

Pioneering animal genetic improvement
to help nourish the world

Taking PRRS virus resistant pigs through regulatory approvals

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About Genus

A world-leading animal genetics supplier for 85 years



Pioneering animal genetic improvement to help nourish the world

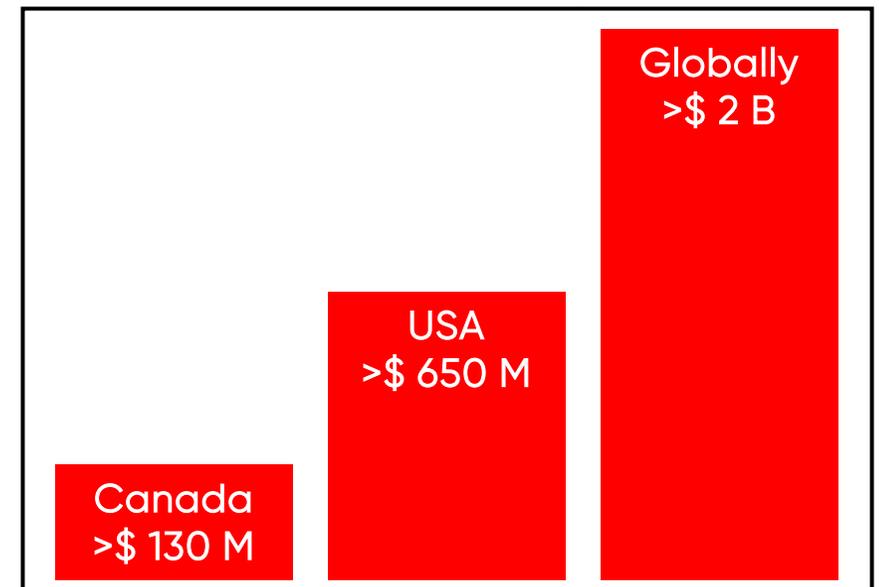
What is PRRS?

Porcine Reproductive & Respiratory Syndrome is a devastating and costly disease in pigs

First recognized in the U.S. in 1987, PRRS is now found in pig production facilities worldwide

