

# Beef from Dairy: The role of genetic improvement in creating greater integration between our dairy & beef industries

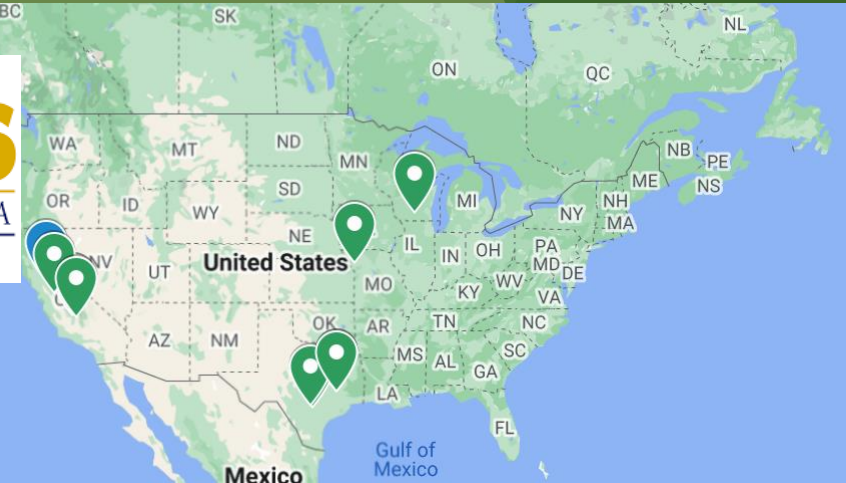
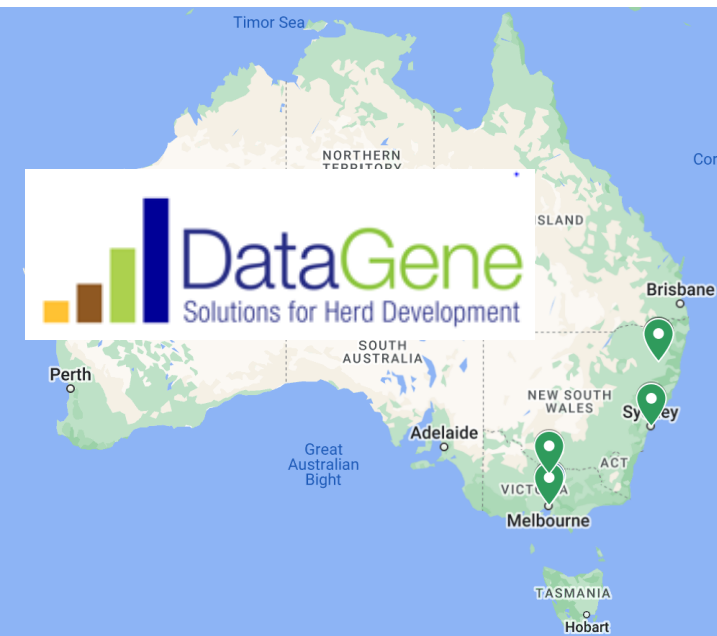
ICAR Brian Wickham Young Persons' Exchange Program Presentation

*Toledo, Spain 24<sup>th</sup> May 2023*

**Dr Jo Newton**

*Agriculture Victoria, AgriBio, Centre for AgriBioscience*  
Project Mentors: Matt Shaffer & Andrew Cromie





6 countries  
85+ interviewees





# Beef from dairy: a dairy origin animal entering the beef supply chain



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# Genetic improvement

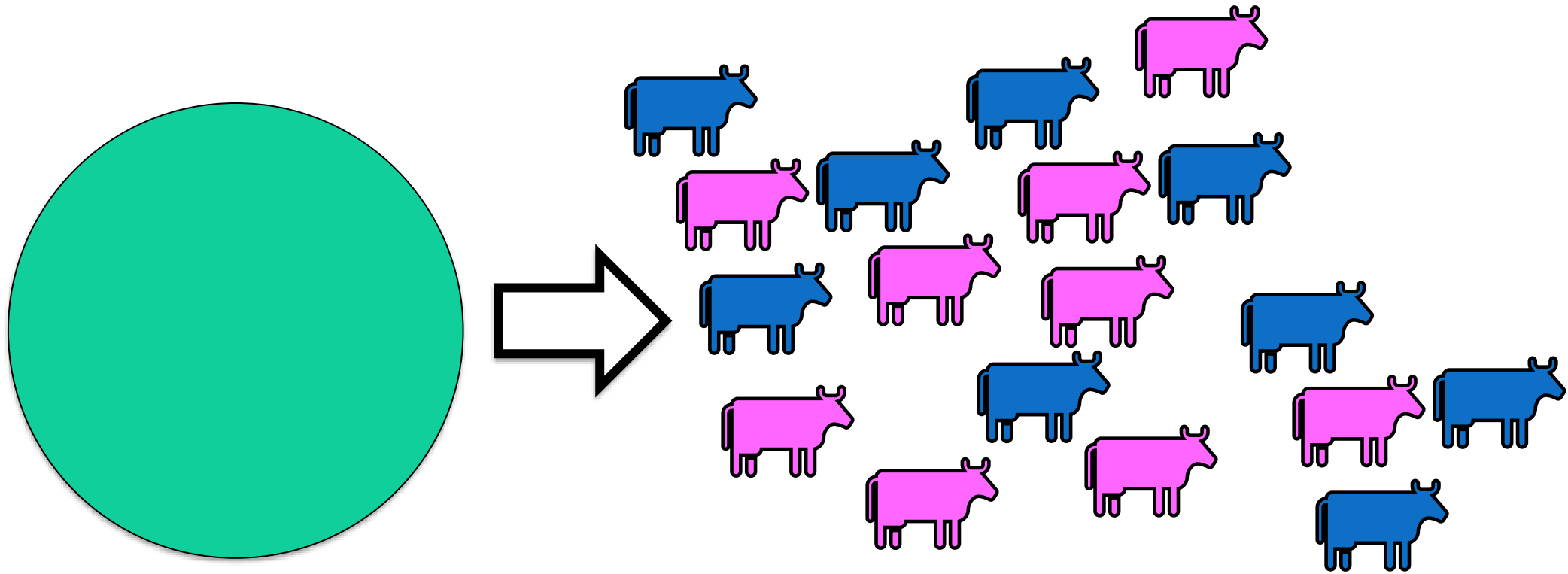
Improvement of genetic merit through selection

