Subunit vaccine for Poultry Infectious Bronchitis Virus (IBV)

Overview: IBV is highly prevalent in the poultry industry and causes millions of dollars in losses despite extensive vaccination. Furthermore, studies indicate that current IBV live vaccines lead to new viruses that actually perpetuate IBV infection. This subunit vaccine provides robust protection without the complications associated with currently available live vaccines.

Advantages:
- ADAPTABLE — Subunits of emerging serotypes can be quickly used in new vaccines
- SAFE & EFFECTIVE — Protects but will not change or produce new outbreaks
- STANDARD DELIVERY — Spray, in ovo using vaccine vectors, or injection

Description: Subunit vaccines against IBV have not been commercialized due to lack of effectiveness and difficulty of mass delivery. Previous vaccines used an inadequate portion (S1) of the viral attachment protein for immunization. This new approach uses a larger portion of the viral attachment protein (S1/S2) and is better able to attach to chicken tissues compared to S1 alone. Chickens immunized twice by subcutaneous injection with S1/S2 were protected against challenge better than chicken immunized with S1. Twenty-two days after vaccination, virus was reduced in both tears and trachea, and trachea was protected from damage. On a commercial scale, this novel subunit vaccine could be used in layers or breeders by injection, or mass delivered to broilers via spray or in ovo, using viral vectors, nanoparticles, adjuvants or other means.

Status:
- Subject of US Patent 10,772,953
- Studies ongoing/proposed for delivery using viral vectors or via mucosal/in ovo routes
- This technology is available for exclusive or non-exclusive licensing
- Partnering opportunities include licensing and funding of further development

(A). Tissue slices showing binding to chicken tissues for S1 (left column) or S1/S2 (right column). Red staining indicates binding. Top row = trachea, Middle row = lung, Bottom row = nasolacrimal gland. (B, C). Comparing protection following vaccination with S1 or S1/S2. (B). Viral loads 5 days post challenge in trachea. (C). Tracheal mucosal thickness as an indication of inflammation due to infection. NonC = non-challenged control; NonV = non-vaccinated control.