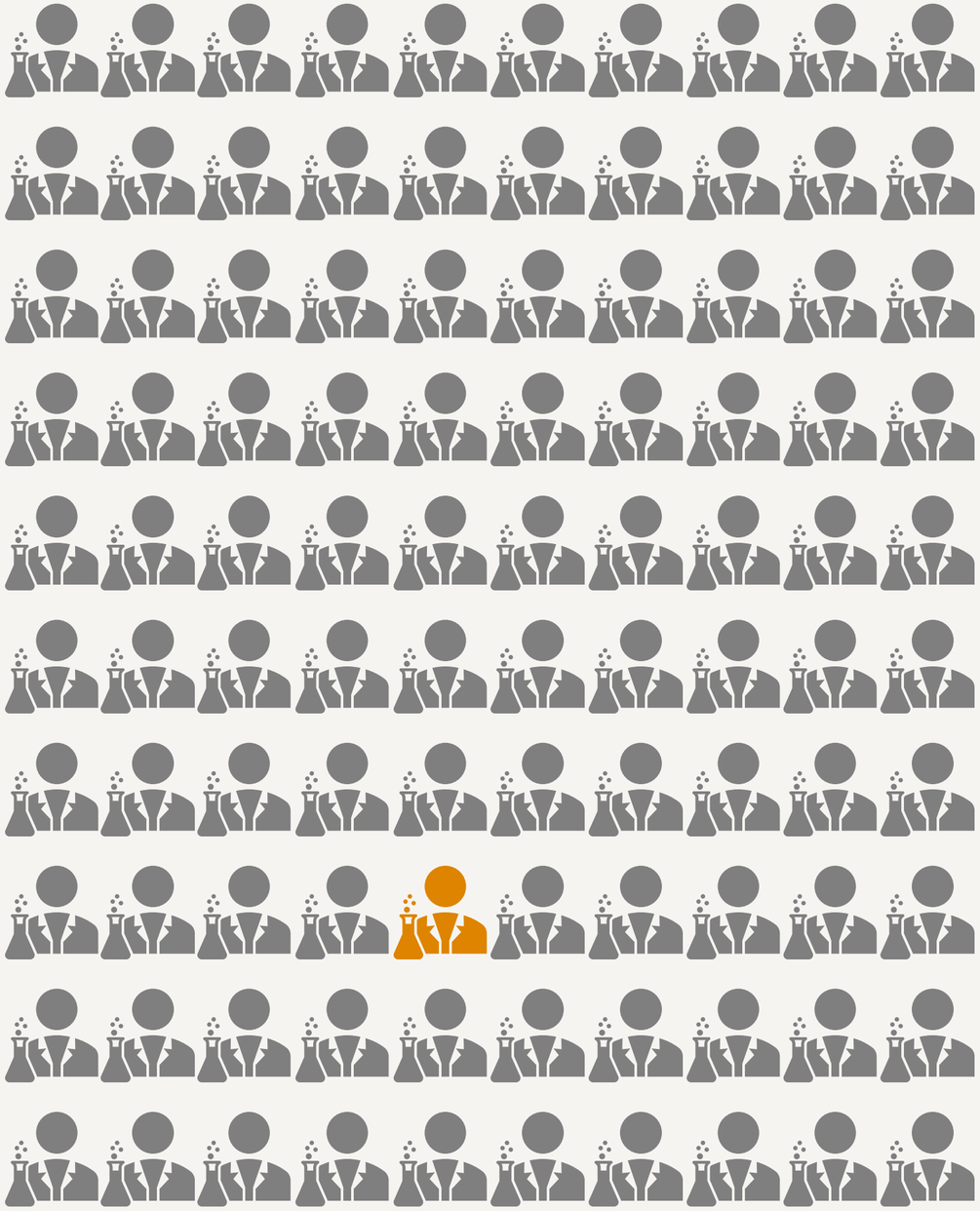
BREEDING FOR LOW EMISSIONS

Marcin Pszczola

POZNAŃ
UNIVERSITY
OF LIFE SCIENCES

PFHBiPM
POLISH FEDERATION
OF CATTLE BREEDERS
AND DAIRY FARMERS

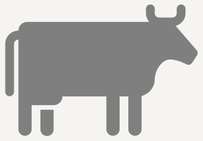


99%

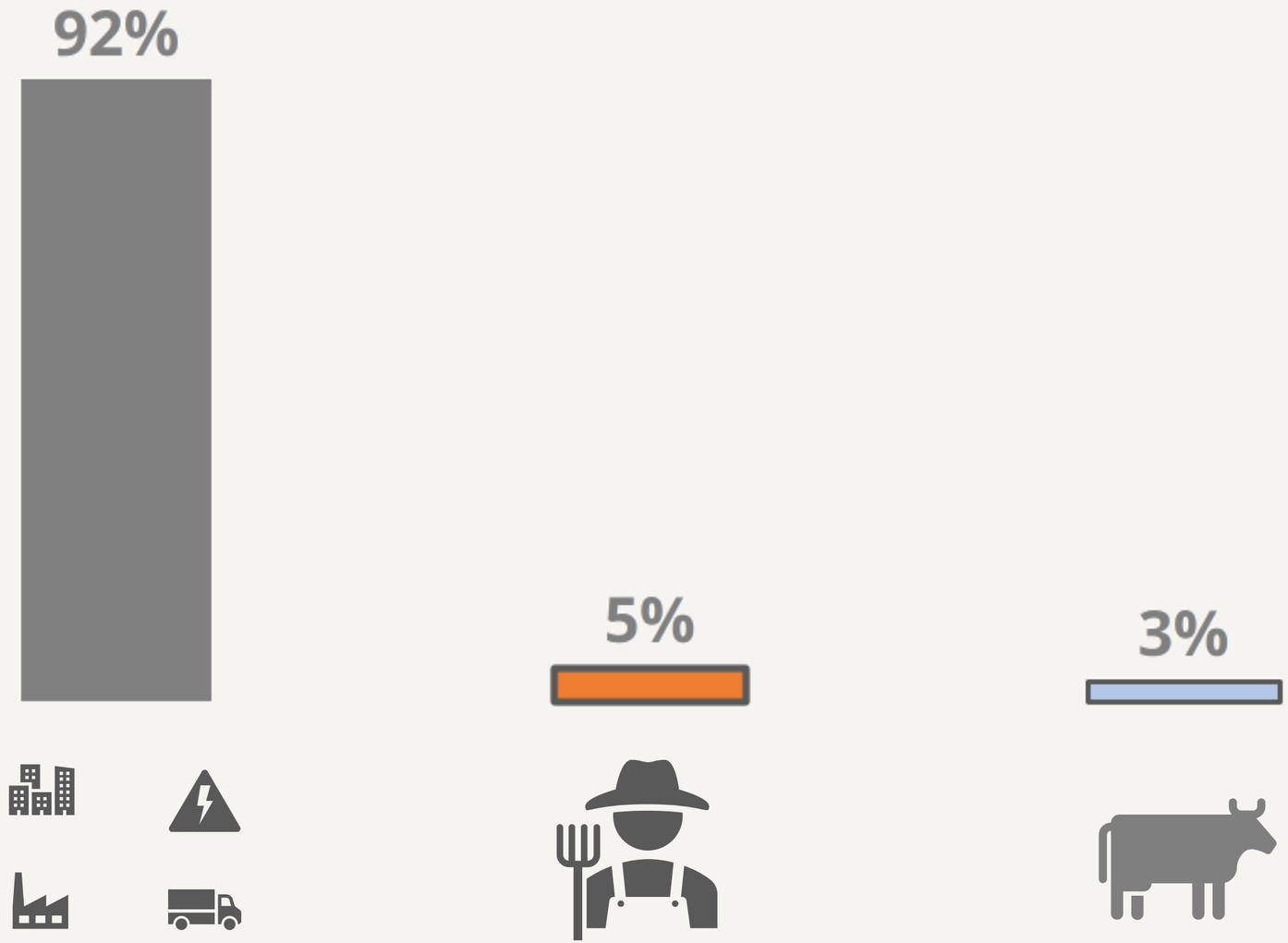