Tools

Traits

Decision  
making

Using conventional dairy semen 50% of calves are low value male dairy calves

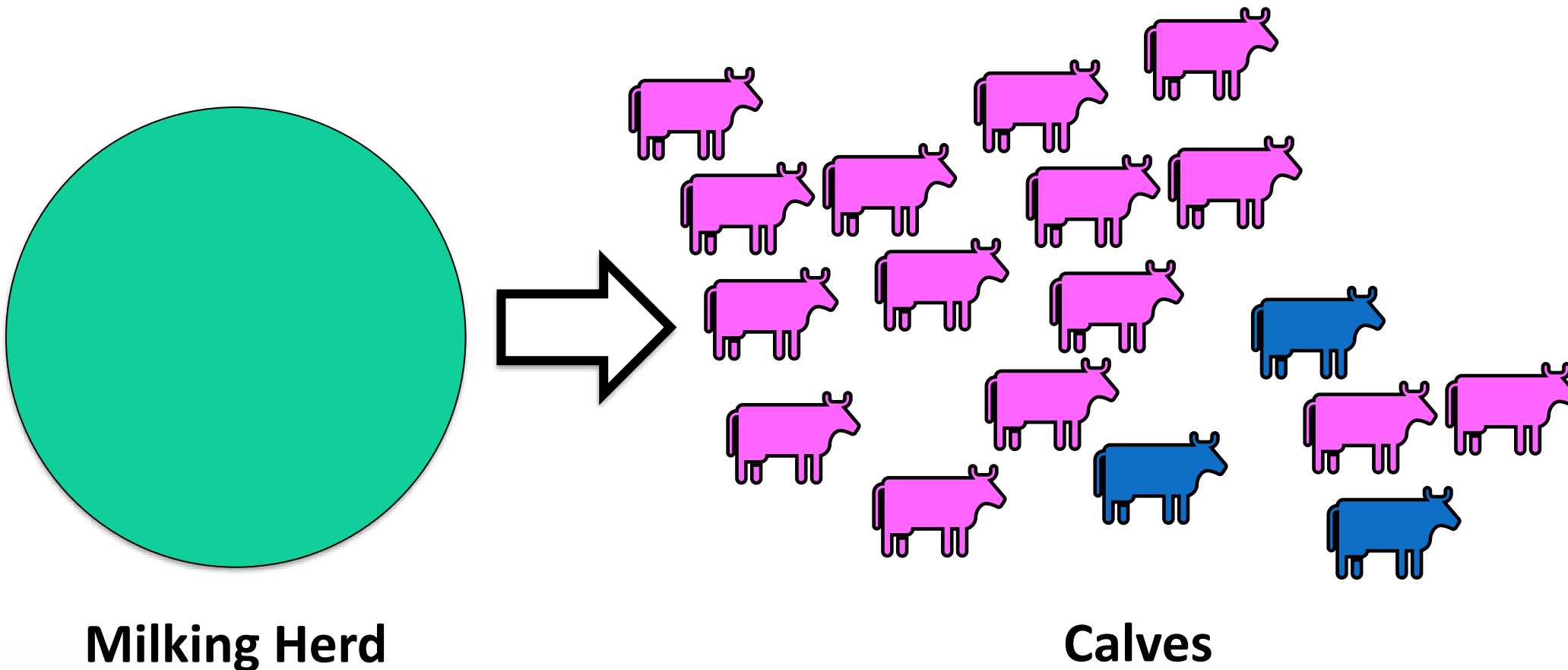


Milking Herd

Calves

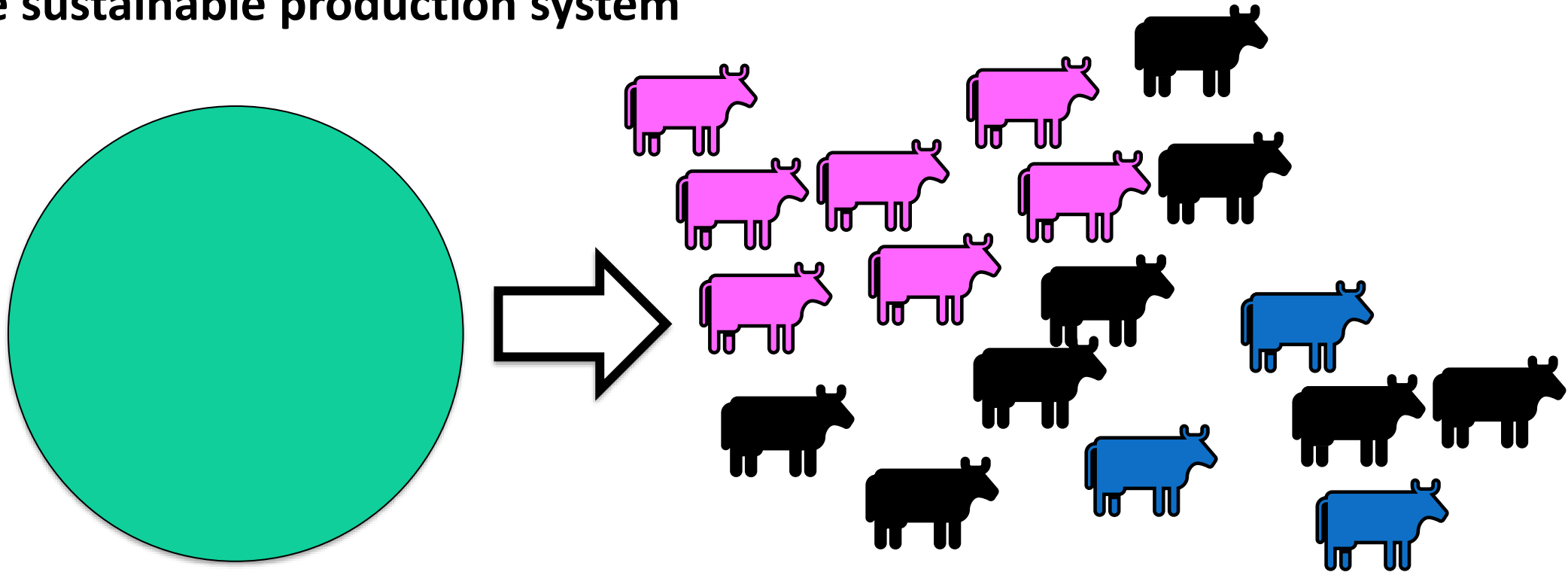


# Sex-sorted (sexed) dairy semen reduces male dairy calf numbers



## Use of beef genetics

- higher value non-replacement calf
- control replacement numbers
- more sustainable production system



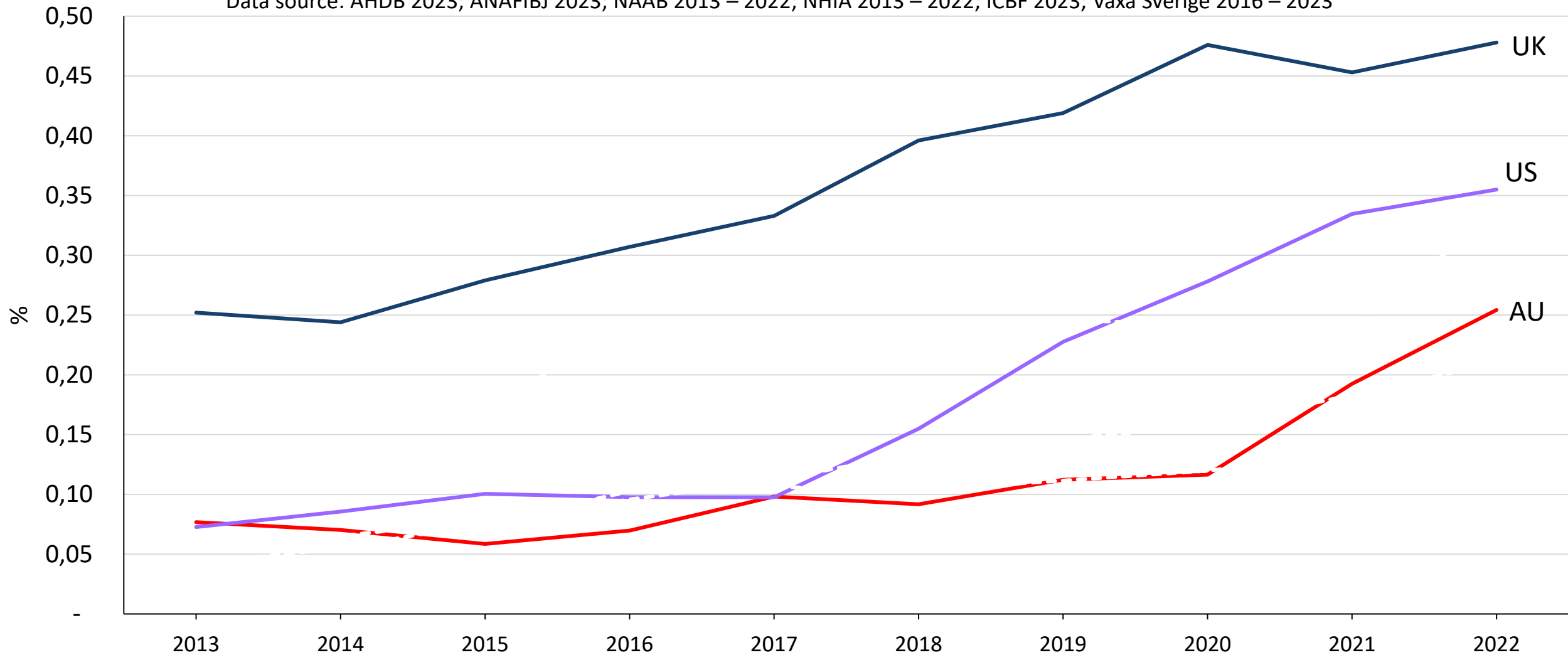
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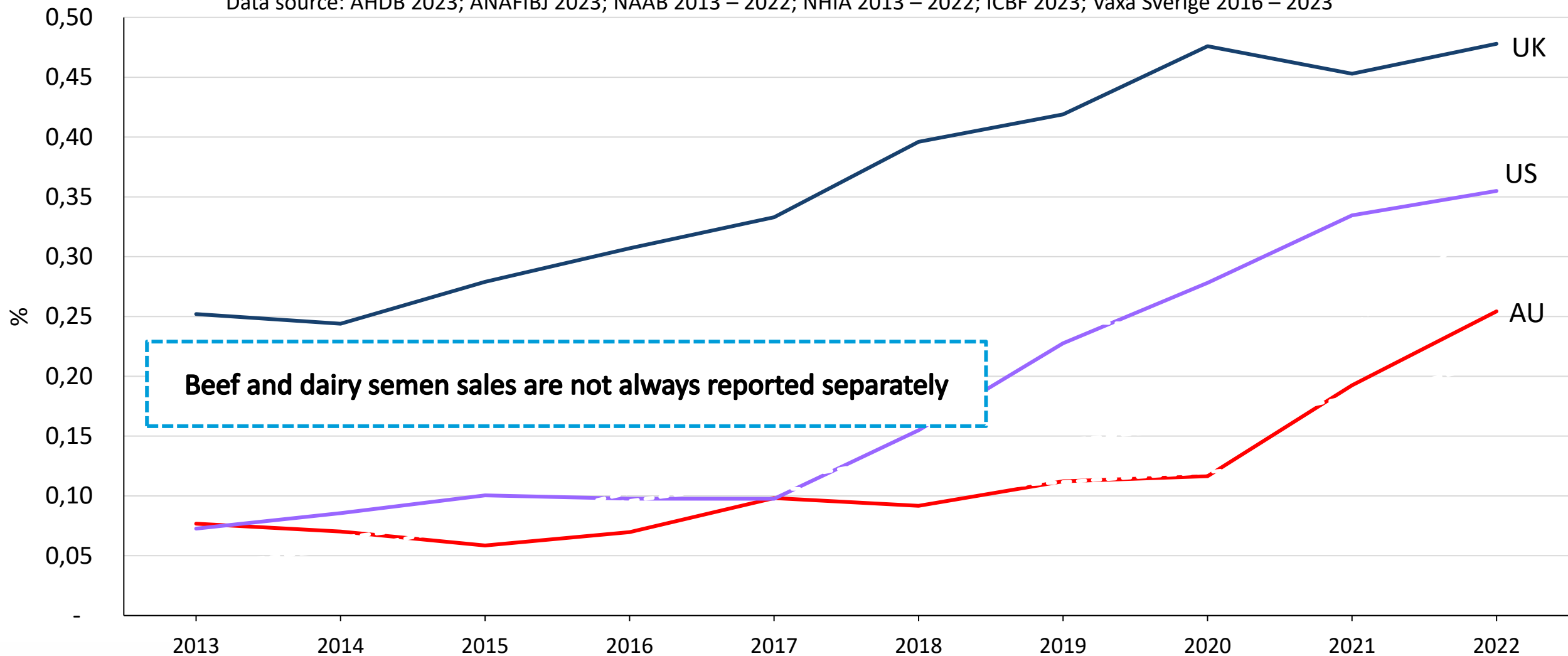
# Proportion of semen sales\* that are beef