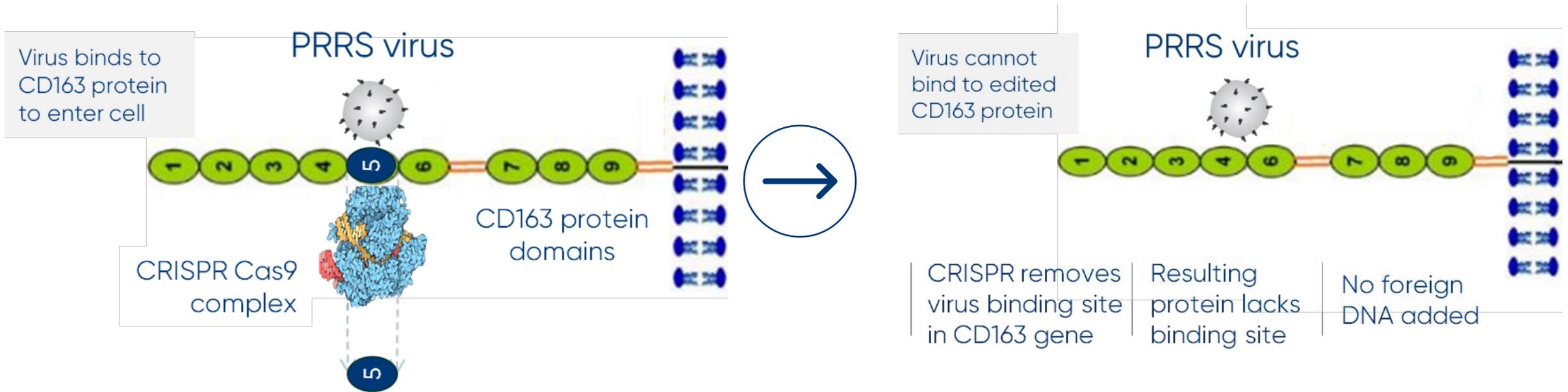


PRRS Annual Impact

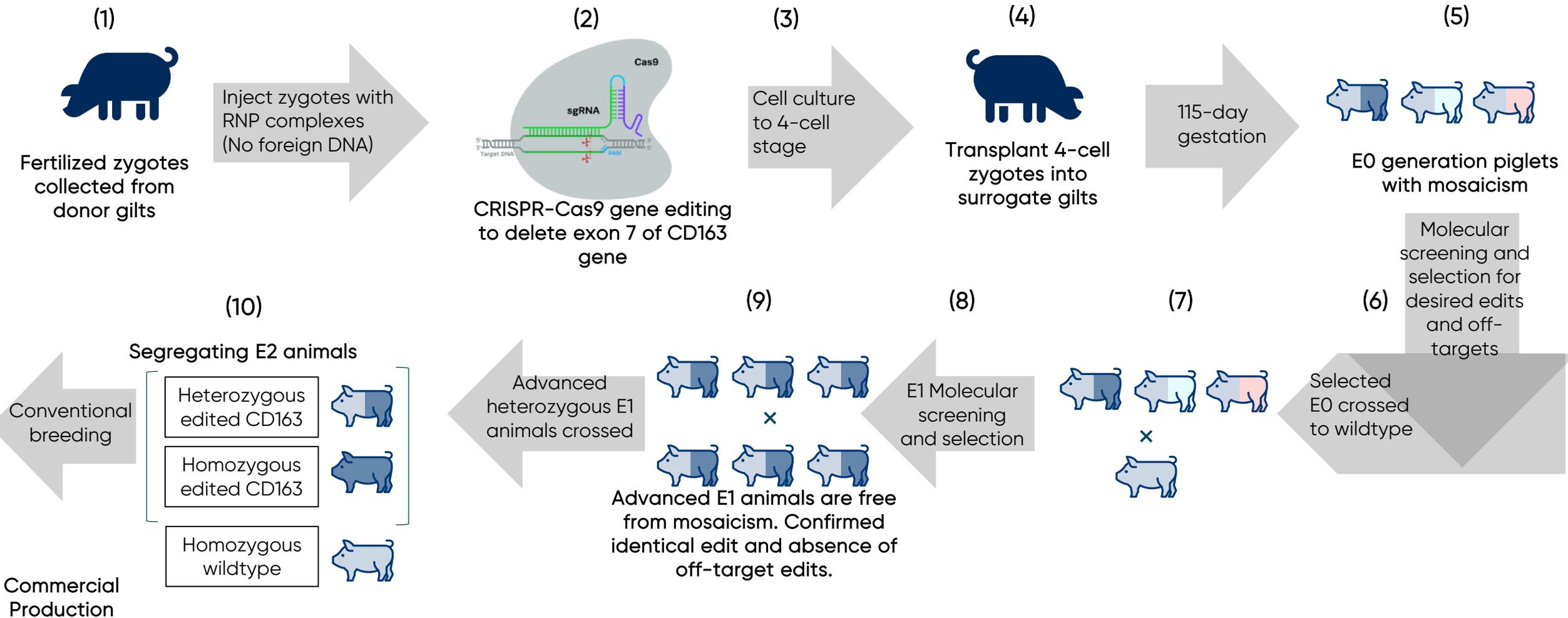


How our gene edit works

Removing the viral binding site without adding any genetic material

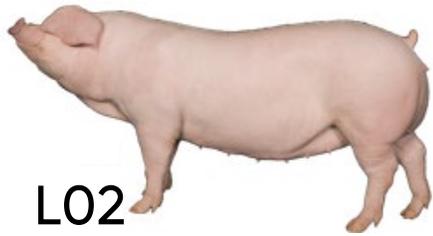


Creation of intended edits and selection for absence of off-target edits

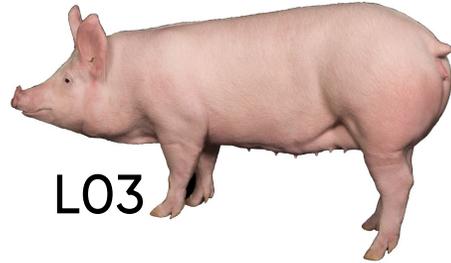


Source: Adapted from Cigan and Knap (2022) *CABI Agriculture and Bioscience*, 3:34.