scientific publications **confirm**
anthropogenic climate impact

Lynas et al.., Environ. Res. Lett. 16 (2021)
Based on > 88k scientific papers on climate

WHAT IS THE IMPACT OF **DAIRY COWS**?

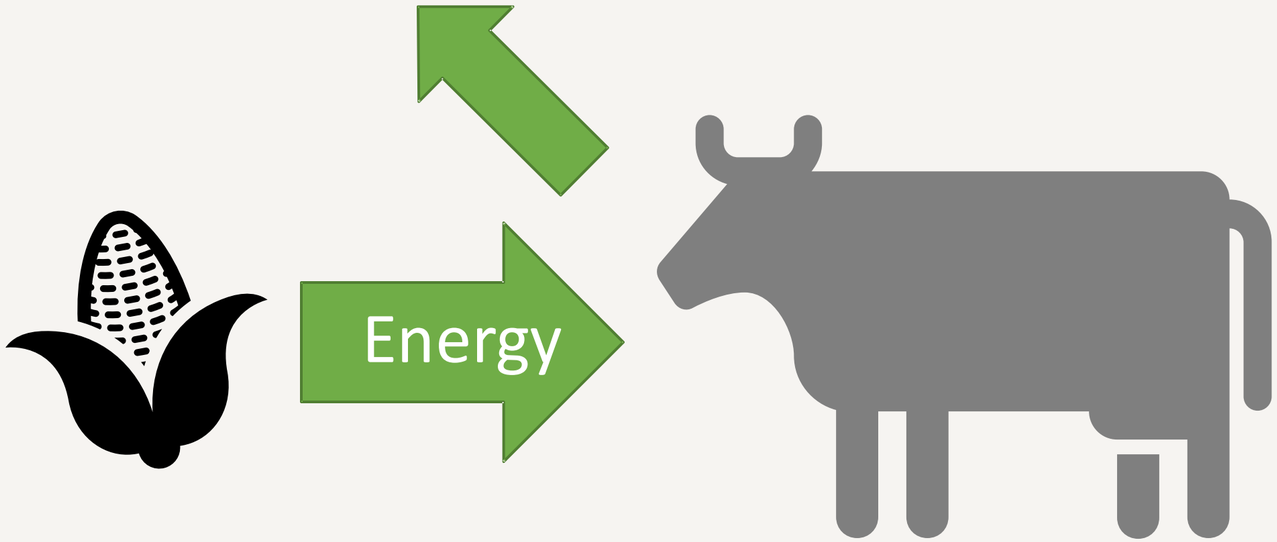


WHAT IS THE IMPACT OF **DAIRY COWS**?



