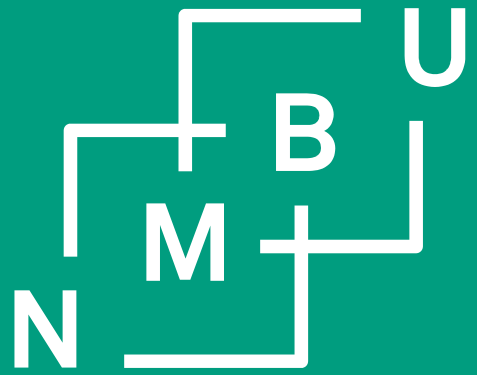


Norwegian University
of Life Sciences

# Assessing the Genetic diversity conserved in the Norwegian live poultry genebank

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NordGen

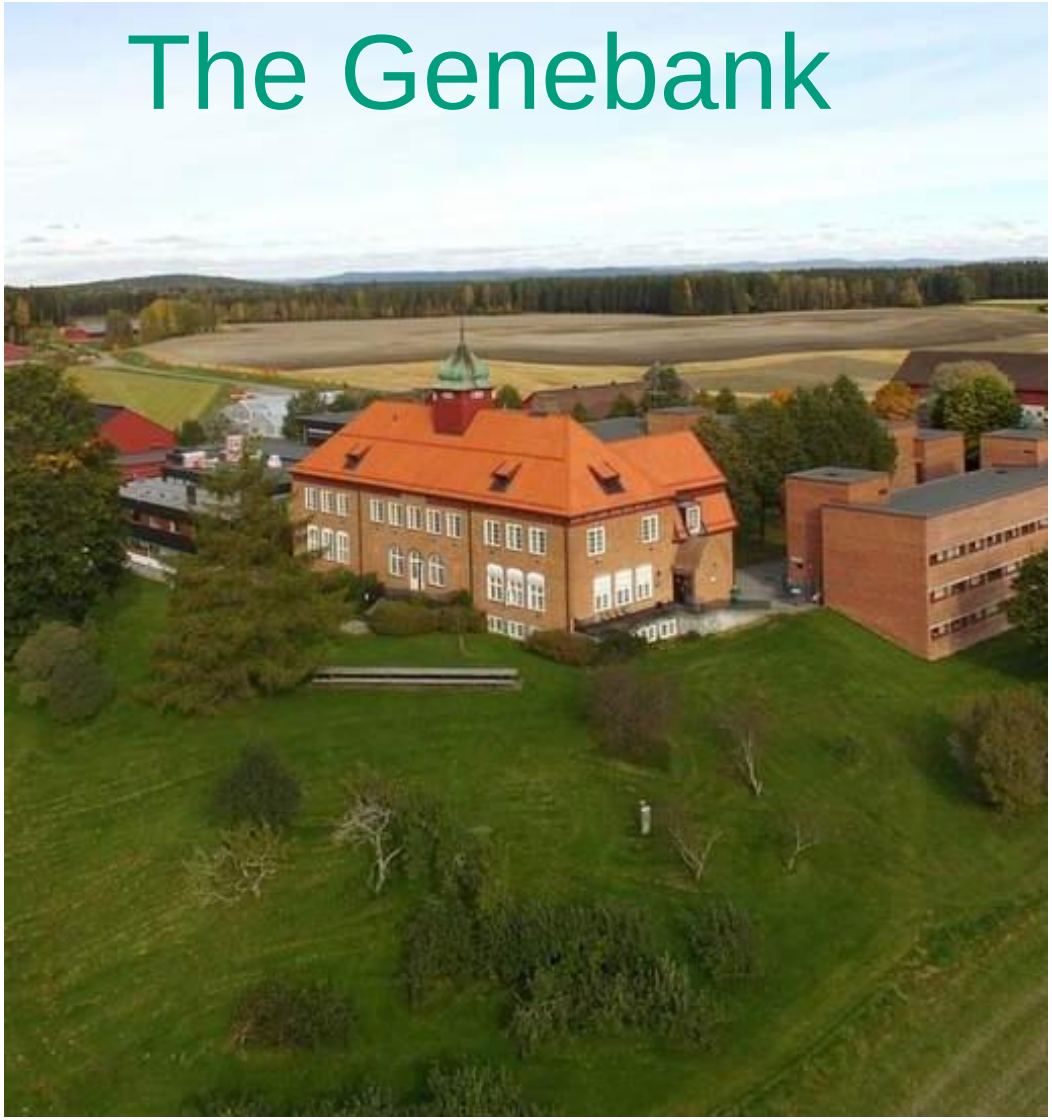
Norwegian University of Life Sciences

NIBIO

Norwegian Genetic Resource center

EAAP “What to conserve” 26.08.2019

# The Genebank



# Lines in the study

## Jærhøns - The national breed

19 Individuals genotyped

# Lines in the study

## Previous commercial white layers

# Lines in the study

## Previous commercial white layers


# Lines in the study

## Previous commercial brown layers


# Lines in the study

## Brown egglayers

# Lines in the study

## Brown egg layers

# International reference data

70 different lines from the Synbreed project (Malomane et al. 2019).

# Commercial reference data

Lohmann White

Lohmann Brown

# Genotyping

- **Affymetrix® Axiom® Chicken Genotyping Array**
- High density SNP Array
- 580 000 SNPs

