



HEALTHIER ANIMALS, A MORE SUSTAINABLE FOOD SYSTEM

The Promise of Gene Editing



WHO IS GENUS?

We help our customers to breed healthier, more productive animals, so they can produce better meat and milk more efficiently and sustainably.

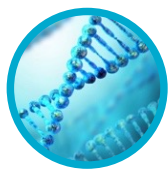
Genus partners with over 50,000 farmers globally in over 70 countries



DAIRY



PORK



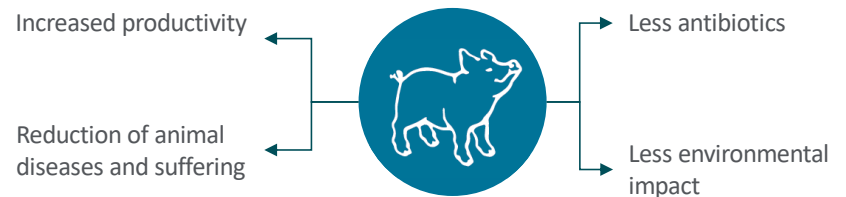
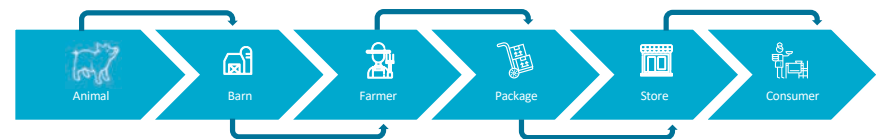
R&D



BEEF

In addition to helping customers reduce the use of feed and other resources, we are reducing the direct emissions from our operations.

We can ultimately impact the sustainability of the entire supply chain.



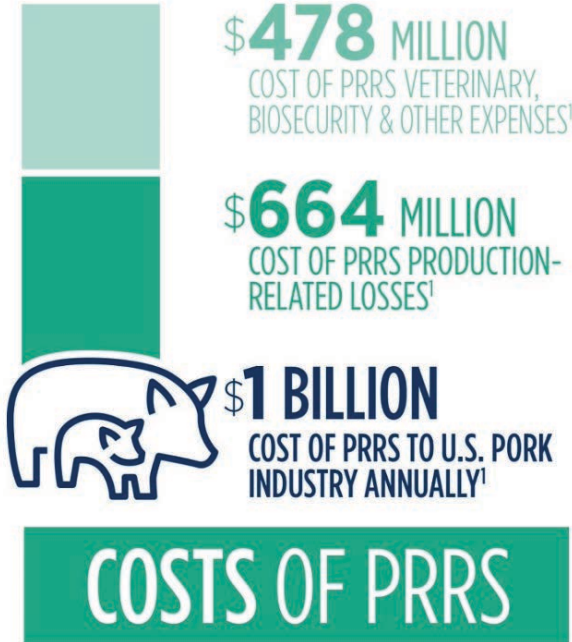
FARM ANIMALS GET SICK, SOMETIMES WITH DISEASES THAT HAVE NO CURE OR EFFECTIVE VACCINE

- **PRRSv does not discriminate.**
- It affects regardless of health status, herd size, raised indoors or outside, conventional or organic.





PRRSV IMPACT



PRRSv affects adults and young pigs:

- Reproductive failure (abortions, early farrowing, decreased litter size)
- Fever, loss of appetite (mortality of 20%)
- Weakened immune system – Prone to other bacterial and viral pathogens, requiring antibiotics

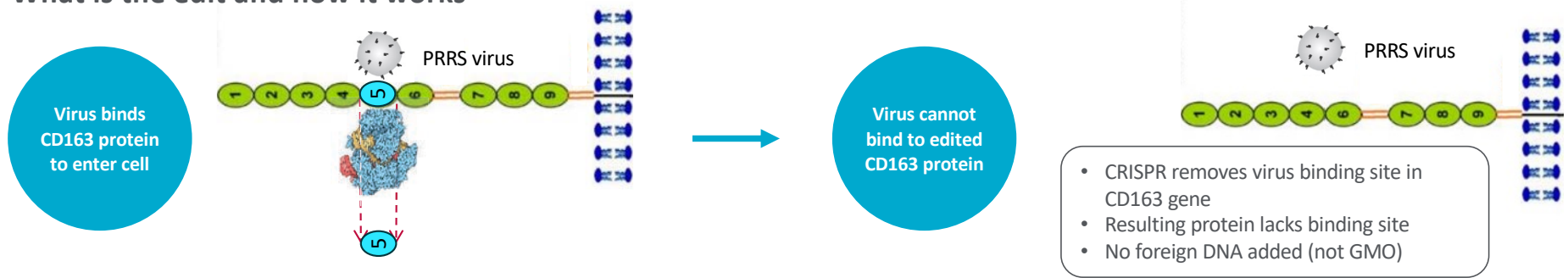
THE GOOD NEWS

We can now eliminate PRRSv in pigs by harnessing, targeting and deploying the same technology used in human medicine to fight previously incurable diseases.