KOBIZE, 2021

CH_4 = 2% - 12% energy loses

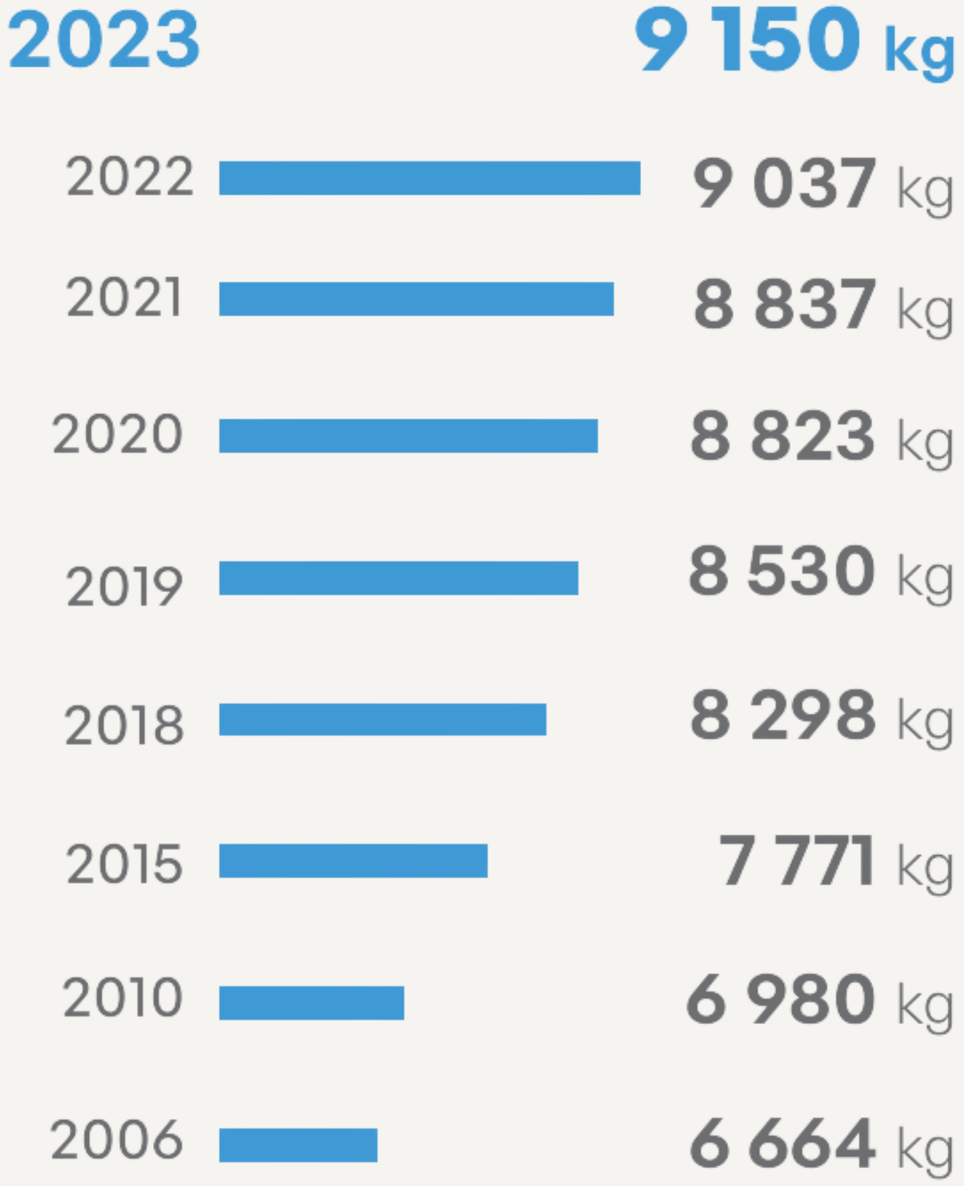


Blaxter, 1962; Johnson and Johnson, 1995

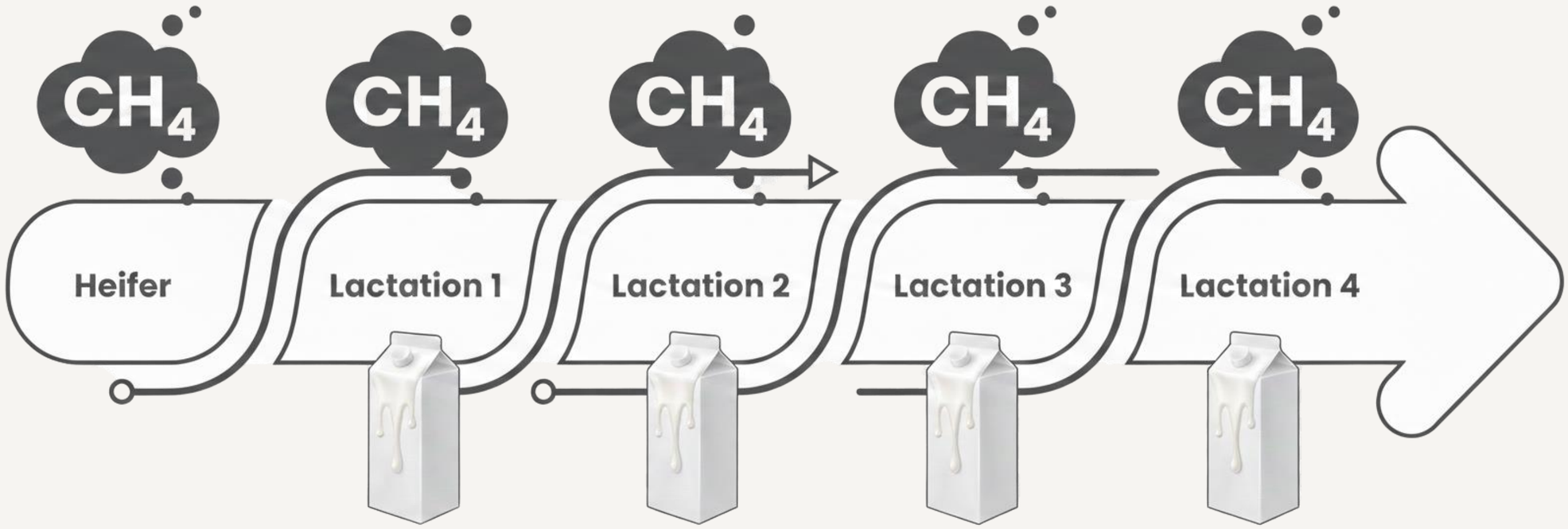
Ways to ↓ CH_4

IMPROVEMENT TROUGH **SELECTIVE BREEDING**

MORE MILK = **LOWER EMISSION INTENSITY**

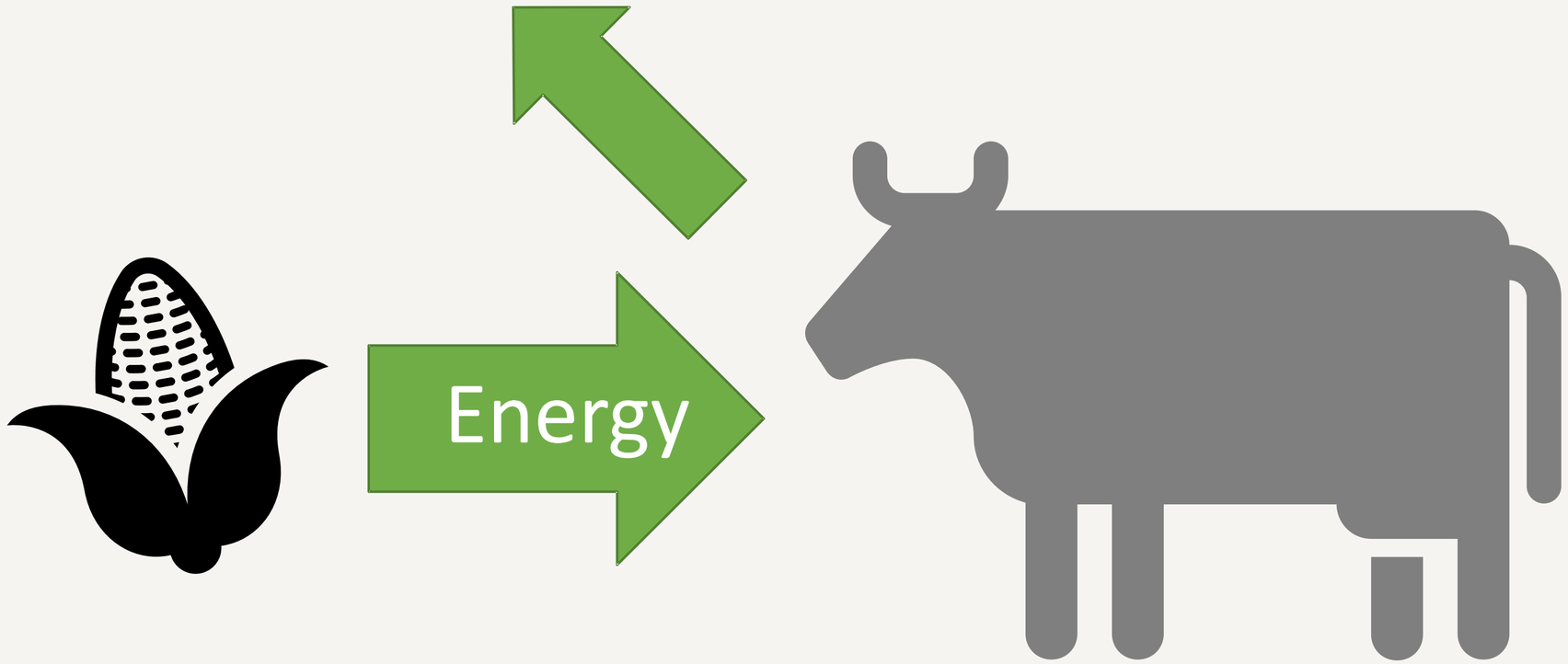


LONG LIVING COWS =
LESS EMISSIONS



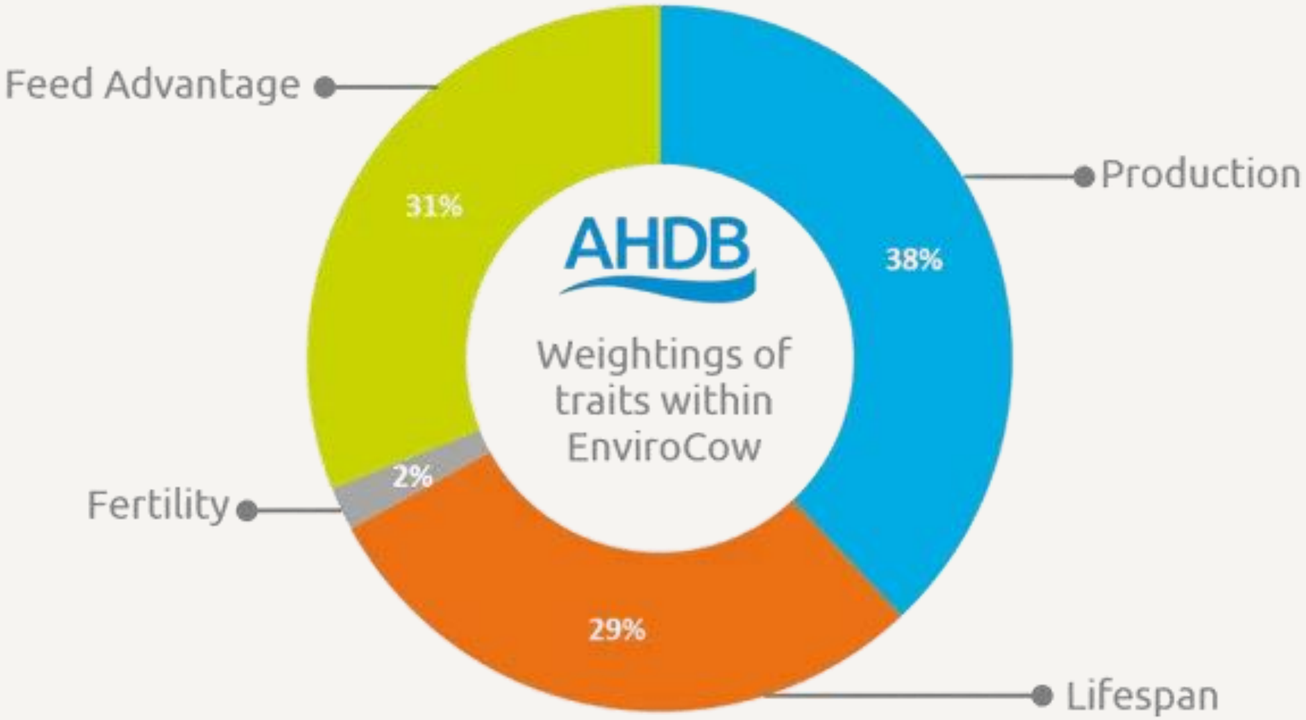
EFFICIENT COWS = LESS EMISSIONS