Data source: AHDB 2023; ANAFIBJ 2023; NAAB 2013 – 2022; NHIA 2013 – 2022; ICBF 2023; Växa Sverige 2016 – 2023



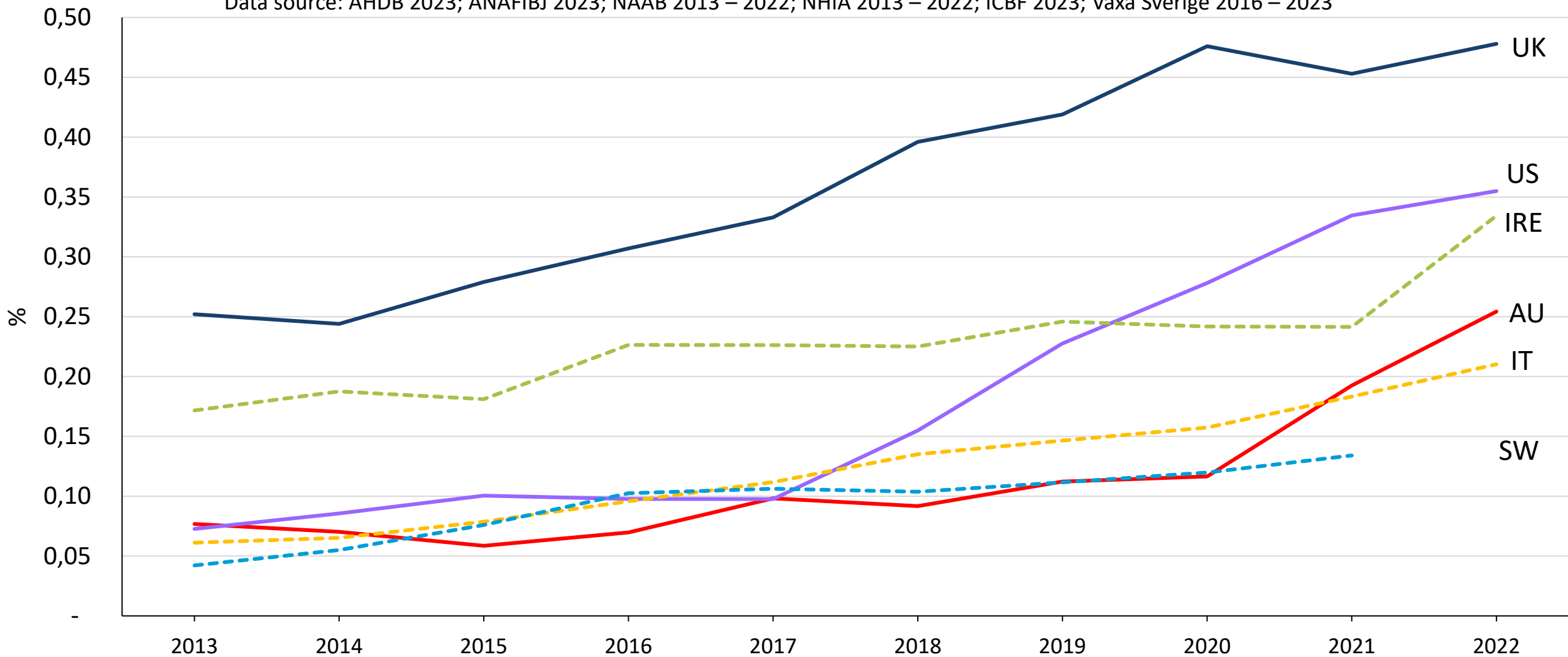
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# Proportion of semen sales\* or inseminations^ that are beef is increasing

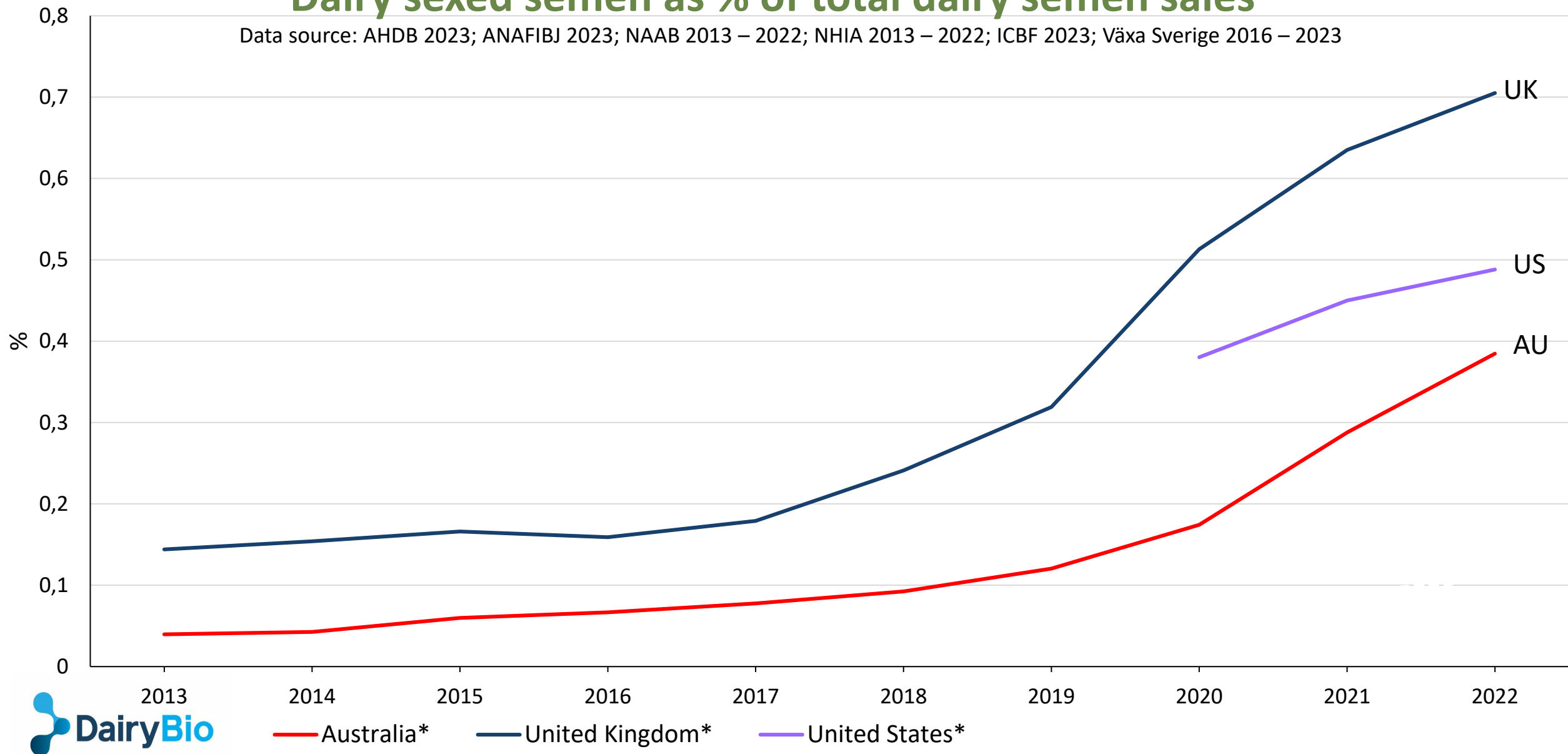
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— Australia\*    — United Kingdom\*    — United States\*    - - - Ireland^    - - - Italy^    - - - Sweden^