This gene editing technology (CRISPR-CAS) is based on how bacteria naturally fight viruses

HOW DOES THE EDIT WORK?

What is the edit and how it works



In-house capabilities



GENUS AND GENE EDITING (CRISPR-CAS)

WHAT IT IS

- ✓ No addition of DNA from a foreign species
- ✓ “Turning Off Genes” in animal’s DNA that make it susceptible to disease
- ✓ Focused on making animals healthier
- ✓ Focused on eradicating diseases with no cure

WHAT IT ISN'T

- ✗ Transgenic—no foreign DNA
- ✗ Used for human amusement (designer animals)
- ✗ Used to allow animals to withstand harsh conditions or allow for abuse

GENUS FIRST GENERATION LIVE ANIMAL DISEASE CHALLENGES ARE SUCCESSFUL

Created two groups of animals – edited and control group

Infected both groups of animals with European & Asian PRRS variants

Measured infection of pigs (through viral replication & antibody response) over 21 days¹

Evaluate PRRS edit stability across generation...

40 animals in trial



Unedited pig

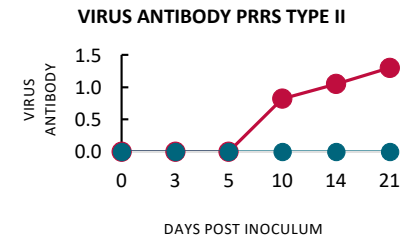
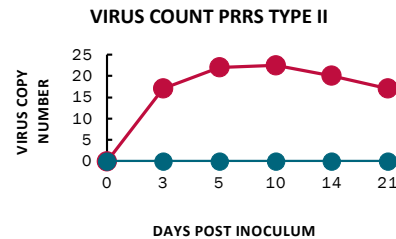
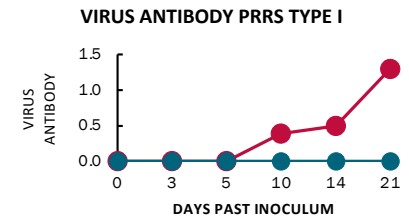
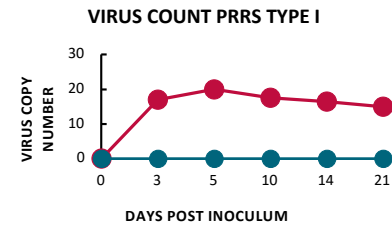