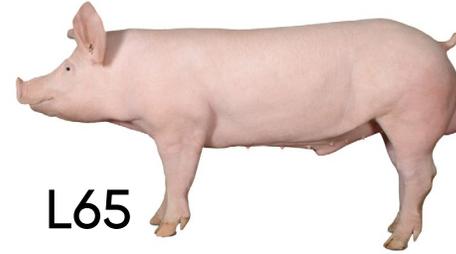
Creation of a commercial population



L02



L03



L65



L800

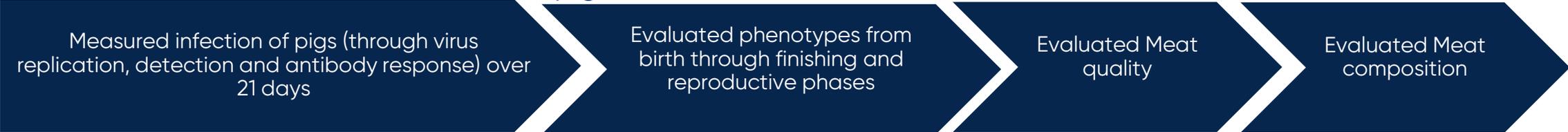
- CD163 edit in four lines (2 dam, 2 sire lines)
- Identical edits in many individual pigs of each line
 - Screening for correct edits and removal of off-targets in E0-E2
 - Phenotypic characterization of a representative subset
- Faster commercial scale-up and prevents bottleneck in genetic diversity

Gene-edited pigs were evaluated for efficacy, performance and meat quality and composition

Gene edited pigs are resistant to PRRS virus strains representing lineages currently circulating in the US

Gene edited pigs perform identically to non-edited pigs

Meat from gene edited pigs is identical to meat from non-edited pigs



PRRS type	Lineage/Strain	Edited	Non-edited
I	SD13-15	No infection	Infection
I	SD01-08	No infection	Infection
II	L1C-144	No infection	Infection
II	L1H-184	No infection	Infection
II	L1A-174	No infection	Infection
II	L1E-142	No infection	Infection
II	L8-NVSL97	No infection	Infection

Key Traits ²	Sire Line	Dam Line
Birth weight	✓	✓
Teat count	✓	✓
Key Traits	Sire Line	Dam Line
Weight @ 140 days	✓	✓
Lifetime daily gain	✓	✓
Carcass health	✓	✓
Key Traits	Sire Line	Dam Line
Gestation length	✓	✓
Total born	✓	✓

Key Traits ²		Key Traits	
Hot carcass weight	✓	Protein %	✓
Muscle pH	✓	Amino acids	✓
Marbling	✓	Fat	✓
Colour (redness)	✓	Vitamins	✓
		Minerals ⁷	✓
		Moisture %	✓