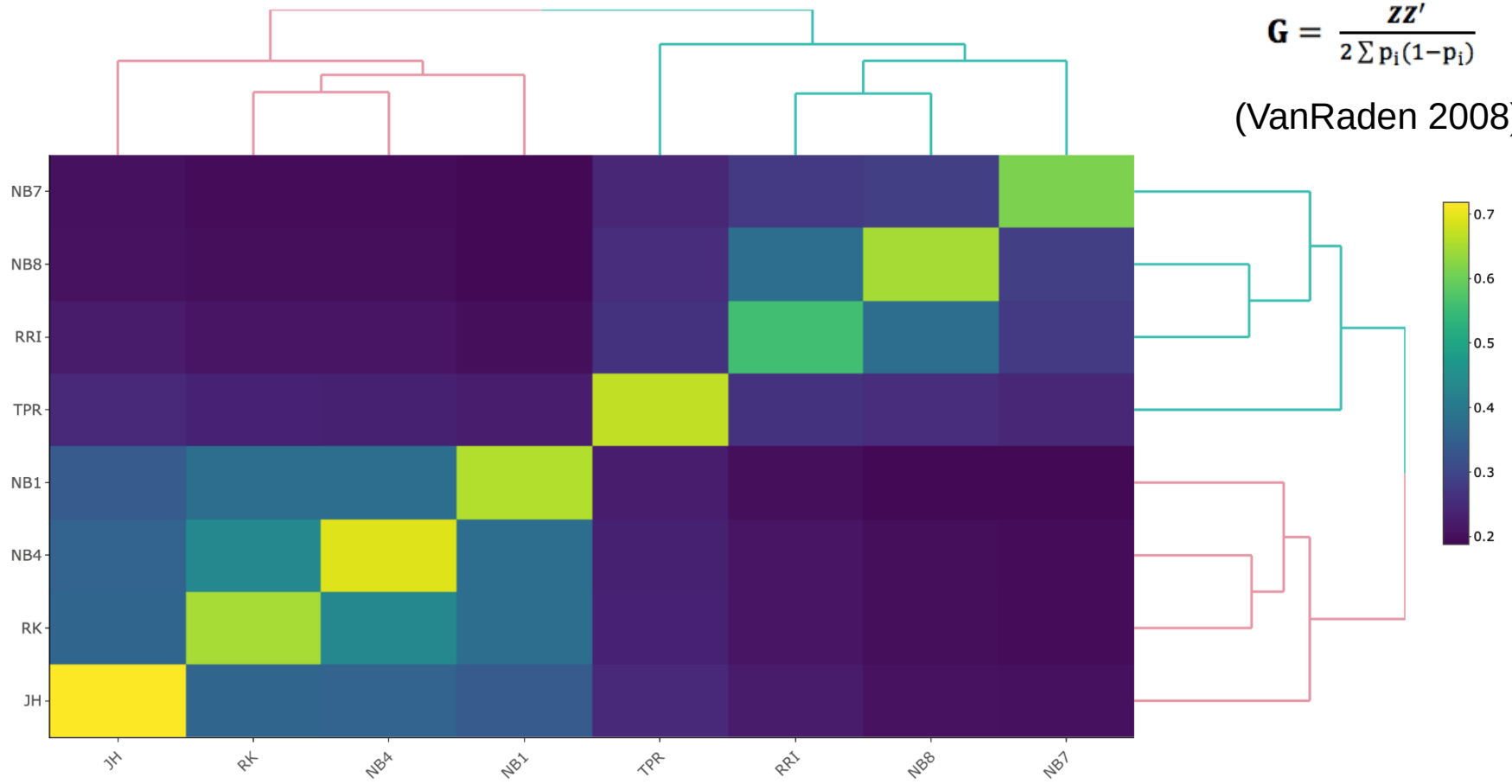
# Aim of the study

- Estimate genetic diversity within and between the lines
