VIRAL FLEX-SEQ®

THE THREE Vs OF VIRAL FLEX-SEQ

Vaccinate: Administer HVT vector vaccines.

Verify: Test representative farm samples to determine presence of the HVT vector vaccine. Viral Flex-Seq Vaccine Report benchmarks vaccine detection on multiple organizational levels.

eValuate: If vaccine-related disease challenges occur, perform phylogenetic analysis testing. Viral Flex-Seq Field Virus Report determines pathogen relatedness to vaccines and true field viruses.

VACCINATE

VERIFY

eVALUATE

WELCOME TO A NEW ERA OF CERTAINTY

Viral Flex-Seq empowers commercial poultry organizations across the world to proactively optimize disease outbreak management by leveraging the ultimate tool for accurate, reliable HVT vector vaccine detection. Thanks to the innovative power of next-generation sequencing (NGS) technology, end-users achieve conclusive, first-in-class diagnostic clarity for improved animal health and welfare. Viral Flex-Seq introduces a new era of certainty, and we can start right now.

Poultry organizations choose Viral Flex-Seq to evaluate vaccine administration accuracy and program effectiveness, benchmarking results on regional, national and international scales. Additionally, in the event of an associated disease challenge or during routine monitoring, users can identify potential sources of infection through phylogenetic comparison against a global Viral Flex-Seq pathogen database. We created the **"Three Vs" (Vaccinate, Verify, eValuate)** to provide a framework for end-users to maximize the benefits of Viral Flex-Seq. Collecting samples is fast and easy with FTA cards, with accompanying data submitted via the Viral Flex-Seq iPhone app. The arrival of Viral Flex-Seq – powered by commitments to innovation, quality, and precision – introduces the new industry standard for HVT vector vaccine verification and disease identification.

To learn more about Viral Flex-Seq, visit **rapid-genomics.com/viral-flex-seq.**

- Available to support any HVT vector vaccine product.
- iPhone app facilitates easy collection of sample information and instant data transmission from the field.
- More precise than serology. More sensitive than rtPCR. More powerful than Sanger sequencing.
- Ideal sampling timepoints:
  - Vaccine Test: Spleen tissue at 8 days, feather pulp at 15 days. Blood is not a viable sample.
  - Field Virus Test: Sampling tissue is defined by the respective field virus replication sites of ILT, ND, or IBD.
  - Test results confirm the significant early replication of HVT vector components by, at the latest, day 8 post-vaccination.
- Identifies and separately characterizes HVT vector vaccine products, pure HVT vaccine, and third party HVT vector vaccines using triplex testing technology. No possibility of testing cross-reactivity or product misidentification.
- Establishes degrees of relatedness of disease challenge pathogens to vaccine-origin or true field viruses using multiplex testing technology.
- Chicken host DNA quantitation data normalizes sample results taken at multiple locations and different time points, creating the Vaccine Score. This enables cross comparisons and results benchmarking.

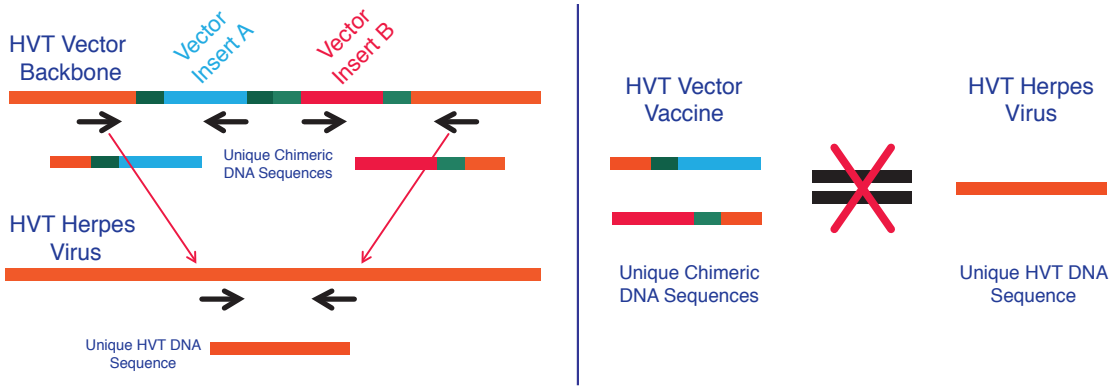

Figure 2: HVT Vector Vaccine Differentiation from HVT: *Vector vaccine products utilize single or double-insert DNA technology, creating unique genetic markers along the HVT backbone not normally found in nature. Viral Flex-Seq amplifies signals across these chimeric DNA sequences, resulting in completely different markers when vector vaccines or non-vector HVT are encountered. The resulting DNA sequences are directly observable as different, eliminating the possibility of misidentification.*