# Dairy sexed semen as % of total dairy semen sales\*

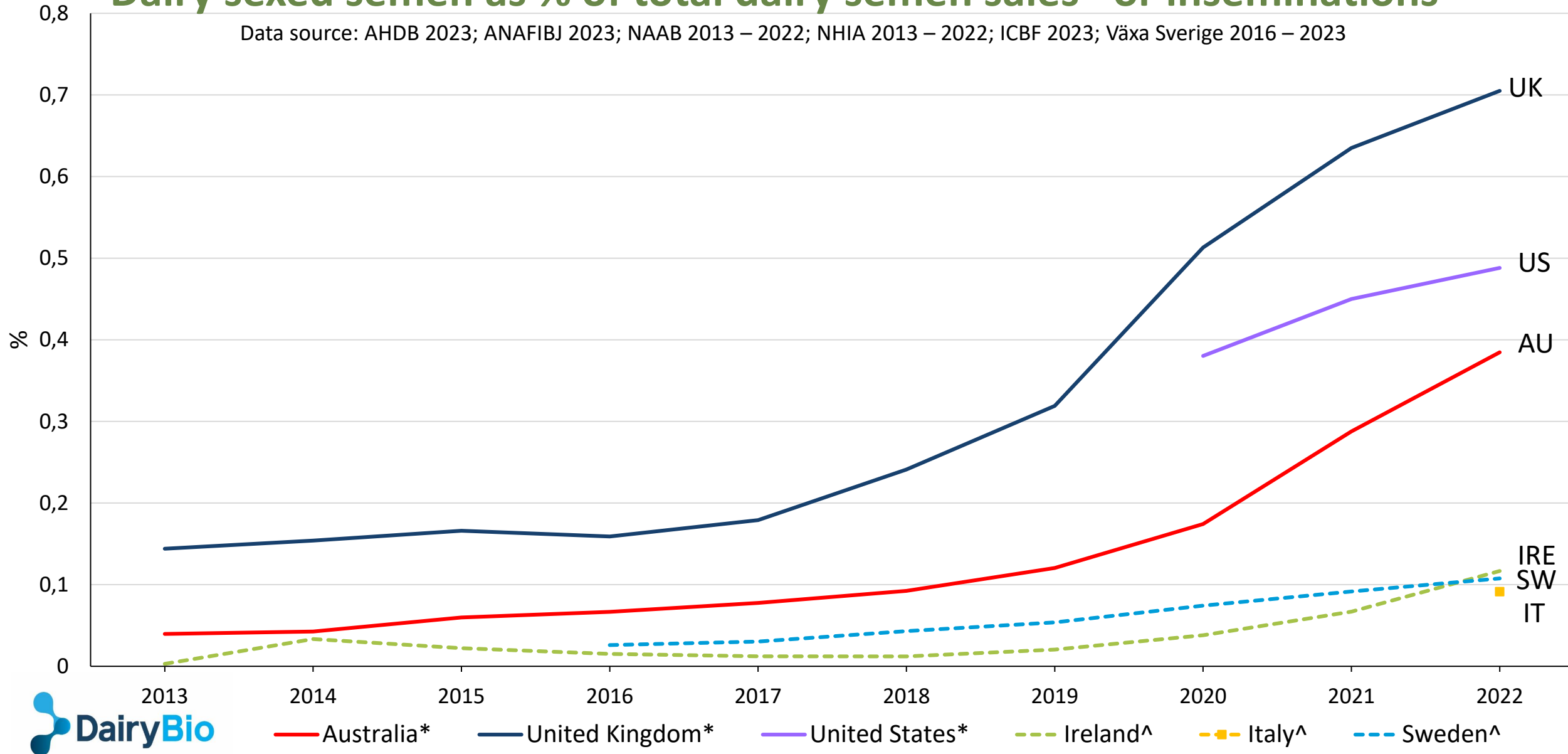
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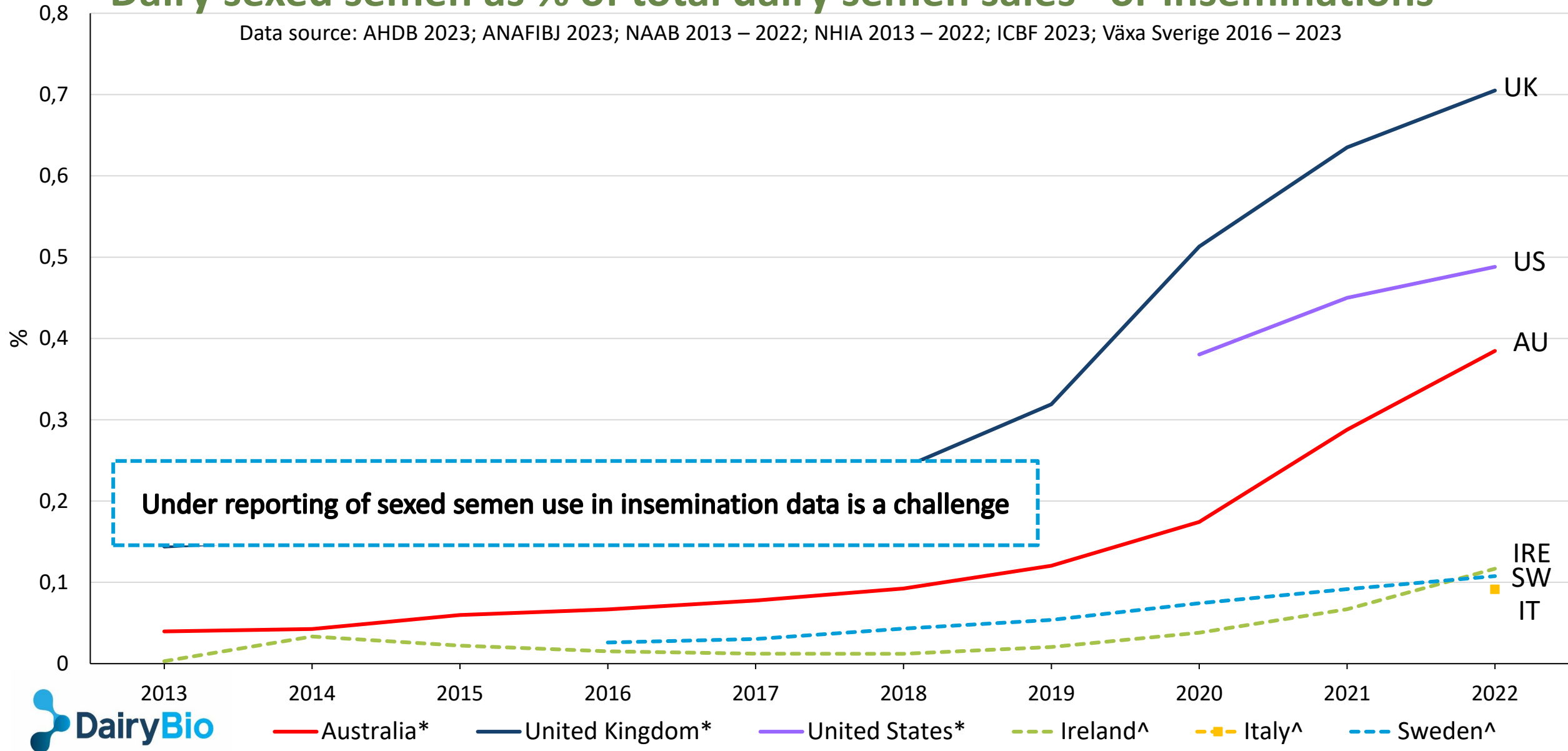
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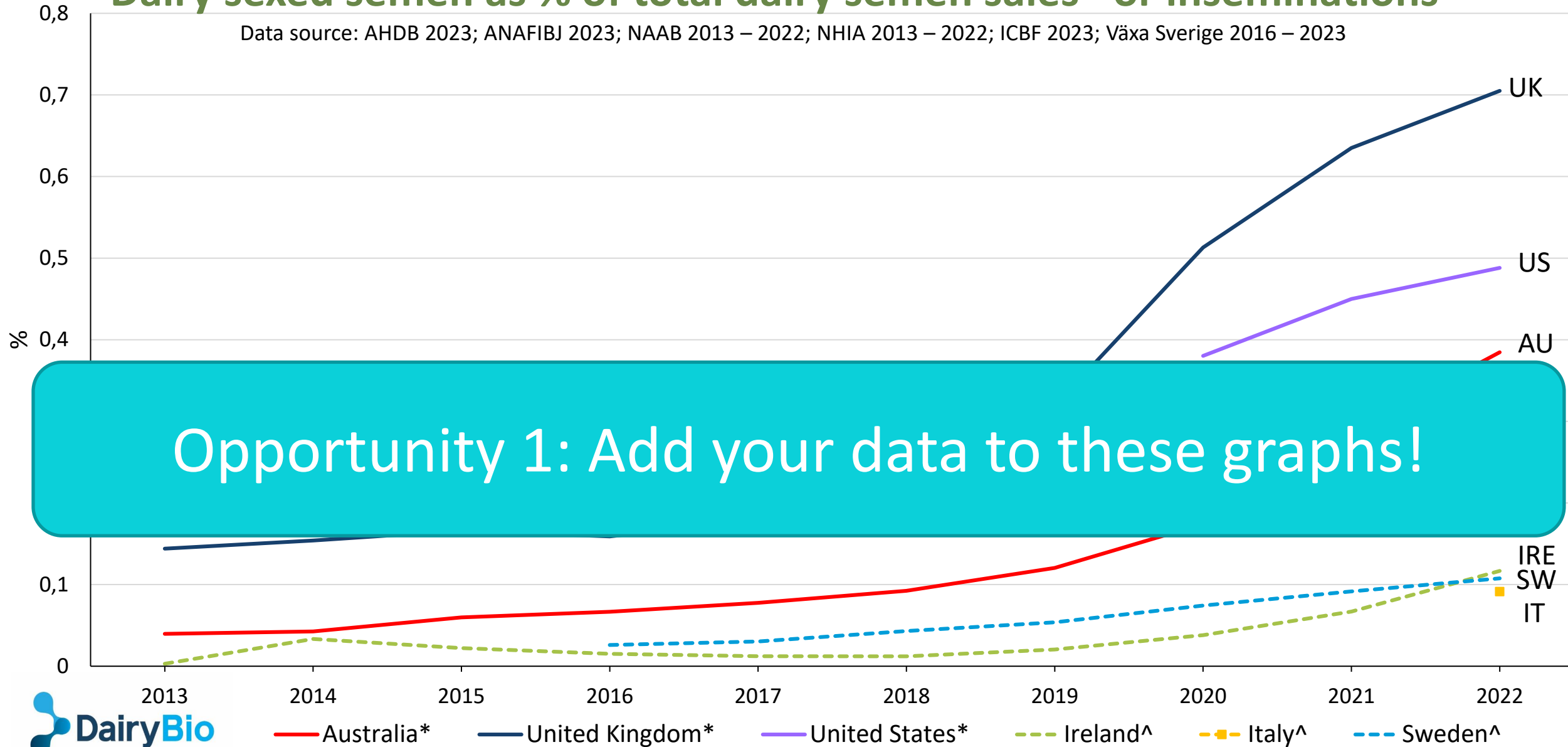
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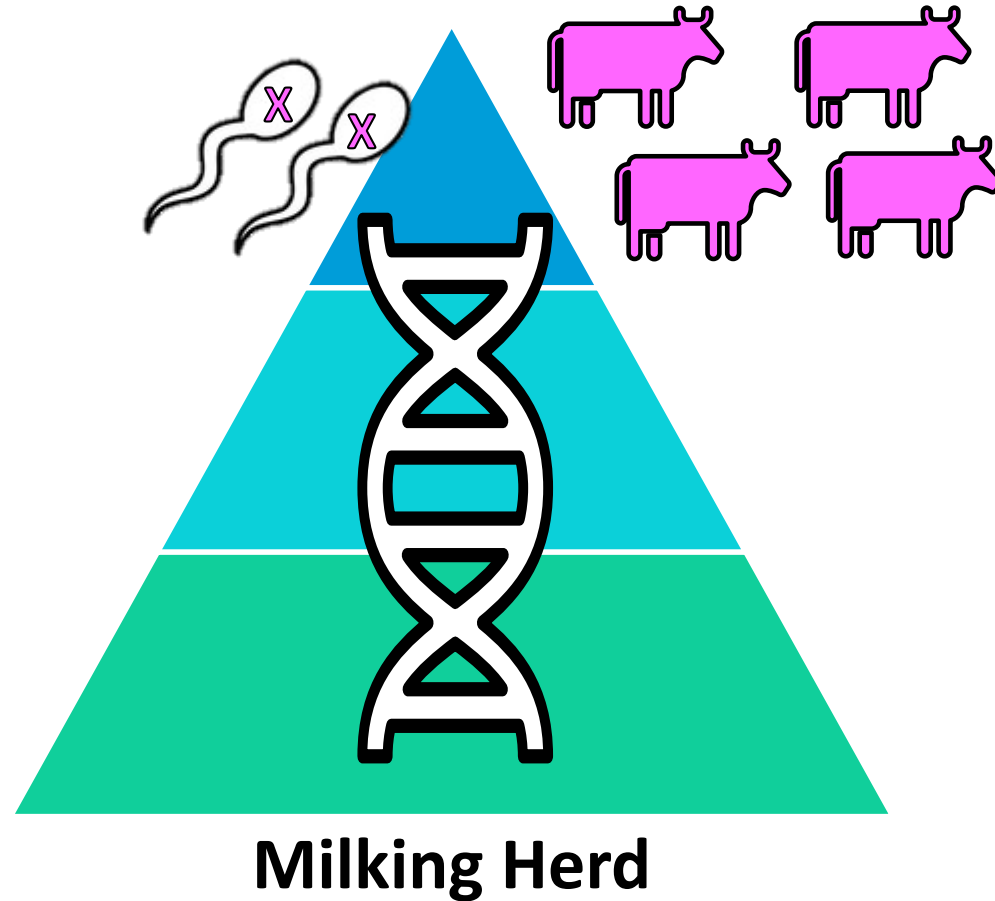