- Quantify conservation value

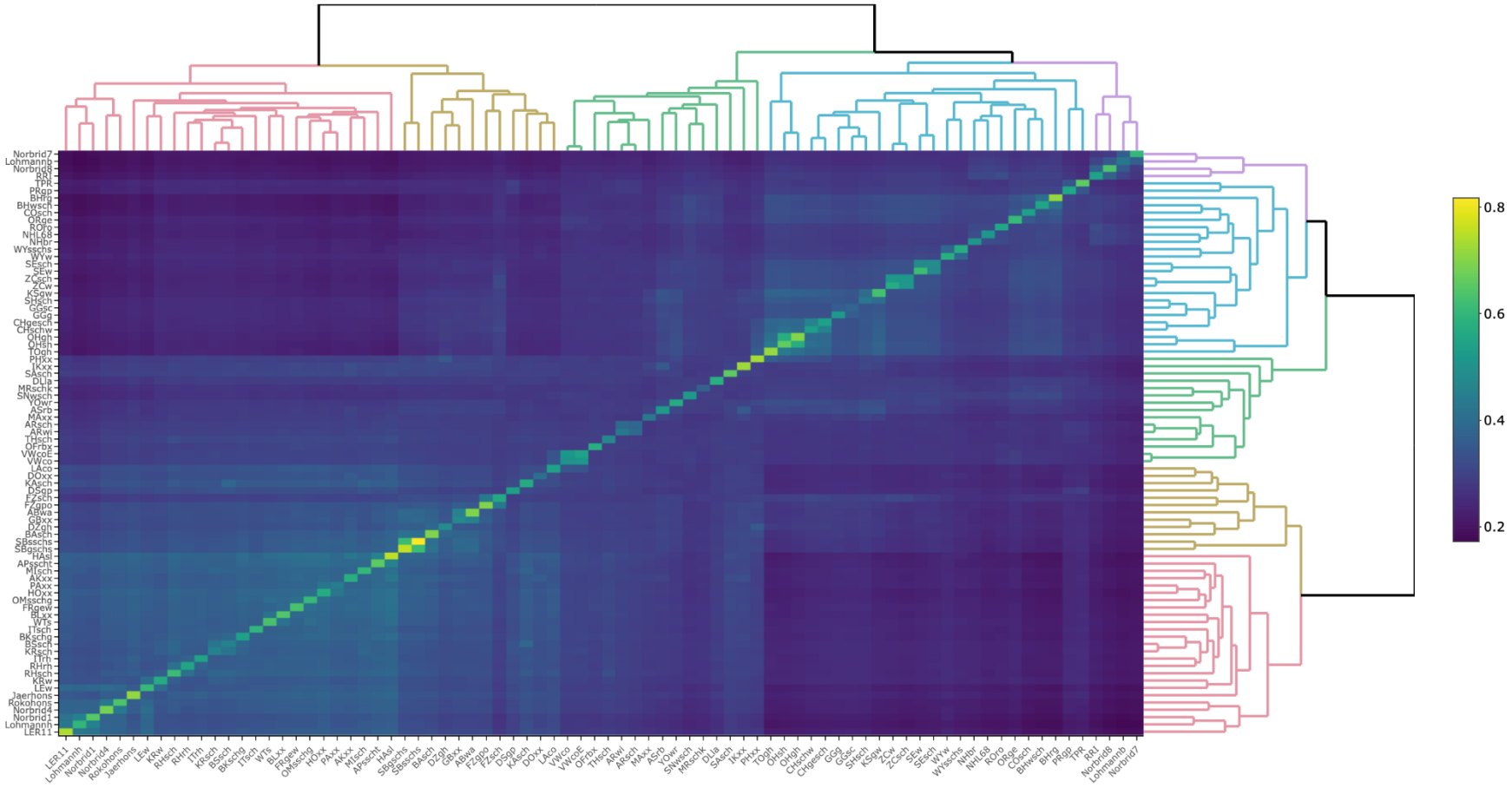
# Average genomic relationships Norwegian lines

