

## **The Effective Use of Siderophore Receptor Proteins (SRP) as Antigens in Poultry Vaccines.**

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Bacterial pathogenesis requires active acquisition of iron from host reservoirs. This is accomplished by sophisticated iron-gathering systems using secreted bacterial siderophores plus outer membrane-bound siderophore receptor proteins (SRP). In the host environment, bacterial SRP expression is amplified and ultimately provides iron for bacterial growth, colonization and disease. Given this key role, SRPs are logical targets for vaccine development and have been shown to be effective immunogens against *Salmonella* Enteritidis (SE), *E. coli* (EC), *Pasteurella multocida* (PM) and other pathogens of veterinary interest.

In a series of studies, SRP vaccine effectiveness (Fisher's Exact Test, all  $P < 0.05$ ) was demonstrated using SPF pullets administered twice with vaccine containing either SRP-SE, SRP-EC or SRP-PM then challenged with a pathogenic field strain. Vaccine containing SRP-SE reduced colonization of reproductive tissues 100% in vaccinated birds (0% positive) compared to the placebo group (24% positive). Vaccine with SRP-EC prevented 100% of mortality in vaccinated pullets (0%) compared to placebo (76%). Vaccine containing SRP-PM (3x4, 2x5 serotypes) prevented mortality by 70% after heterologous challenge with serotype 7x9x10 and by 92% with serotype 8x14x15.

These studies demonstrate that vaccines using SRP antigens are effective for prevention of bacterial disease in chickens.