
- Education
- Extension