$$\mathbf{G} = \frac{\boldsymbol{zz'}}{2\sum p_i(1-p_i)}$$

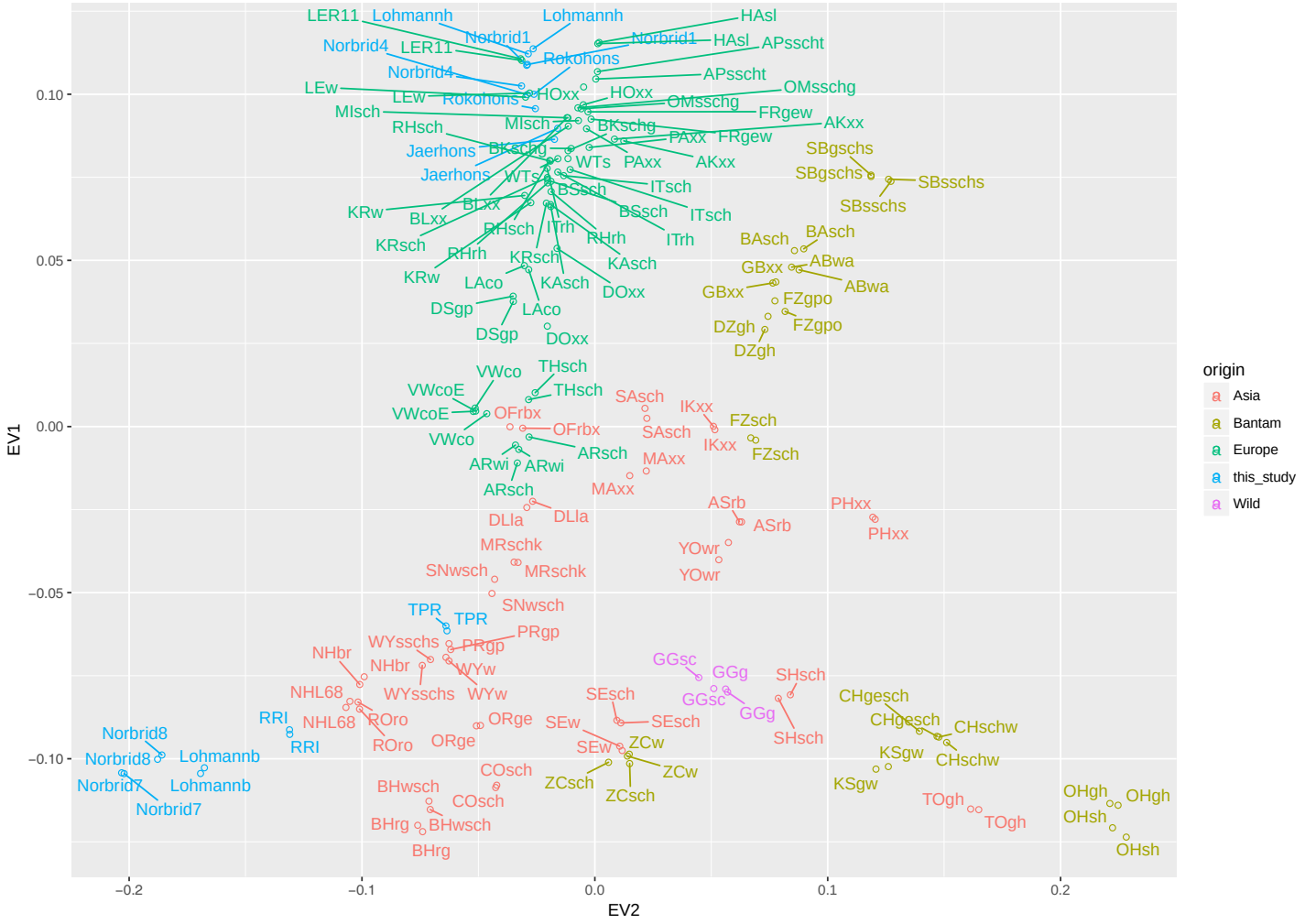
(VanRaden 2008)