Opportunity 1: Add your data to these graphs!



# Sexed dairy semen + beef genetics + genotyping

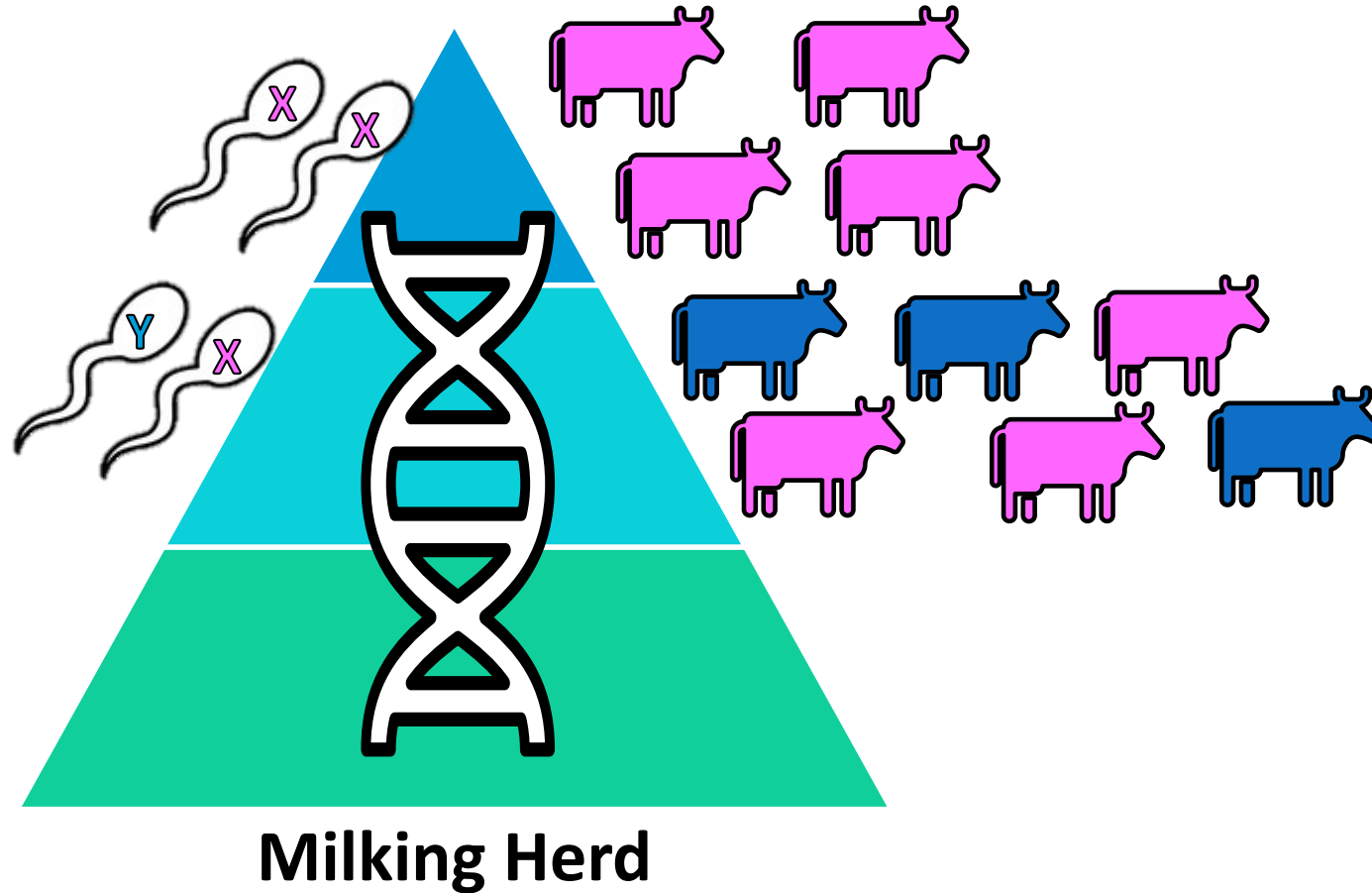
- Targeted allocation of sexed semen to highest genetic merit cows





