

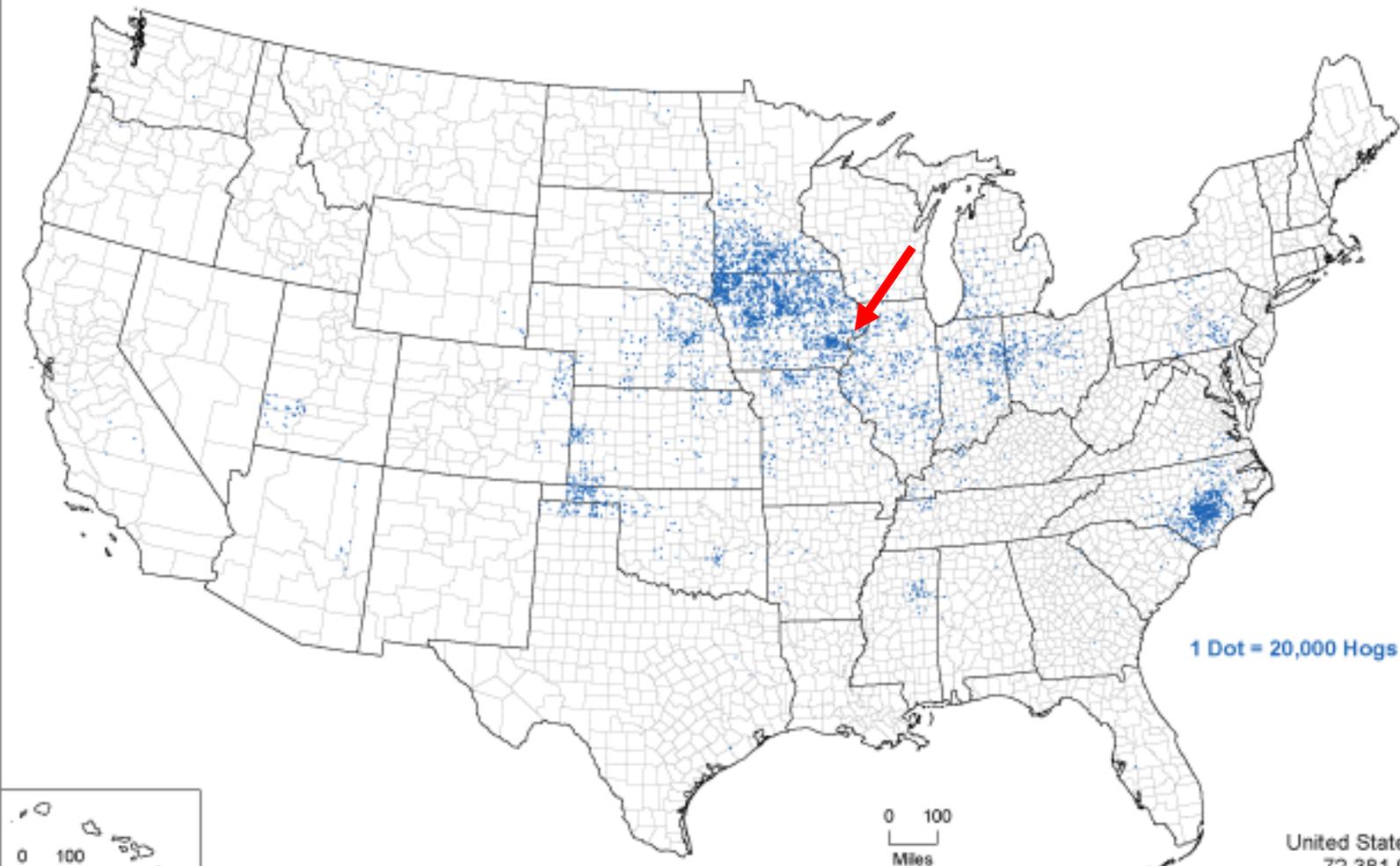
Genomic selection and trait
discovery:
a pork producer perspective