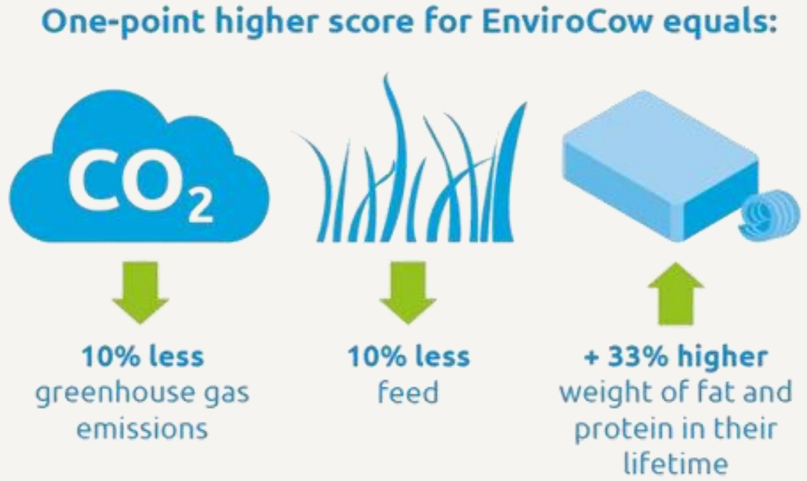
CH_4 = Energy loses 2% - 12%



Blaxter, 1962; Johnson and Johnson, 1995

TOOLS AVAILABLE

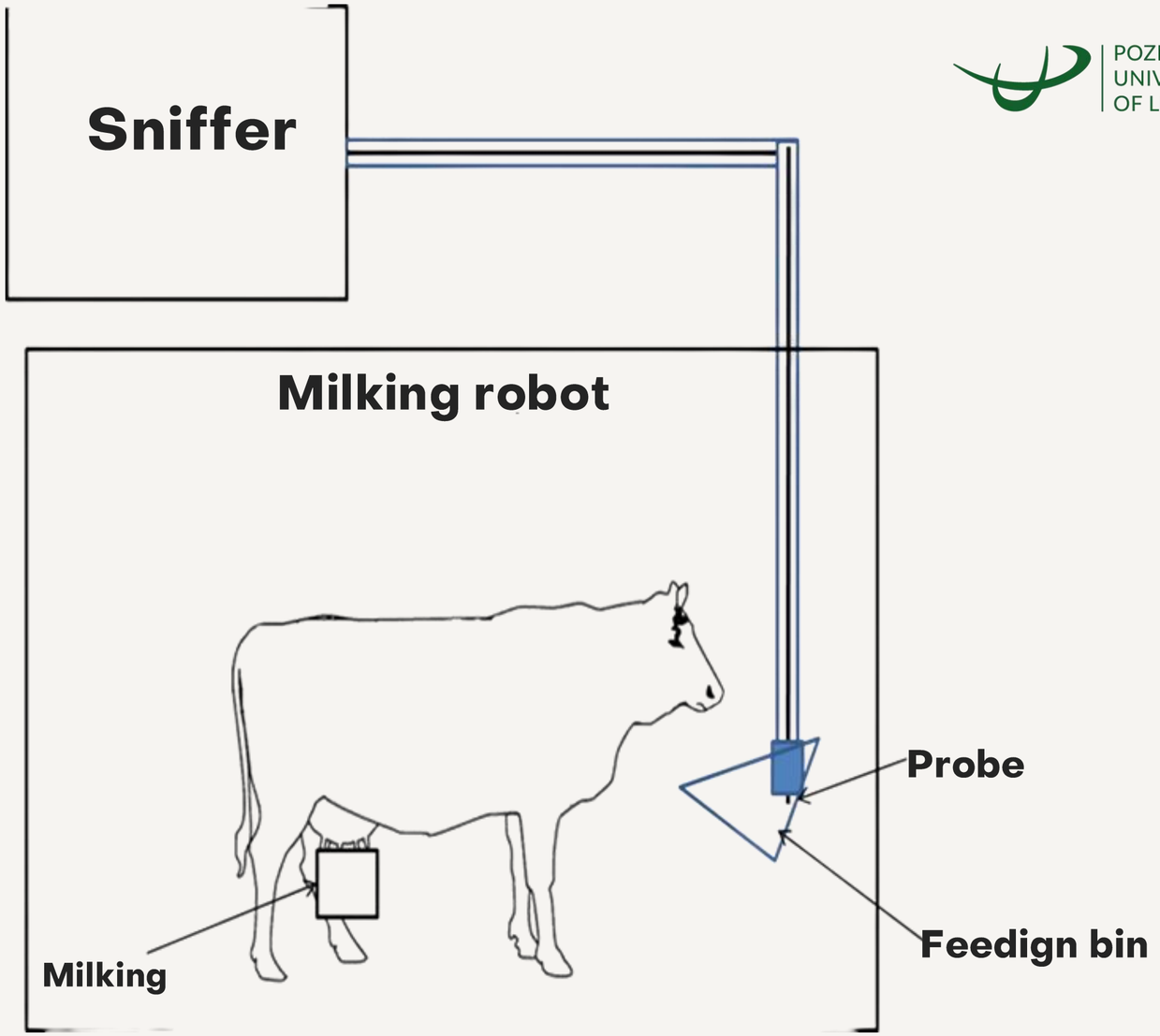




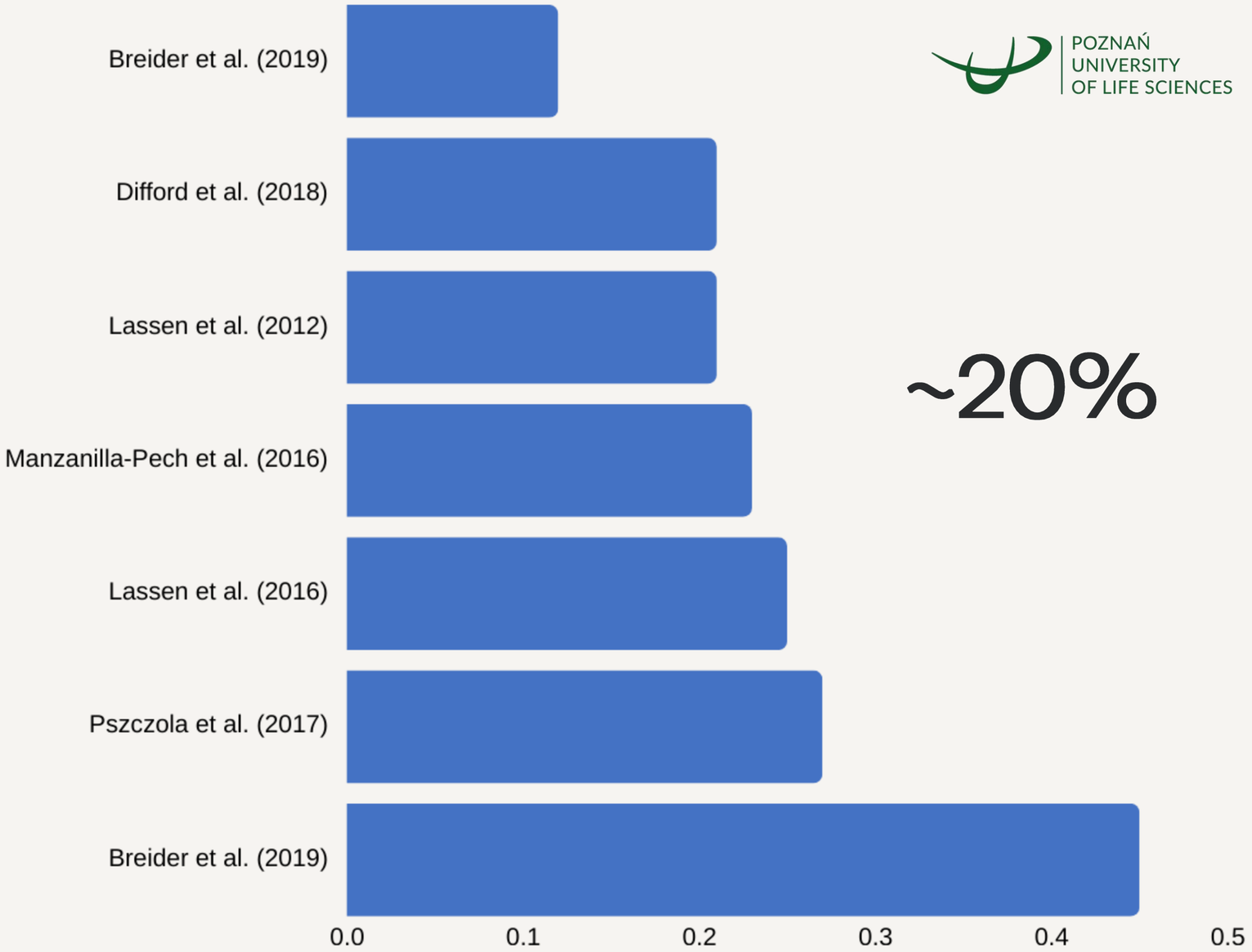
https://ahdb.org.uk/

METHANE EMISSION **MEASUREMENTS**

POZNAŃ UNIVERSITY OF LIFE SCIENCES



METHANE EMISSION **IS HERITABLE**

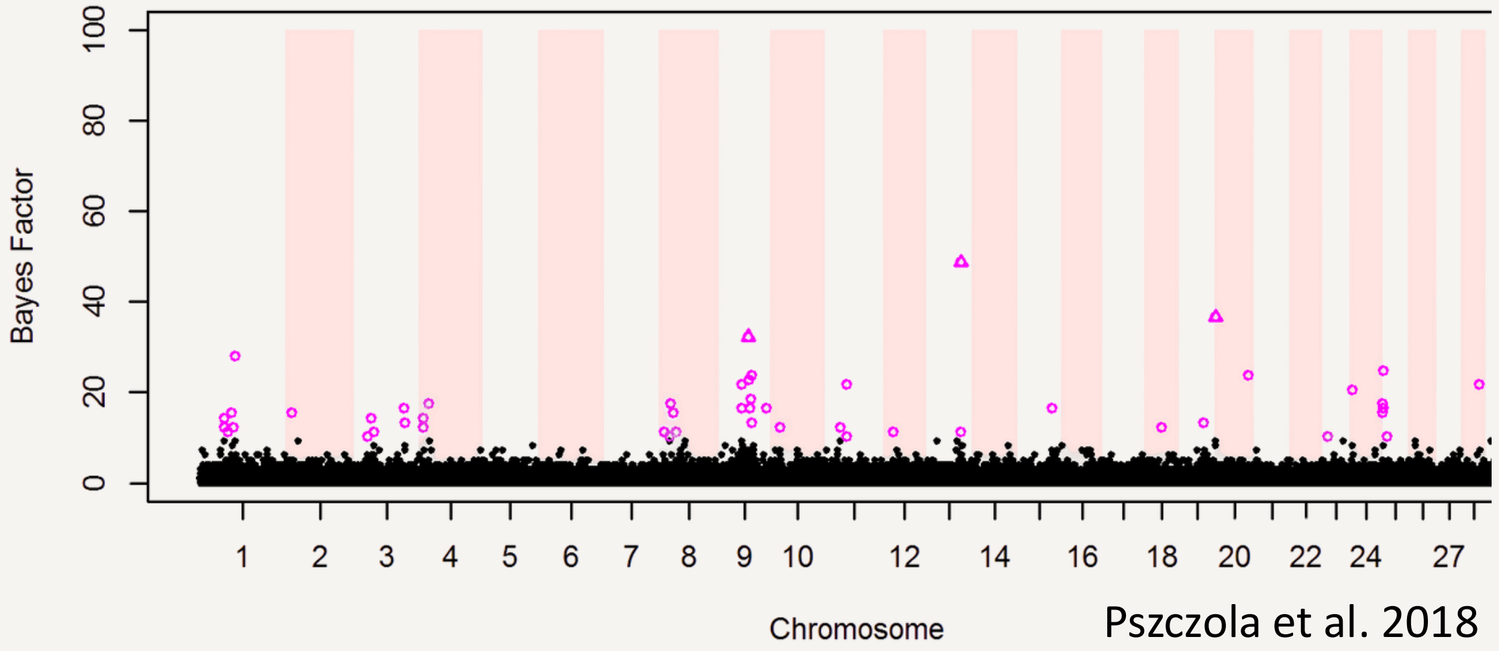


POZNAŃ UNIVERSITY OF LIFE SCIENCES

~20%

METHANE EMISSION