Edited pig

Animals infected with prevalent PRRS virus types

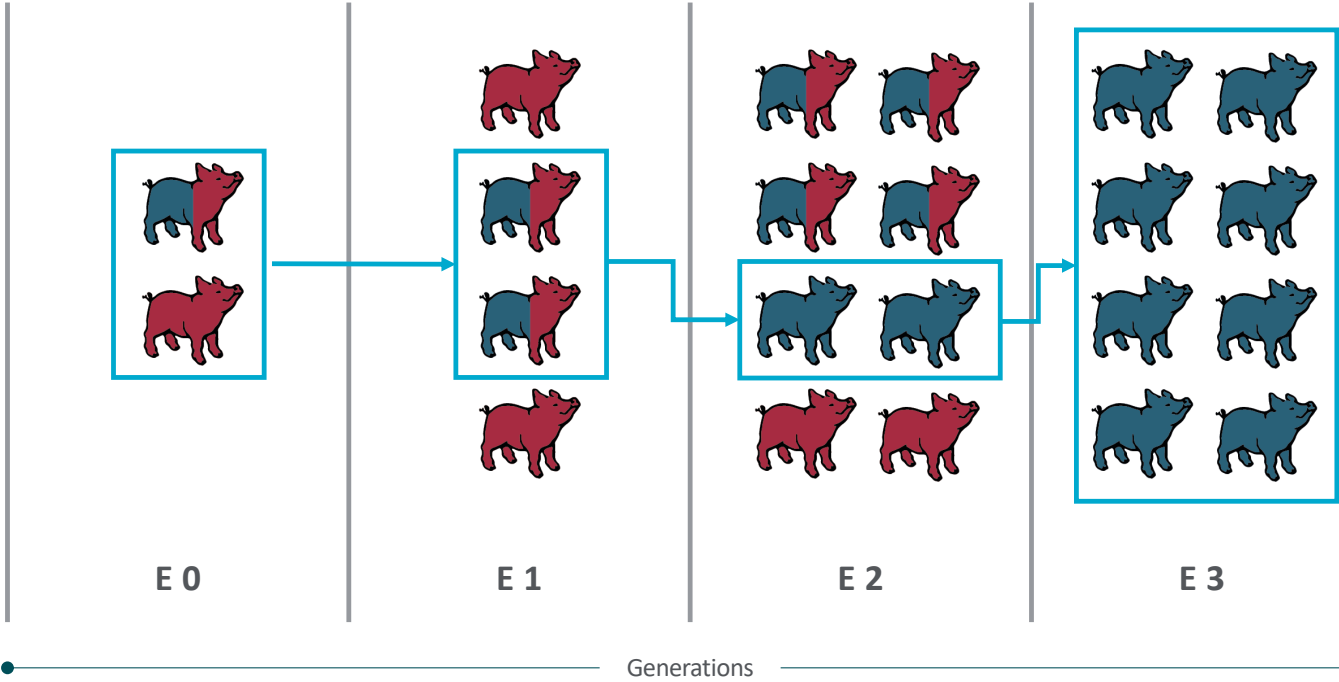
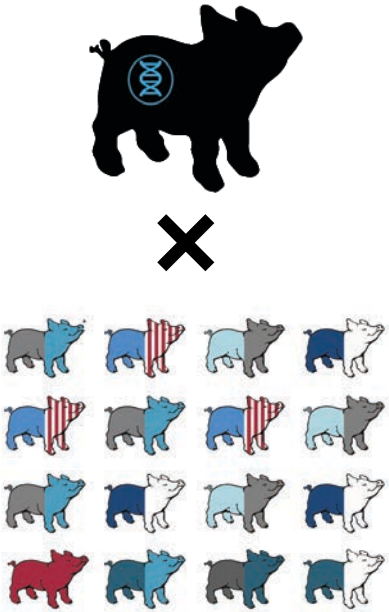
- Type I - US, European
- Type II - US, Asian

Our first generation edited pigs showed 100% resistance in our official disease