Mike Paustian

Hogs and Pigs - Inventory: 2017



2017 Census of Agriculture



1 Dot = 20,000 Hogs and Pigs



17-M211
U.S. Department of Agriculture, National Agricultural Statistics Service

United States Total
72,381,007

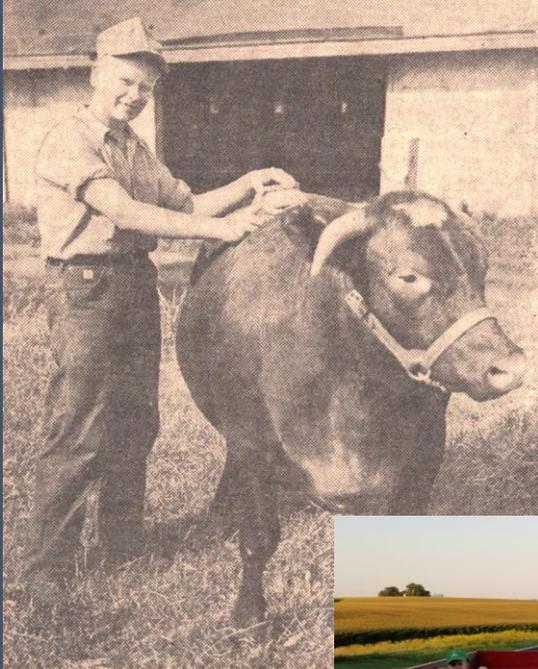
Iowa agriculture

- 85% of Iowa's total land is used for agriculture
- Average farm size is 355 acres
- 5,400 pig farms
- 48 million hogs marketed annually (#1 USA)
- 2.5 billion bushels of corn (#1 USA)
- \$10.3 billion agriculture exports (#2 USA)