IS CONTROLLED BY GENES

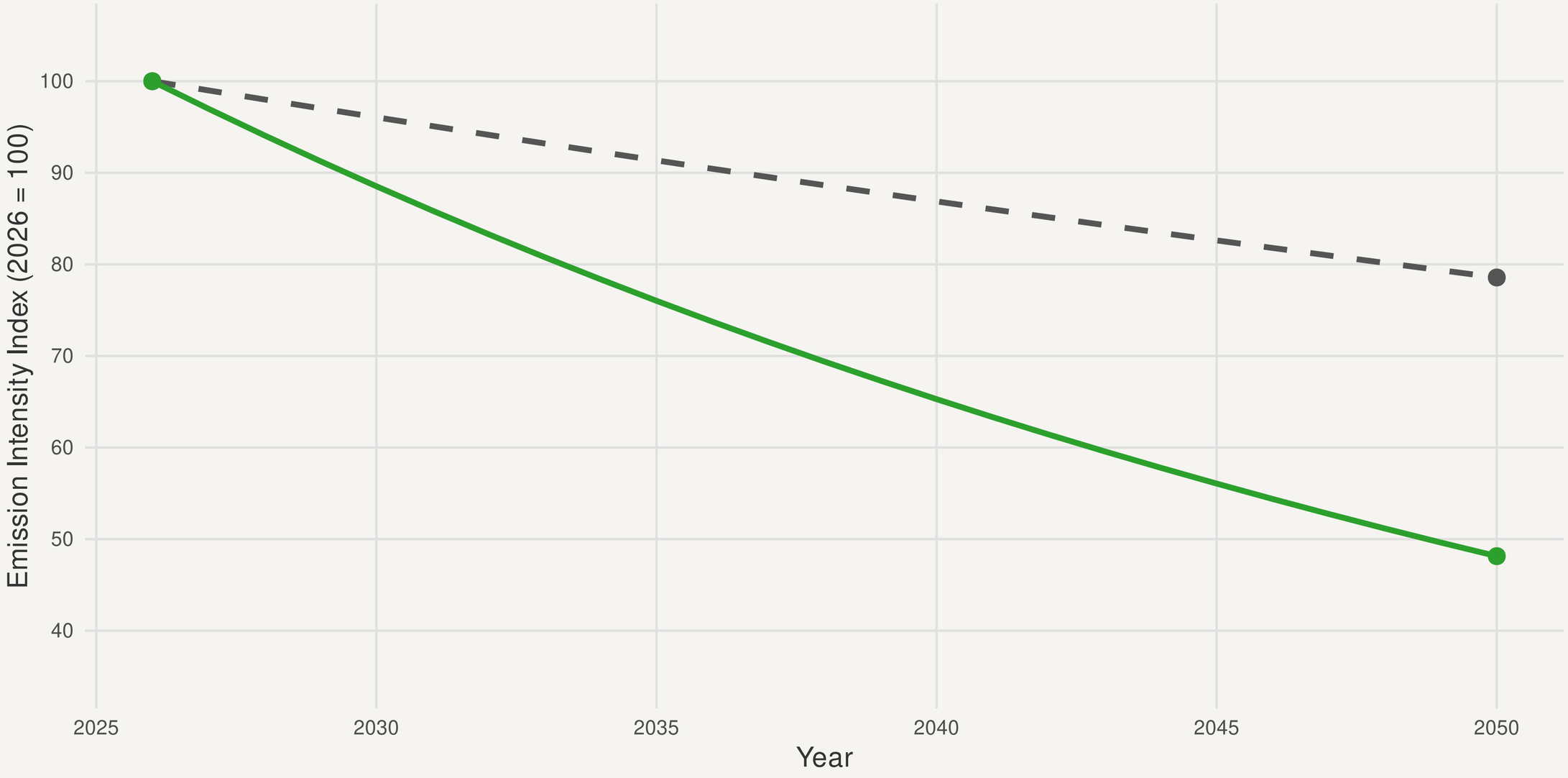
POZNAŃ
UNIVERSITY
OF LIFE SCIENCES



Pszczola et al. 2018

Predicted Genetic Progress: Emission Reduction Scenarios

Comparison of annual genetic gain impact on carbon intensity



METHANE BREEDING VALUES
PUBLISHED

→ **Canada**

→ **Spain**

→ **The Netherlands**

Global Methane Genetics initiative

Led by

WAGENINGEN
UNIVERSITY & RESEARCH

In Partnership with

BEZOS EARTH FUND