# Average genomic relationships

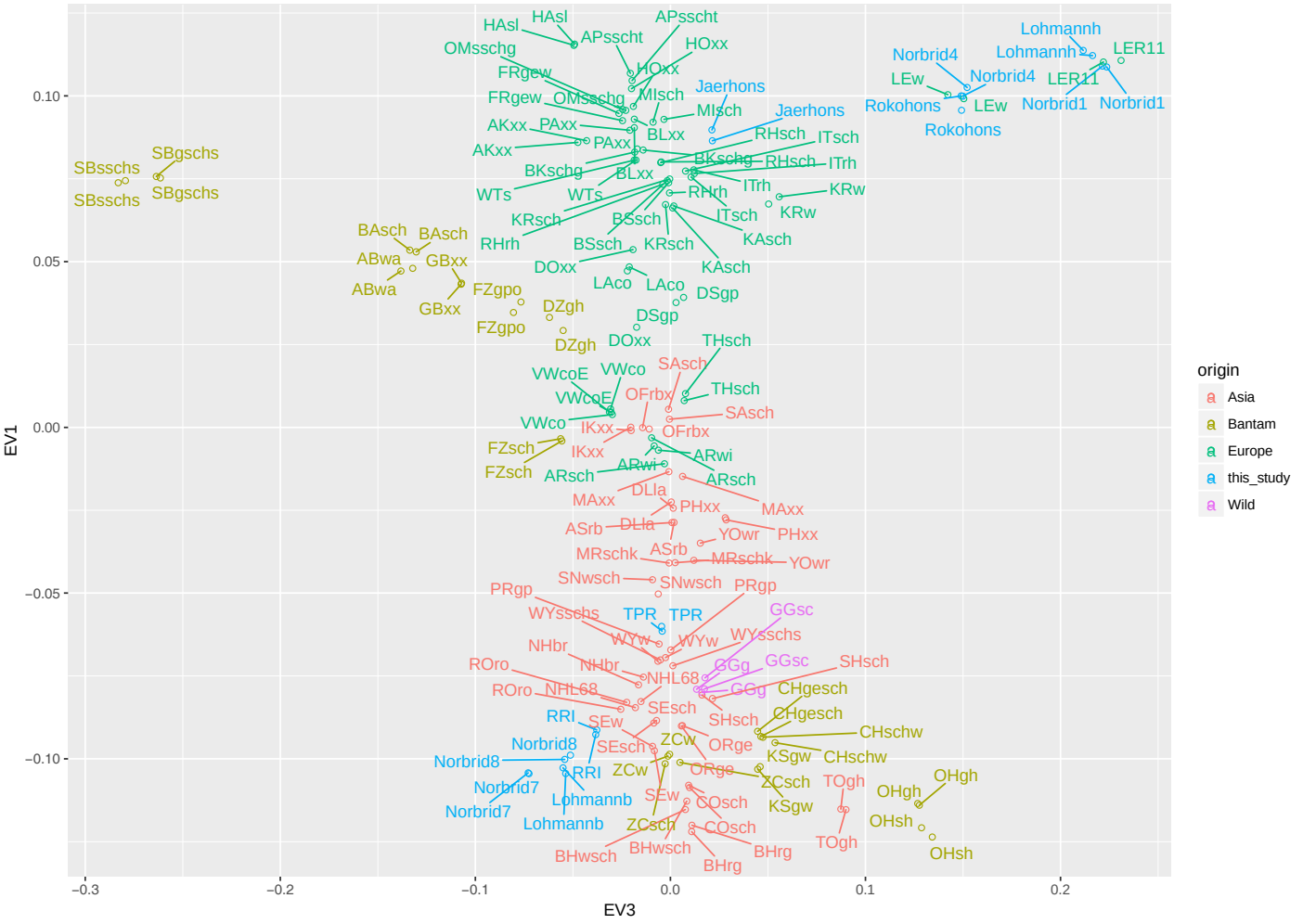


# PCA


EV1
EV2
0.10
0.05
0.00
−0.05
−0.10
−0.2
−0.1
0.0
0.1
0.2
origin
Asia
Bantam
Europe
this_study
Wild