trials – the PRRS virus was not able to bind to the host pigs, and hence the pigs developed no antibodies



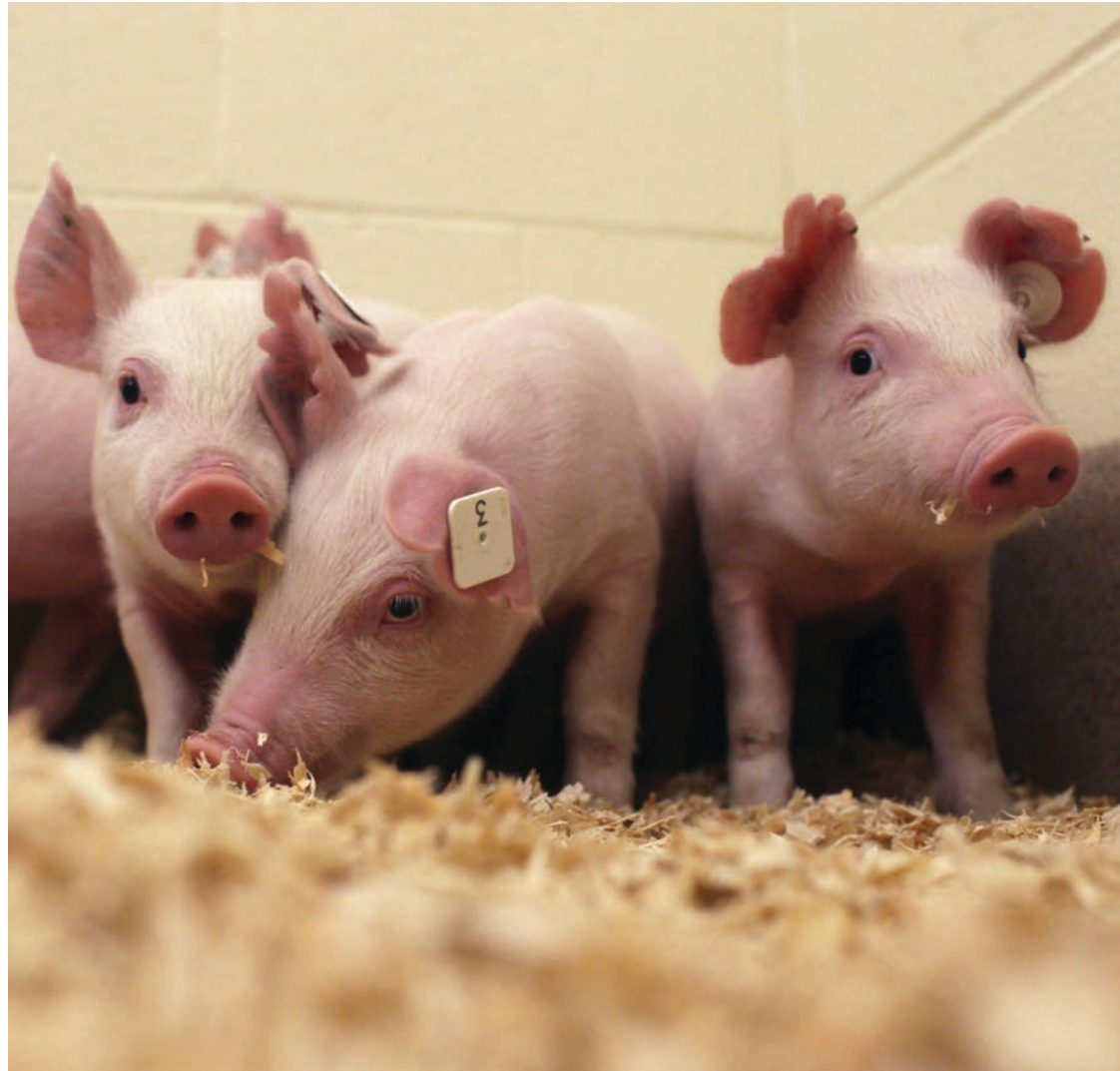
(1) Virus copy number relates to Inverted Cycle Threshold (Ct) Value
Antibody number relates to S/P Fluorescence Ratio

