



SEQUIVITY™

SEQUIVITY™ RNA PARTICLE TECHNOLOGY

Merck Animal Health – a global leader and pioneer in biologicals – is proud to deliver SEQUIVITY, an innovative and highly advanced RNA Particle Technology that's used to create flexible, safe and precise solutions to new and evolving disease challenges.

Revolutionizing vaccine production

SEQUIVITY RNA Particle Technology is used to create innovative, highly advanced vaccine solutions that are:

- Flexible
- Safe
- Precise

HOW RNA-BASED VACCINES WORK

Vaccination is key to preventing disease and has been a major advancement in protecting animal and human health. Classically, vaccines mimic infection using inactivated whole pathogens (antigens) to stimulate the immune system.

Exposing the body to antigens leads to the production of antibodies specifically directed against them. Memory cells release antibodies and other factors to enable a more rapid and efficient response the next time the cell is exposed to the antigen.

RNA vaccines, a new class of vaccines, rely on a different way to present an antigen.

For a conventional vaccine, the antigen is grown in the lab, deactivated or killed and then presented to the body. However, in the case of this revolutionary technology, an electronic gene sequence is utilized.

With SEQUIVITY RNA Particle Technology utilizes only the known gene of interest, specific to the pathogen. The gene of interest provides instructions to the dendritic (immune) cells to translate the sequence into proteins which act as antigens. Then, when presented with an actual pathogen challenge, the animal's immune system recognizes the antigen and a targeted immune response is triggered.

This remarkable technology targets specific pathogens to produce prescription customized, herd-specific vaccines against both viral and bacterial pathogens. It also gives veterinarians and producers a tool to help address specific diseases that cannot always be addressed by conventional measures.

SEQUIVITY™

WHAT MAKES SEQUIVITY UNIQUE

In a world where diseases evolve and mutate continuously, Merck Animal Health is making sure producers can address their animals' health with strain-specific vaccines.

This unique way to approach vaccine production offers a safe and innovative solution to today's herd health challenges. The Merck Animal Health proprietary RNA Particle Technology takes a genetic sequence from a targeted pathogen, isolated from an infected animal, to create a herd-specific vaccine in a matter of weeks.

In most cases, the process starts with the veterinary herd visit. A sample is collected from the infected herd and sent to a diagnostic lab where the pathogen strain's gene sequence is identified and sent electronically to Merck Animal Health. This maximizes safety and biosecurity.

After receiving the gene sequence, the gene is synthesized and inserted synthetically into the RNA production platform. After incubation, RNA particles (RP) released from the production cells are then harvested, purified and formulated into a final vaccine.

The RPs are able to enter immune cells and carry the GOI of the disease identified. Each RP targets the dendritic cells of the pig, the cells that are involved in presenting an antigen to the immune system. The pig's immune system recognizes the protein encoded by the GOI and triggers an immune response.

Because RPs are designed just to deliver the information and not to replicate themselves, safety is maximized. SEQUIVITY RNA Particle Technology also lets producers and veterinarians target multiple pathogens and farm specific strains with a single injection.

BIOLOGICALS OF THE FUTURE – AVAILABLE TODAY

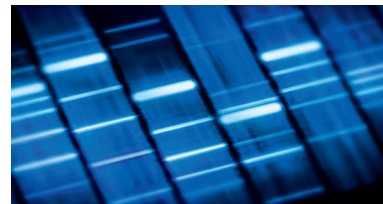
Using SEQUIVITY RNA Particle Technology, Merck Animal Health offers an innovative, safe, flexible and precise solution when herd health management requires the most advanced, tailored vaccination solutions.

Our Process

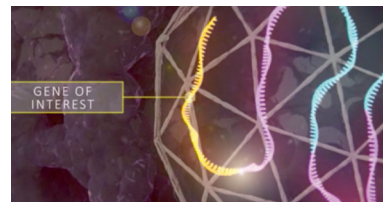
Gene of Interest = GOI
RNA Particles = RPs



1. A sample is collected and sent to the lab by a veterinarian.



2. GOI is identified and sent electronically.



3. GOI is synthesized and inserted into the RNA production platform.



4. After incubation, RNA particles released from the production cells are harvested, purified and formulated into a final vaccine.