7,36 %

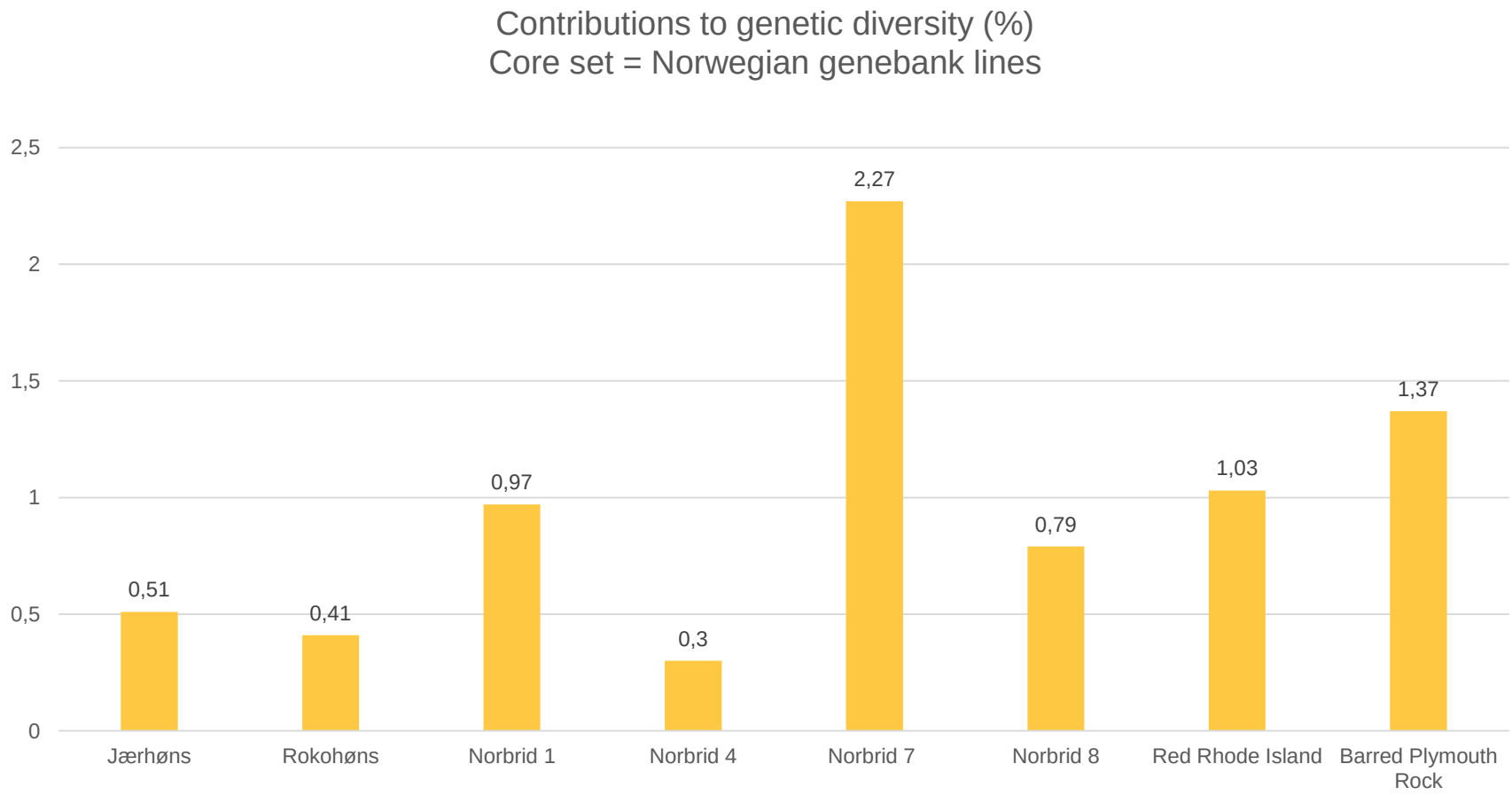
# PCA


EV1
EV3
0.10
0.05
0.00
−0.05
−0.10
−0.3
−0.2
−0.1
0.0
0.1
0.2
origin
Asia
Bantam
Europe
this_study
Wild