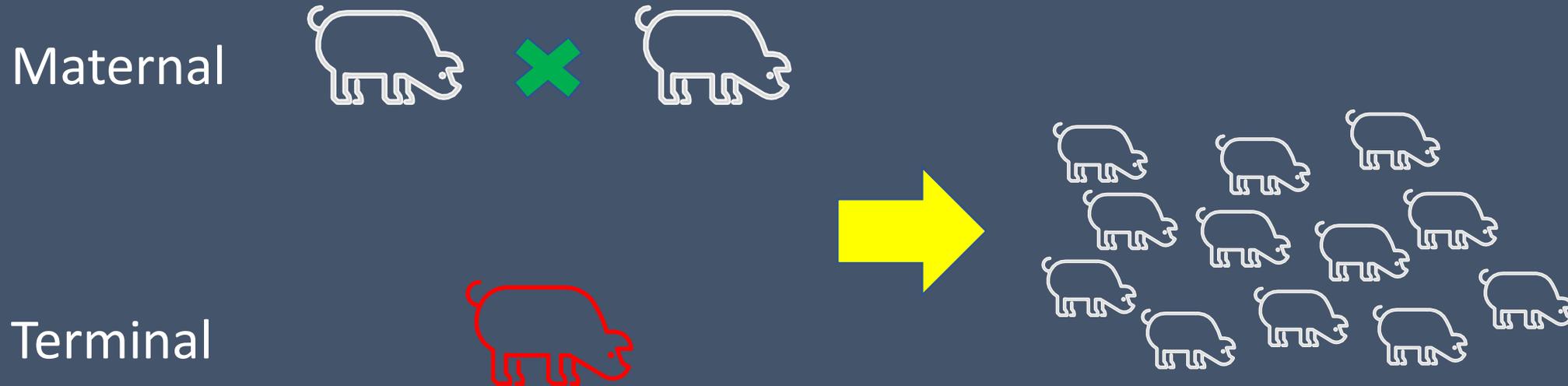




Seven generations of change



Genetic lines on production farms



Swine breeding: core selection traits

- Average daily gain
- Feed conversion
- Mortality



Swine industry challenges

- Disease
- Sustainability
- Welfare
- Antibiotic usage

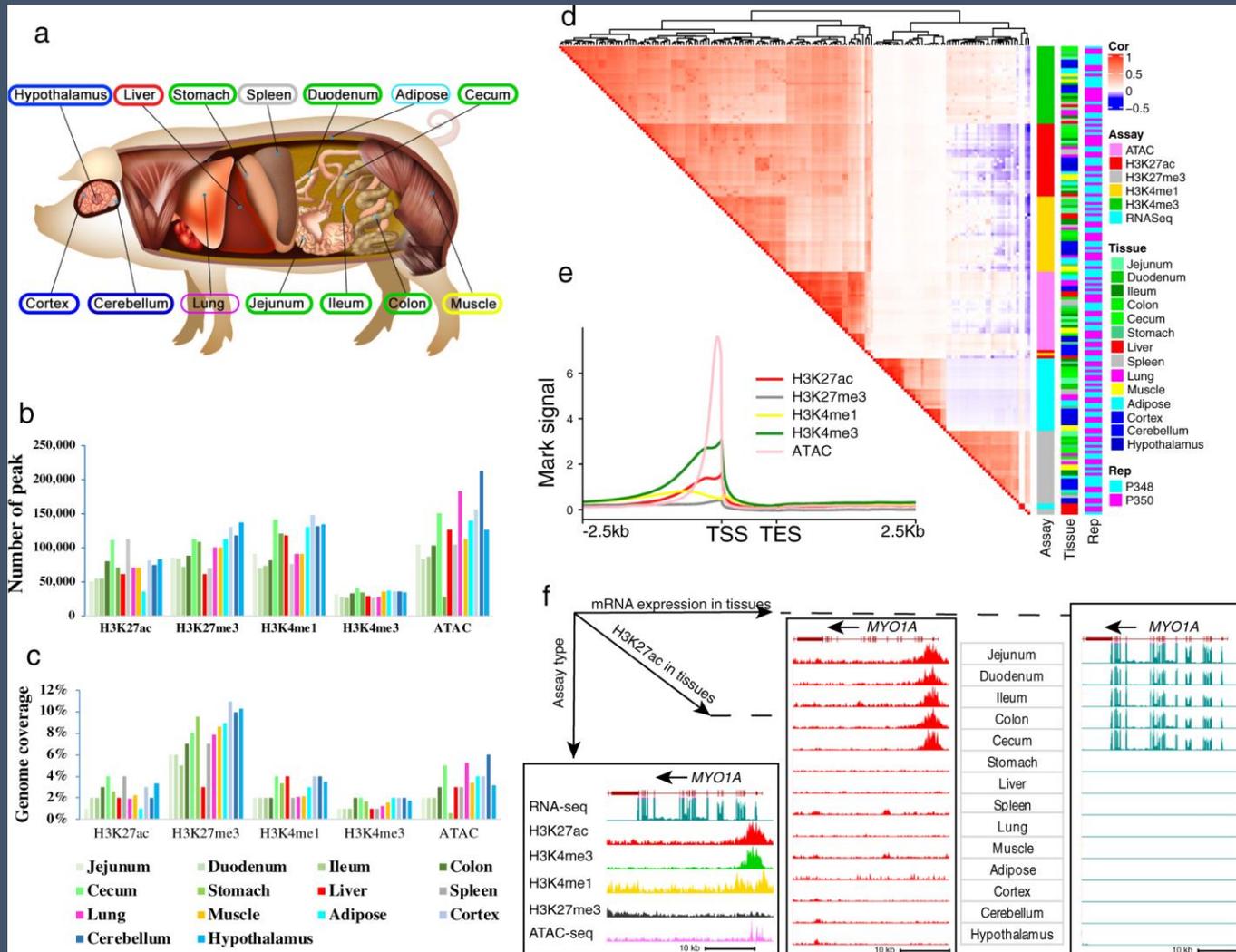


Swine breeding: additional traits

- Heat tolerance
- Disease resistance/resilience
- Behavior
- Meat quality
- Nutrient utilization



Functional annotation



Source: Pan et al, Nature Communications 12:5848 (2021)

Global markets



Country	2021 pork exports (million USD)
China	1,698
Japan	1,694
Mexico	1,675
Canada	952
South Korea	557
Colombia	258
Philippines	204
Australia	197
Dominican Rep	151
Honduras	115
All others	607

Source: US Census Bureau Trade Data

Summary

- Rapid genetic progress desired
- New traits needed
- Trade considerations
- Regulation based on type of modification