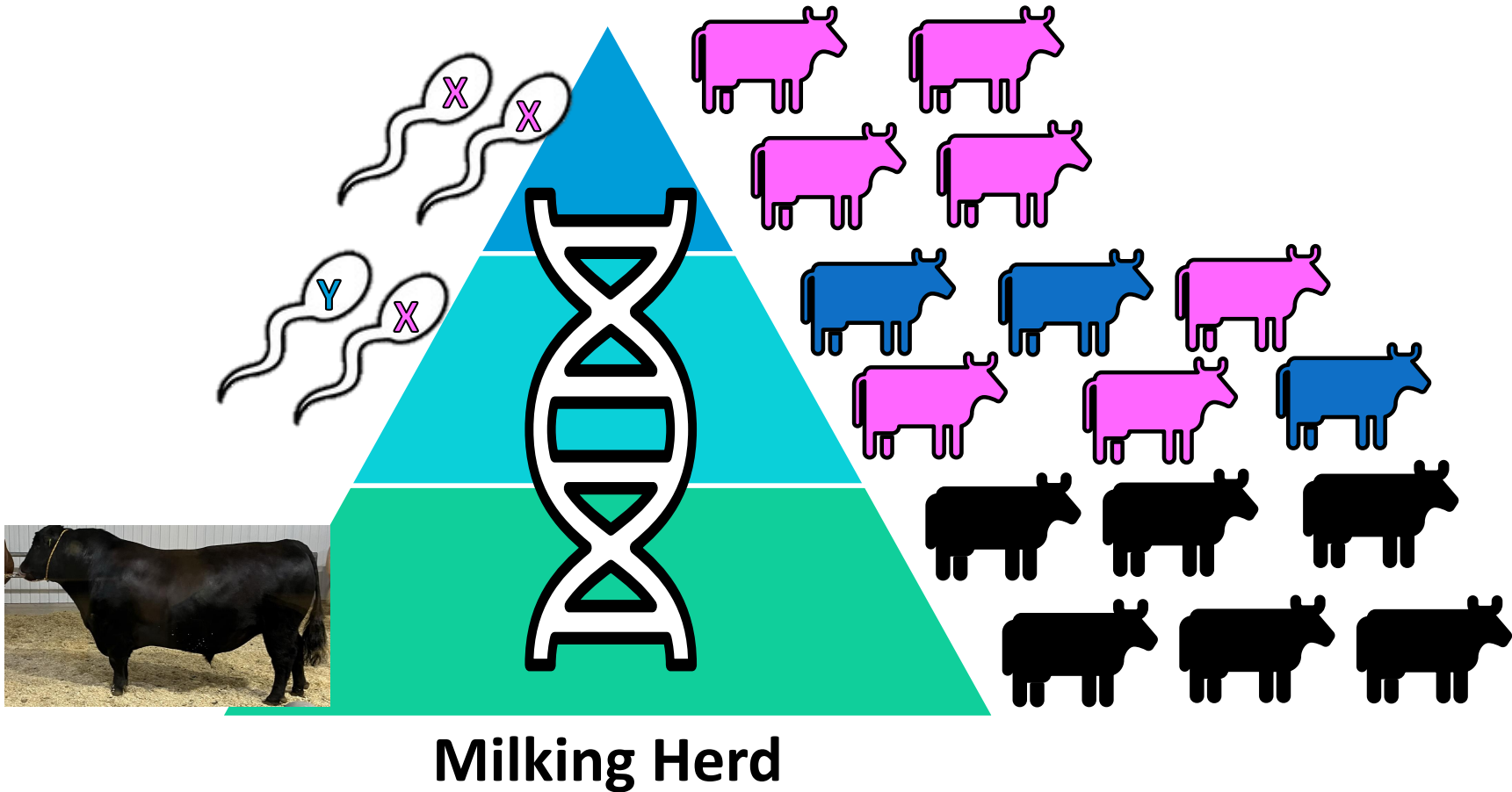
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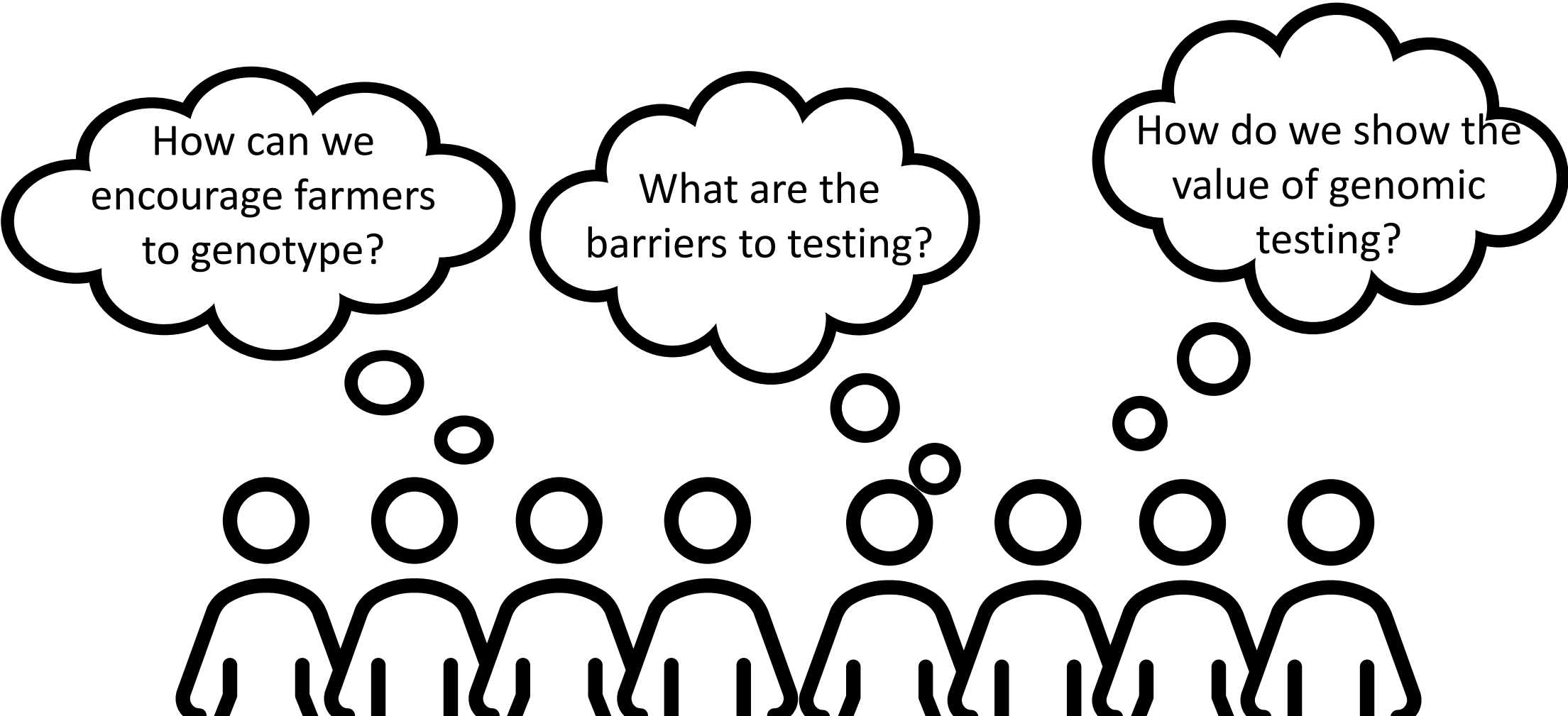


# Sexed dairy semen + beef genetics + genotyping

- Targeted allocation of sexed semen to highest genetic merit cows



# Female genomic testing key tool to support beef on dairy integration



How can we encourage farmers to genotype?

What are the barriers to testing?

How do we show the value of genomic testing?

## Female genomic testing key to support beef on dairy integration

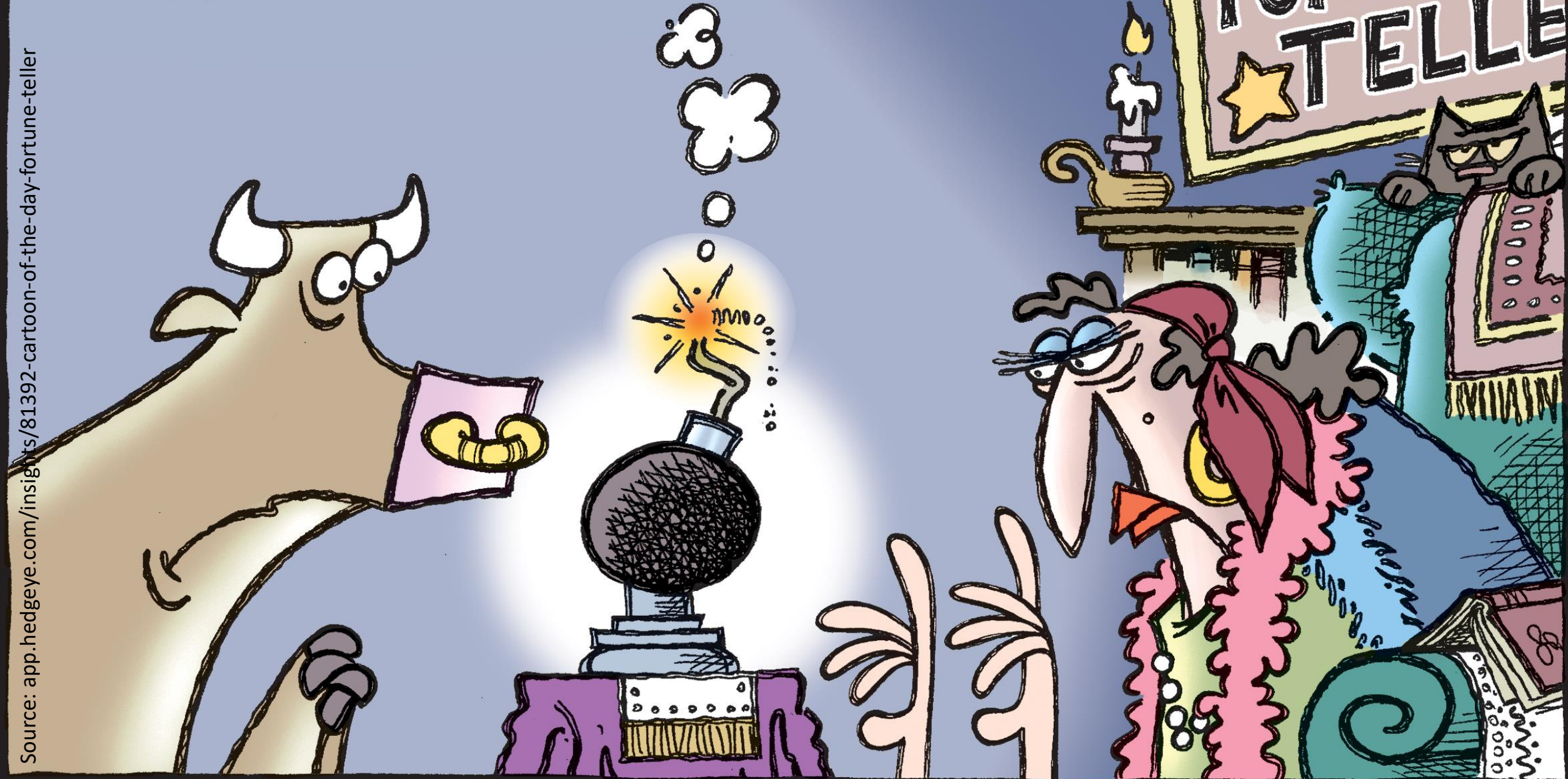


Opportunity 2: ICAR establishes platform to bring together members involved in adoption of genomic testing on farm