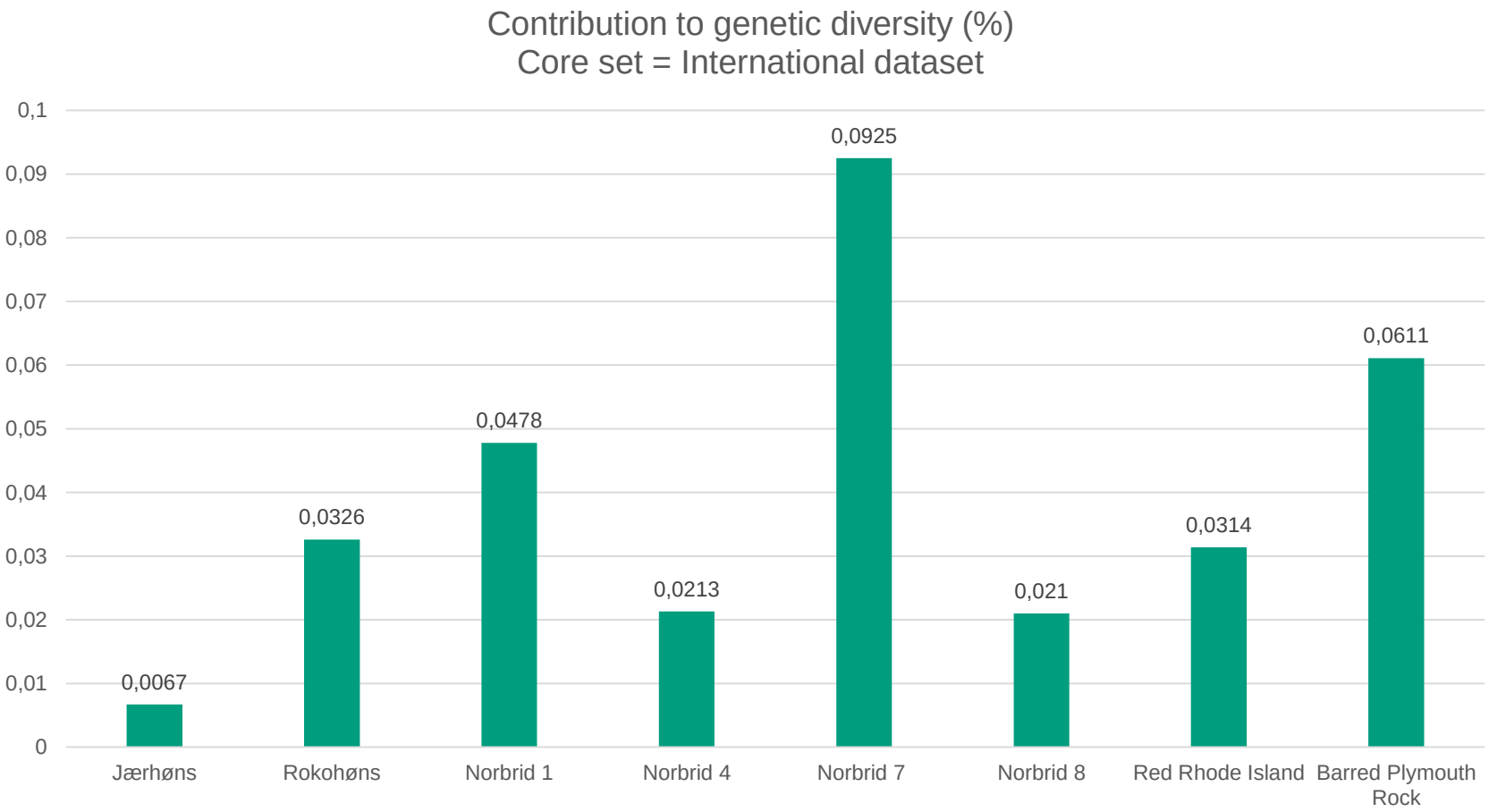
9,34 %

# Contribution to genetic diversity

- Core set method suggested by Edings et al. 2002
- Set of breeds is constructed (safe set)
- If adding one breed to the set leads to a decrease in genomic relationships the breed has a contribution to genetic diversity




Core set method (Edings et al. 2002)




Core set method (Edings et al. 2002)

# Discussion

- Diversity across the genome, or in spesific regions or for spesific traits of interest?
- Phenotypic diversity does not necessarily translate into genomic diversity (and vice versa)
- (Previous) Commercial lines = genetic resources


Thank you!