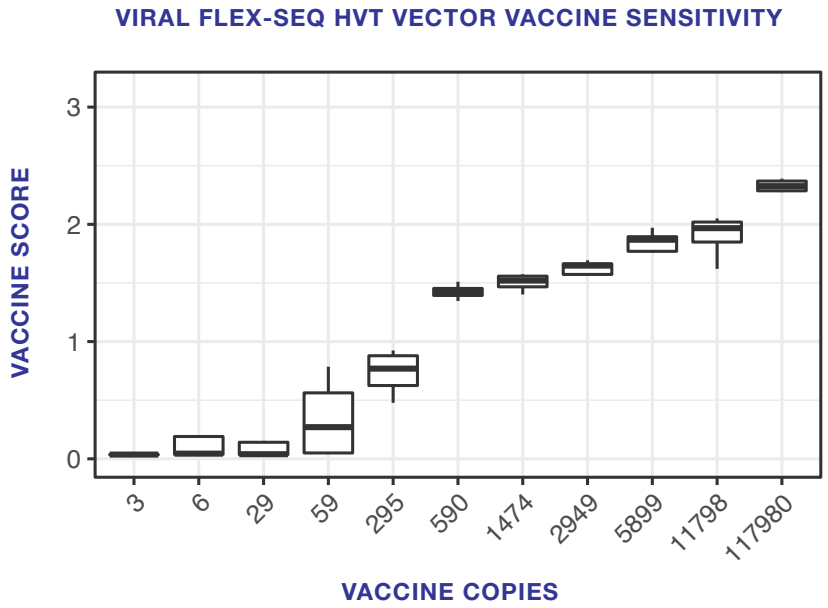

Figure 3: Detection Limits of Viral Flex-Seq: *Viral Flex-Seq's sensitivity, through the use of next-generation sequencing (NGS) technology, can detect HVT vector vaccine levels as low as 29 copies per test sample.*

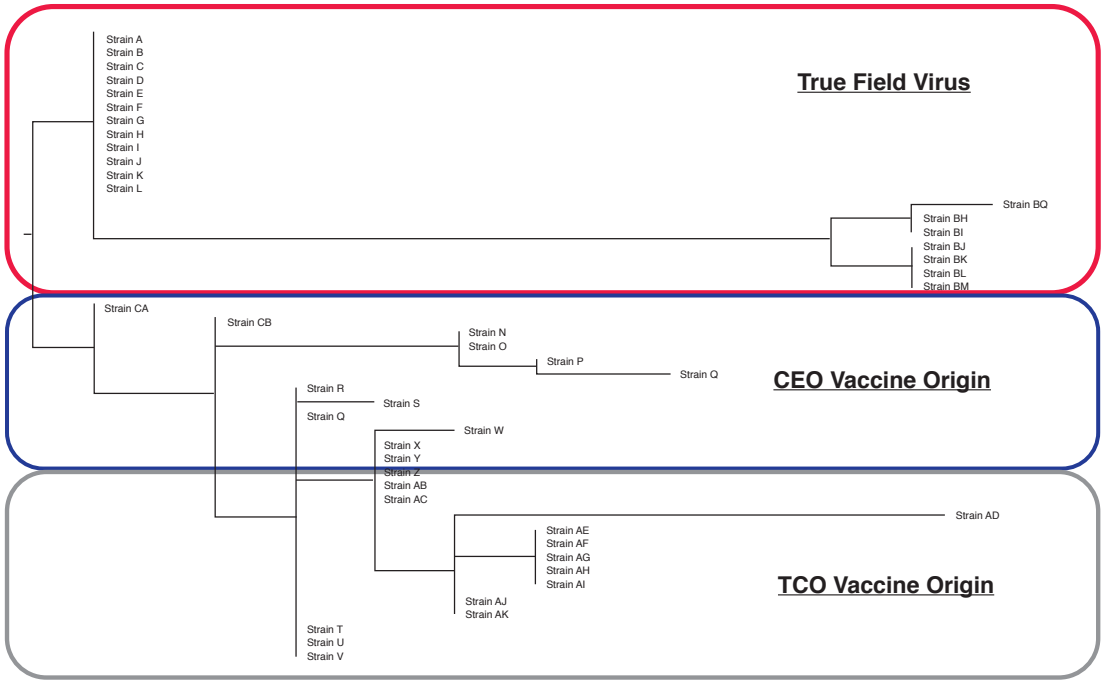

Figure 4: Example Data for Viral Flex-Seq Field Virus Test Result for ILT: An example phylogenetic tree containing reference virus genomes from public databases. Viral Flex-Seq Field Virus Test uses multiplexed testing technology to analyze a unique genetic marker profile of pathogens from diseased birds. The results are used to evaluate relatedness of the sample to true field viruses, CEO vaccines, and TCO vaccines.