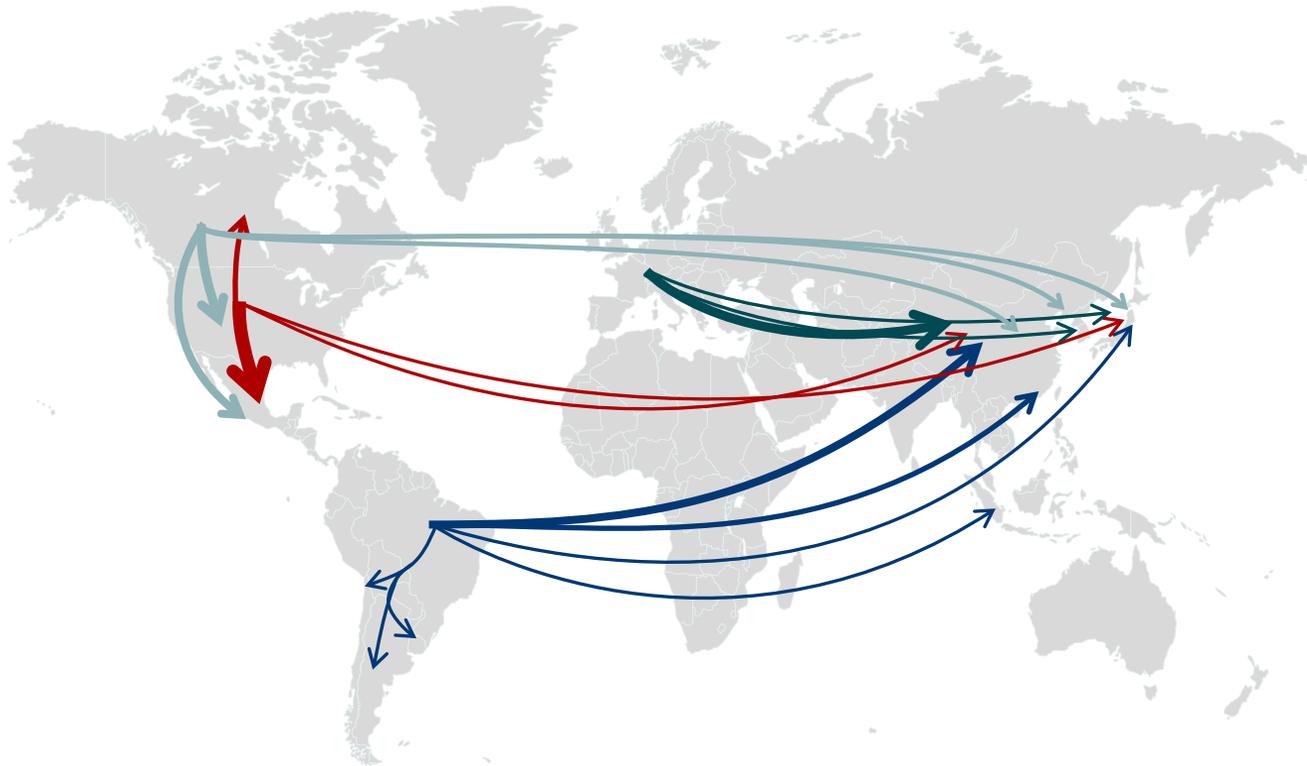


¹ All claims about safety and efficacy of PRP are currently being evaluated by the US FDA;

Global pork trade flows require a global perspective

We are committed to deploying PRRSV-resistant pigs transparently and responsibly

Major Pork Export Flows



Targeting countries that produce and/or import substantial amounts of pork and have clear regulatory pathways

Countries that do not export significant quantities of pork may be quicker to commercialise following regulatory approval (e.g. Colombia, China & Japan)

Targeting widespread technology adoption to minimise pork trade disruption & maximize benefit to the global pork value chain

FDA regulatory process nearing completion

2021

Phase I - Product Claim and Methods

- | | |
|--|------------------------|
| 1. Product Definition | Submitted and accepted |
| 2. Molecular Characterisation of Altered DNA | Submitted and accepted |

2022

Phase II - Molecular Characterization

- | | |
|---|------------------------|
| 1. Molecular Characterization of Edited Animals | Submitted and accepted |
|---|------------------------|

2023 - 2024

Phase III - Animal Characterization

- | | |
|--------------------------------|------------------------|
| 1. Phenotypic Characterization | Submitted and accepted |
| 2. Phenotypic Durability | Submitted |
| 3. Genotypic Durability | Submitted |
| 4. Food Safety | Submitted and accepted |
| 5. Environmental Safety | Submitted |



Global regulatory submissions

Other geographies will be pursued as regulatory frameworks develop



Colombia positive determination – 2023



Brazilian positive determination - 2024



Regulatory submissions in Canada - 2024



Regulatory submissions in Japan - 2024



Regulatory environment developing; regulations on gene-edited animals published
Obtained approval for import of PRRSv resistant pigs for in-country assessment



Identifying a path for positive determination or approval in Mexico