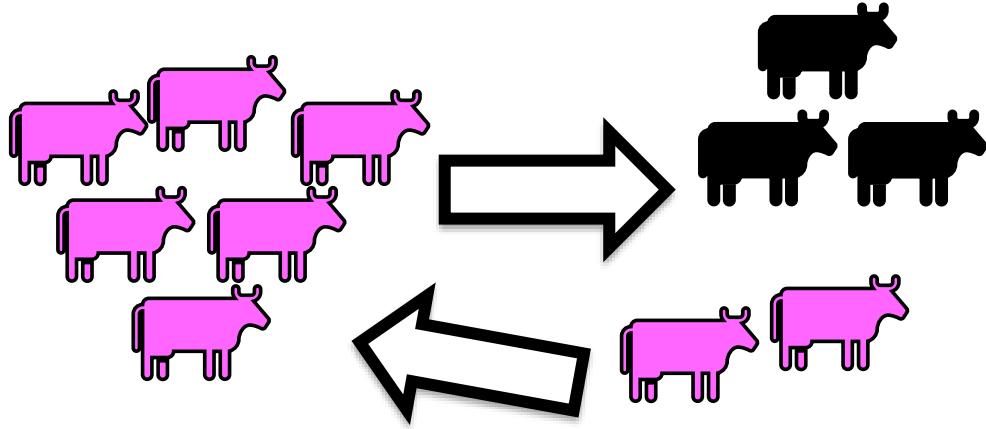


B. Kitch HEDGEYE

Source: app.hedgeye.com/insights/81392-cartoon-of-the-day-fortune-teller

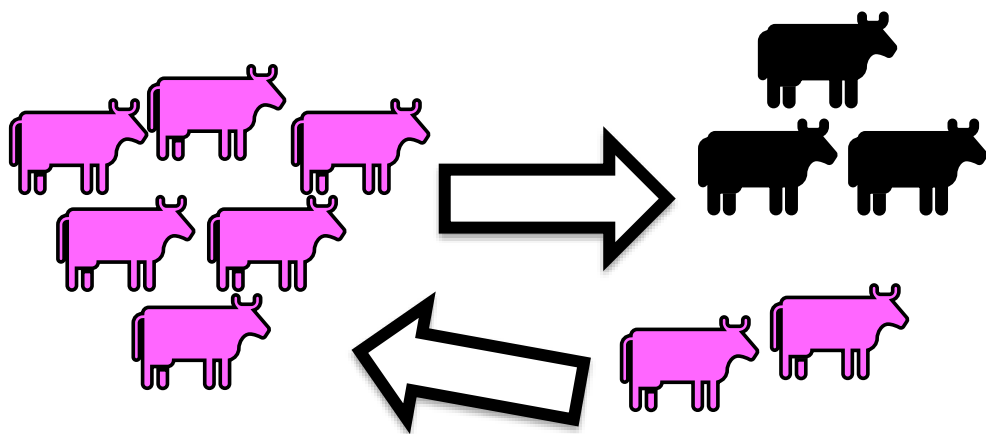


## Beef from Dairy

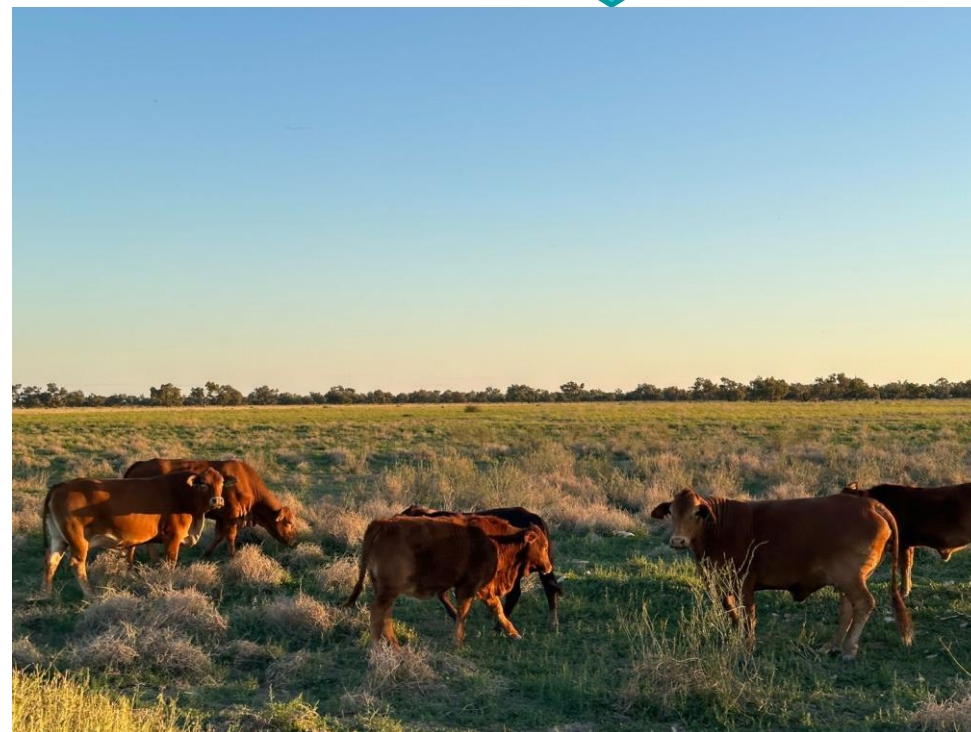
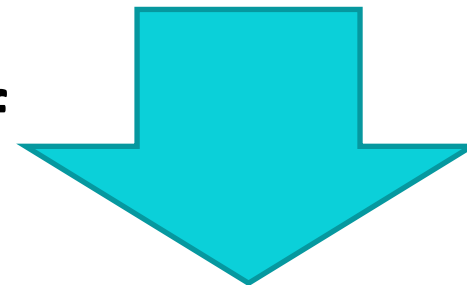


- Stabilise to meet dairy heifers replacement needs
- ↑ dairy sexed semen + beef semen only