Global Methane Hub

Global Methane Genetics initiative

Led by

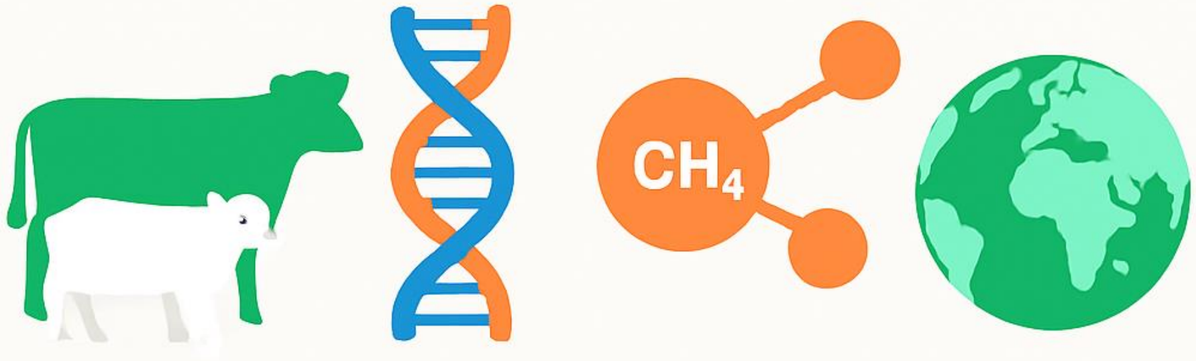
WAGENINGEN UNIVERSITY & RESEARCH

In Partnership with

BEZOS EARTH FUND

Global Methane Hub

Accelerating genetic progress to reduce methane in ruminants



Investment
27 mil $us

25 countries
50 partners
25 breeds

Methane pheno- & genotype
~110k cattle & sheep

~20k
microbiome

Global Methane Genetics initiative

Led by