SIMPLIFIED BREEDING TO HOMOZYGOUS



LITTER OF PRRSV RESISTANT PIGLETS

- Not gene edited animals
- Born with inherited disease resistance

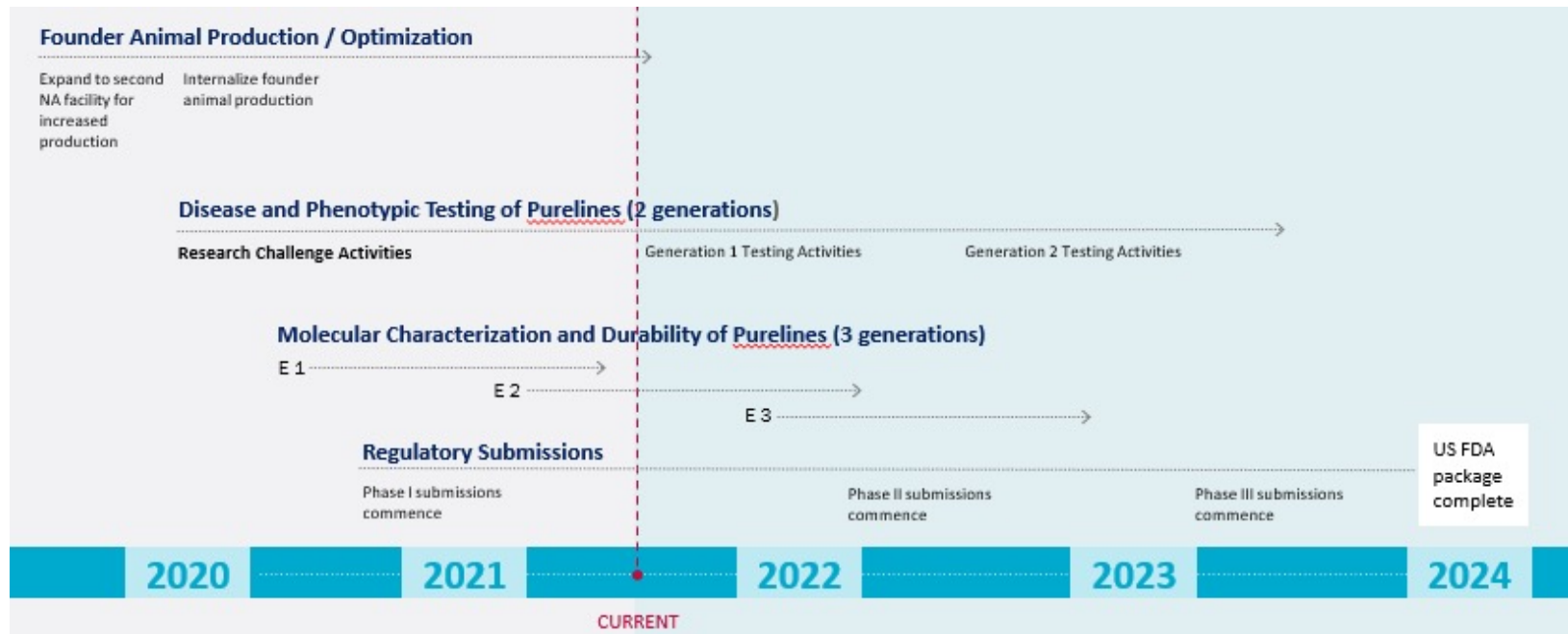


HERITAGE PORK: A DISEASE-RESISTANT LEGACY

- They are at least five generations removed from the pigs that were gene edited for disease resistance
- They inherit the trait for disease resistance through normal breeding
- They are identical, except for disease resistance, to other pigs



THE PATH TO COMMERCIALIZATION IN 2024



We are now multiple generations into animal production and working with regulatory authorities in the US (FDA) and China (MARA) to enable commercialization and global trade.

In addition, active conversations are on-going to advance regulatory approval and market acceptance in Japan, Mexico and Canada.



GENUS' GENE EDITING ETHICAL COMMITMENTS

Genus has adopted a series of ethical commitments to guide our use of new breeding approaches, such as gene editing, in today's research and tomorrow's potential innovations and products.

GENE EDITING ETHICAL COMMITMENTS

Genus is a world-leading animal genetics company that—through our PIC and ABS businesses—produces genetic lines of pigs and cows for farmers, small and large, around the world to be raised for meat and milk. We've used traditional breeding methods for more than 60 years to accomplish this goal. Our research in gene editing, which can accelerate efforts to eradicate diseases, is a natural progression in our business.

In the company's use of gene editing, both in today's research and tomorrow's potential commercialization, we stand by the following commitments:

- TRANSPARENCY**
Genus will provide information to our customers, partners and consumers about our use of gene editing. We will collaborate with our food system partners to create a process that makes information transparent to the public.
Specifically:
 - We will actively seek out opportunities to engage with the public regarding questions or information about our research into developing disease resistant animals from gene editing.
 - We will provide clear disclosure to our customers and partners of any use of gene editing in the animals or the offspring of animals they purchase from Genus.
 - We will seek out opportunities to publish scientific papers and research results of our work in gene editing.
- HUMAN HEALTH COMES FIRST**
Genus will monitor disease resistant animals from gene editing to identify any potential safety concerns.
 - We will conduct testing for many years before potential commercialization.
 - We will test to examine any potential for the introduction of human allergens or other risks.
 - We will test to make sure that meat from any animal entering the food system is nutritionally equivalent to, or more nutritional than, meat from other farm animals.
- MONITORING FOR UNINTENDED CONSEQUENCES**
Consistent with regulatory guidance, Genus will implement a monitoring system for any commercialized animals to ensure ongoing oversight of disease resistant animals from gene editing.
 - As part of our regular business operations, we continually test new generations of pigs and cows to ensure they carry only desirable traits and not any unexpected ones.
- ENVIRONMENTAL STEWARDSHIP**
Genus strives to use gene editing to improve environmental stewardship. We strive to produce animals that will lessen environmental impact through solutions like the reduced need for antibiotics or the ability to produce less waste in our food system. We will not introduce animals that create a heavier burden on the environment when raised for food.
- REGULATORY COMPLIANCE**
Genus will partner and comply with all government regulations related to farm animals and gene editing. We will comply with all FDA testing and safety requirements.
- DISEASE RESISTANCE FOCUS**
Genus strives to use gene editing to make animals healthier.
 - We target the use gene editing to prevent or treat animal disease or to reduce animal suffering.
 - We will not use gene editing technology for human entertainment or recreation.
- THIRD PARTY OVERSIGHT**
Genus will seek independent third-party validation to certify our testing and scientific study results before bringing any animal from gene editing to commercialization.

FRAMEWORK FOR RESPONSIBLE GENE EDITING IN AGRICULTURE

HELPING TODAY'S FOOD SYSTEM
EARN CONSUMER TRUST



BUILDING TRUST IN GENE EDITING IN
FOOD AND AGRICULTURE



HELPING TODAY'S FOOD SYSTEM
EARN CONSUMER TRUST





THANK YOU