## Beef from Dairy



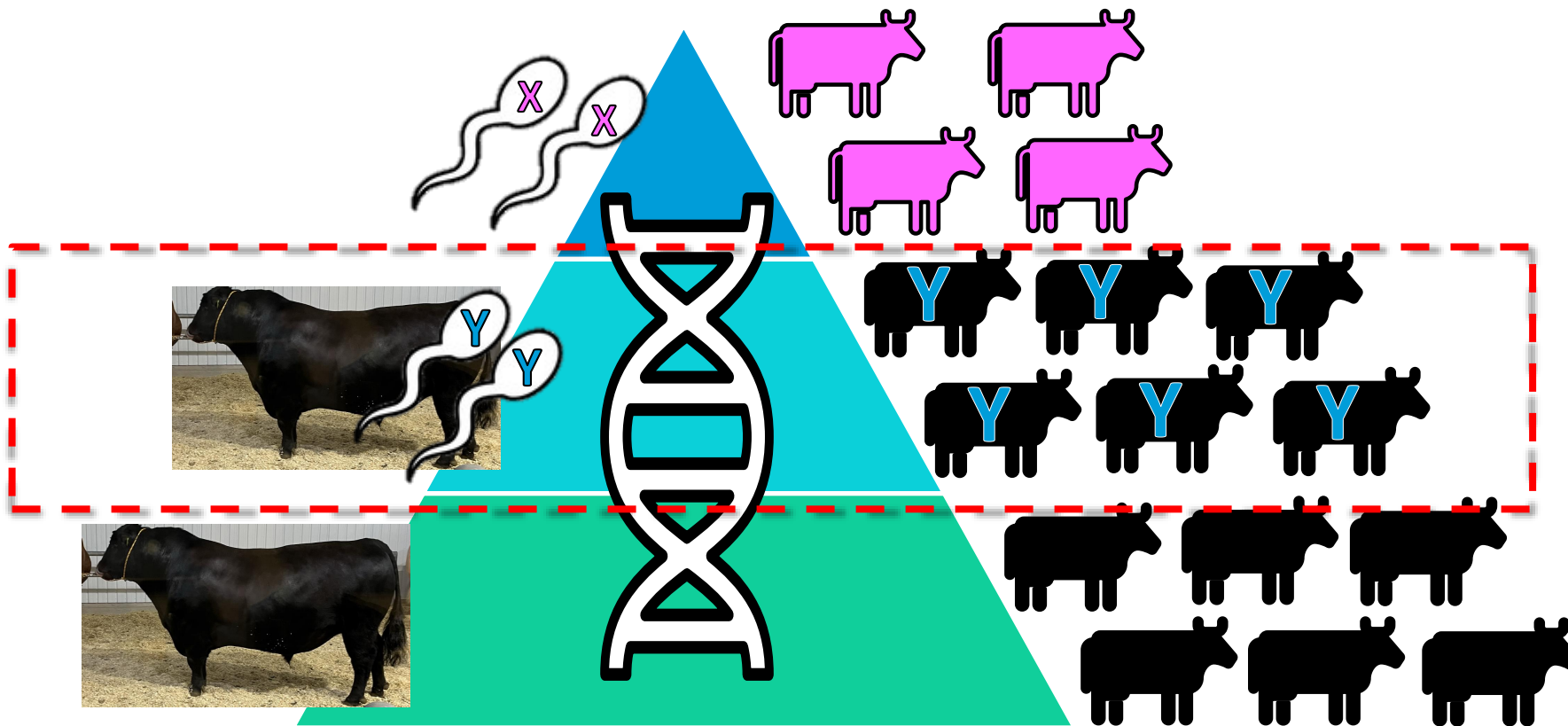
## Beef from Beef



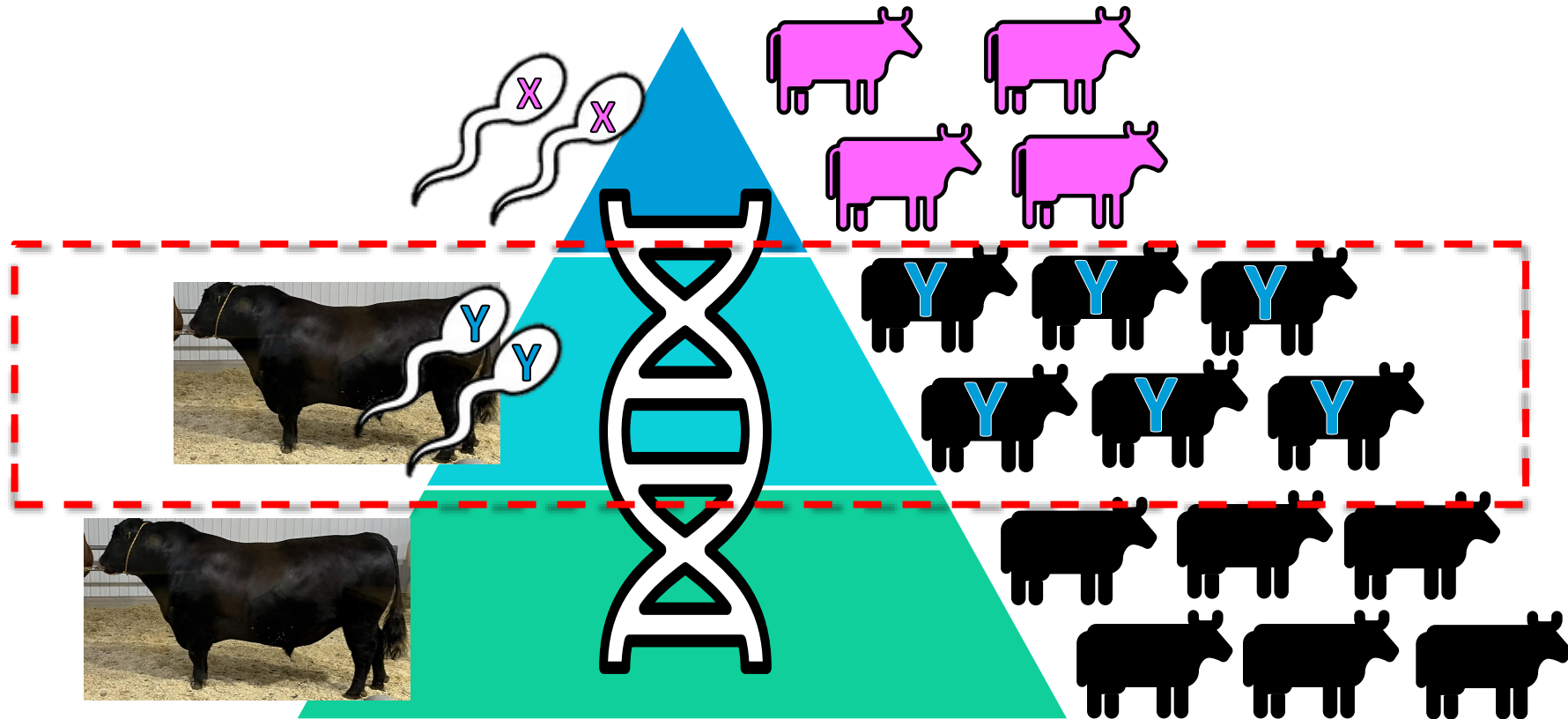
- Stabilise to meet dairy heifers replacement needs
- ↑ dairy sexed semen + beef semen only
- Maintain important role in beef supply chain



# Sexed dairy + sexed beef +conventional beef semen



## Sexed dairy + sexed beef + conventional beef semen



Opportunity 3: Mating tool that considers genetic & management factors in breeding program design



## Attributes valued by stakeholders differ



### Dairy farmer

- **Calving ease**
- Fertility
- Gestation length



### Calf rearer

- Health
- Growth



### Finisher/ backgrounder

- Average daily gain
- Feed efficiency
- Meet grid specs



### Processor

- Carcass weight
- Carcass yield
- Liver abscess



### Retailer

- Consistency
- Eating quality
- Cut size
- Sustainability



## The dairy cow contributes 50% of genetics

- Little appetite to select for carcass traits in dairy cows at a cost to production
  - Exception Pezzata Rossa Italiana, Index weighting 2/3 meat, 1/3 milk
  - Some dairy animals better beef attributes than beef animals



## The dairy cow's role in beef on dairy breeding?

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- Common ground in dairy and beef
  - Young stock survival
  - Feed efficiency
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Opportunity 4: Improving young stock survival, feed efficiency & GHG emissions benefits both beef and dairy farmers

## Beef from dairy integration

- Links across every step in supply chain!
  - Local 'slow food' movement in Italy
  - Farmer is also the retailer
  
- Agritourism is a growing field
  - Niche market



## Successful beef on dairy integration



- Established pipeline
- Facilitated by contract/s:
  - Semen
  - Calf pricing
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  - Nominated bulls

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- Established pipeline
- Facilitated by contract/s:
  - Semen
  - Calf pricing
  - Contract rearing/finishing
- Facilitate use of superior terminal genetics
  - Set targets, thresholds
  - Nominated bulls
- What's the buy in?
  - Risk reduction
- Biggest schemes usually have genetics company involvement



## Role of indices in beef from dairy

- Identify sires whose progeny will perform across the whole supply chain!
  - Confident sire & calf purchasing decision
  - Stakeholders rewarded based on animal genetic potential
- Fast track genetic progress & improve the profitability of beef production
- Most indices are proprietary
  - Breed and/or genetics company specific
  - Validation of indices!



**NBDI**  
**Nordic Beef on**  
**Dairy Index**

## The race for better (or any!) carcass data

- Beef from dairy genetic progress limited by access to detailed carcass records
  - Data pipelines a big barrier
  - Lack of data/feedback back to farmers in supply chain
- Most countries
  - No across breed beef genetic evaluation
  - No combined beef and dairy database
- Genetics companies rapidly developing links to processors & building private data sets
  - Establishing in-house beef from dairy breeding programs
  - How much control should global genetics companies have on future beef on dairy breeding programs?
  - Validation?

## International beef from dairy evaluation

- A system for comparing beef bulls for use in the dairy herd across breeds and countries
- ICAR through Interbull/Interbull created platform for international genetic evaluation

Opportunity 5: International genetic evaluation for beef on dairy

# International beef from dairy genetic evaluation

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## Opportunity 5: International genetic evaluation for beef on dairy

- The key: a data pipeline from processors.
  - If it was easy we would already be doing it!
- Several large companies control large % of global meat processing
  - Would you rather work with many companies or 1 central organisation on data sharing arrangements?

## Opportunity 6: ICAR takes lead in conversations establishing data pipelines from processors to central database

## Recap

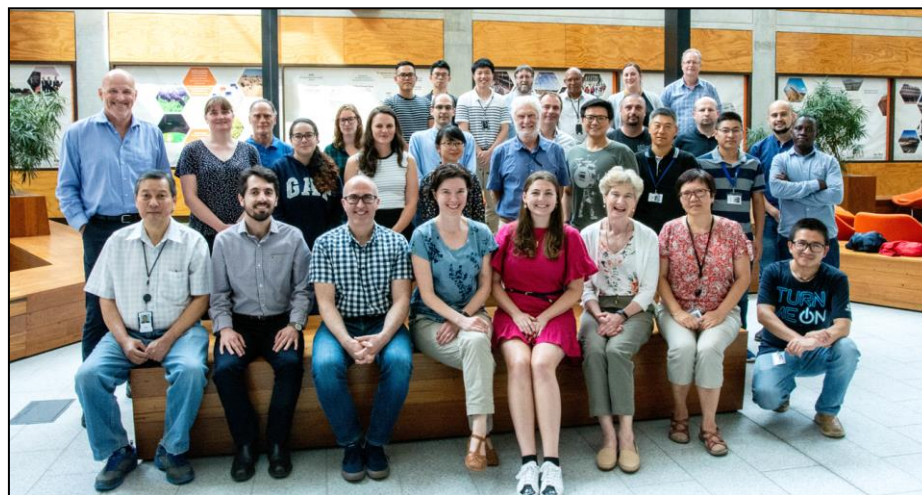
- Rapid increase in sexed dairy and beef semen usage globally
  - Different rate of uptake across countries
  - Female genomic testing a key integration tool
- Farmer & service provider engagement for adoption of best practice
- Stakeholders value different traits.
- Traits and tools available to support beef on dairy but more are needed
- Limited time to decide our roles in this space





# Thank-you

**International Committee on Animal Recording  
Brian Wickham Young Persons Exchange Program**



**Computational Biology group**

## BWYPEX Hosts:

- University of California Davis
- Interbull Centre
- ANAFIBJ
- ANAPRI
- AHDB
- ICBF

## DairyBio Animal Program

Jennie Prycea  
Mekonnen Haile-Mariam



ICAR would like to acknowledge the 11 Members who help fund the inaugural Brian Wickham Young Persons Exchange Program



+  
New Zealand Animal Evaluation  
Limited (NZAEL);  
a wholly owned subsidiary of  
DairyNZ



THE GLOBAL STANDARD  
FOR LIVESTOCK DATA



# BWYPEX Beef from Dairy Opportunities

Opportunity 1: Share your beef on dairy data for my report

Opportunity 2: ICAR establishes platform to bring together members involved in adoption of genomic testing on farm

Opportunity 3: Mating tool that considers genetic & management factors in breeding program design

Opportunity 4: Improving young stock survival, feed efficiency & greenhouse gas emissions benefits both beef and dairy farmers

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# Questions?