WAGENINGEN UNIVERSITY & RESEARCH

In Partnership with

BEZOS EARTH FUND

Global Methane Hub

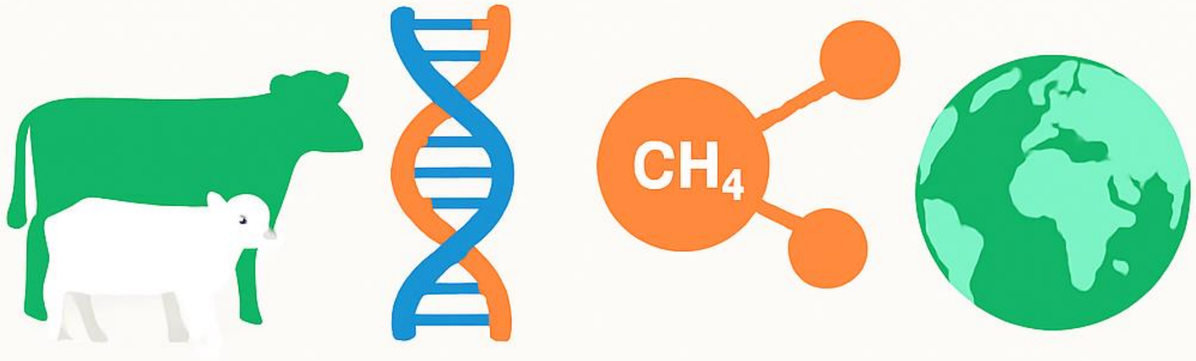
PFHBiPM

POLISH FEDERATION OF CATTLE BREEDERS AND DAIRY FARMERS

ANAFIBJ

Associazione Nazionale Allevatori della Razza Frisona Bruna Jersey Italiana

Accelerating genetic progress to reduce methane in ruminants



Investment
27 mil $us

25 countries
50 partners
25 breeds

Methane pheno- & genotype
~110k cattle & sheep

~20k
microbiome

BREEDING FOR LOW EMISSIONS

Already ongoing

(improving production, health, efficiency)

More to come

(direct selection)

Require acceleration

(through support programs)

BREEDING FOR LOW EMISSIONS

Already ongoing

(improving production, health, efficiency)

More to come

(direct selection)

Require acceleration

(through support programs)

THANK YOU!

marcin.pszczola@puls.edu.pl

POZNAŃ UNIVERSITY OF LIFE SCIENCES