



71st Annual Meeting of European Federation of Animal Science

1st – 4th December, Porto 2020

Signatures of selection in three indigenous Croatian cattle breeds

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Genetics poster session 34: December 3rd 9.00-12.45

To identify signals of positive selection:

1. extreme Runs Of Homozygosity islands (eROHi)
2. Integrated Haplotype Score (iHS)

Istrian Cattle “Boškarin”

♂ 50 ♀ 919



- highly endangered

Busa Cattle

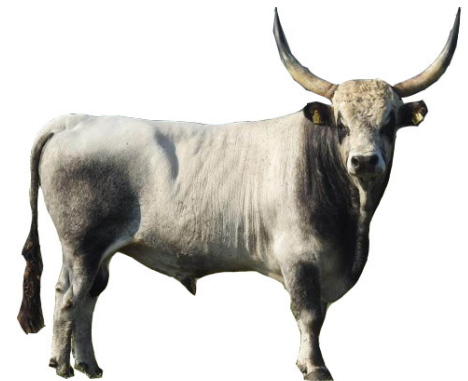
♂ 114 ♀ 1309



- potentially endangered

Slavonian Syrmian Podolian Cattle

♂ 13 ♀ 227

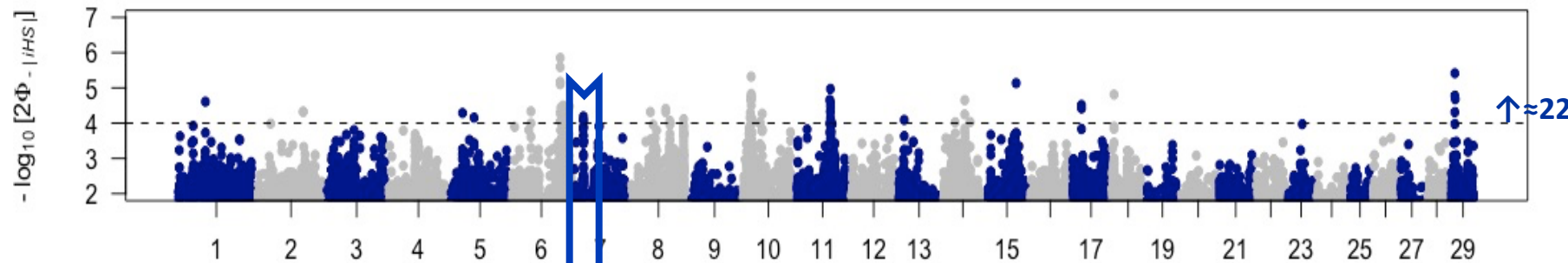


- critically endangered

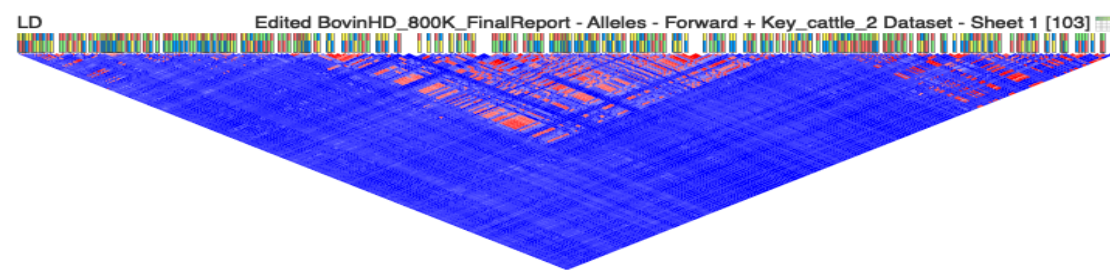
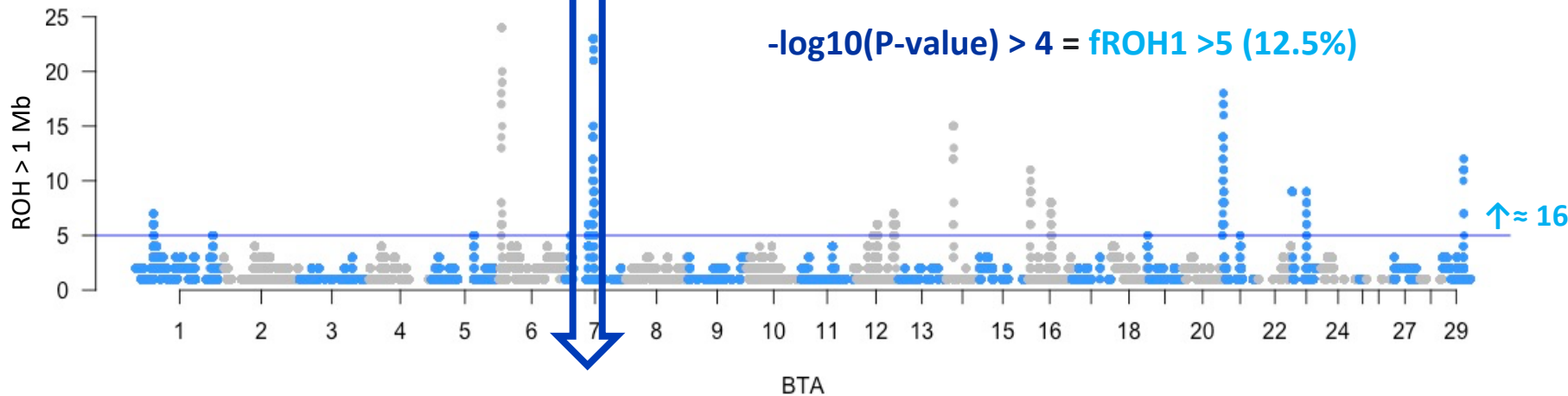


Busa Cattle (Buša)

iHS



eROHi

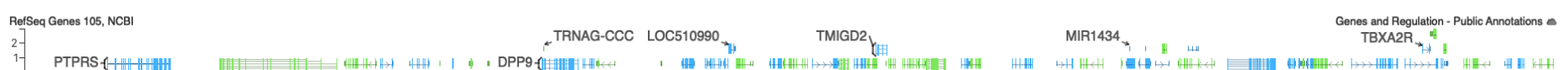


BTA7: 20.3-21.7 Mb

SAFB2 – estrogen receptor corepresor

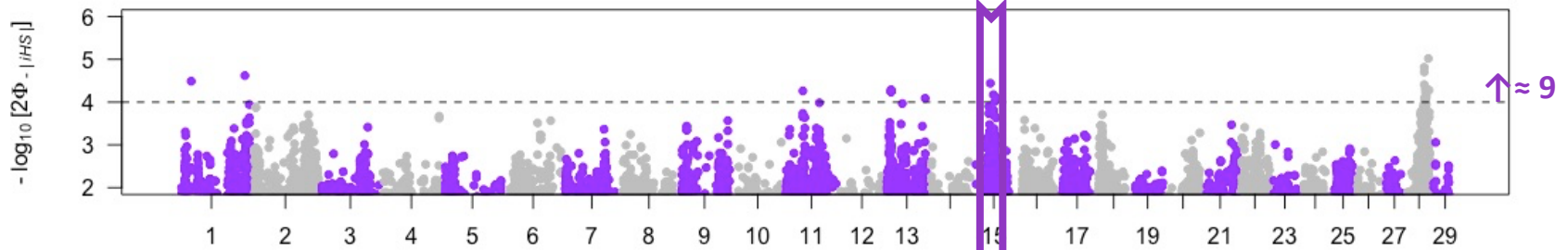
PLIN5 – lipid storage

TMIGD2 – immune response

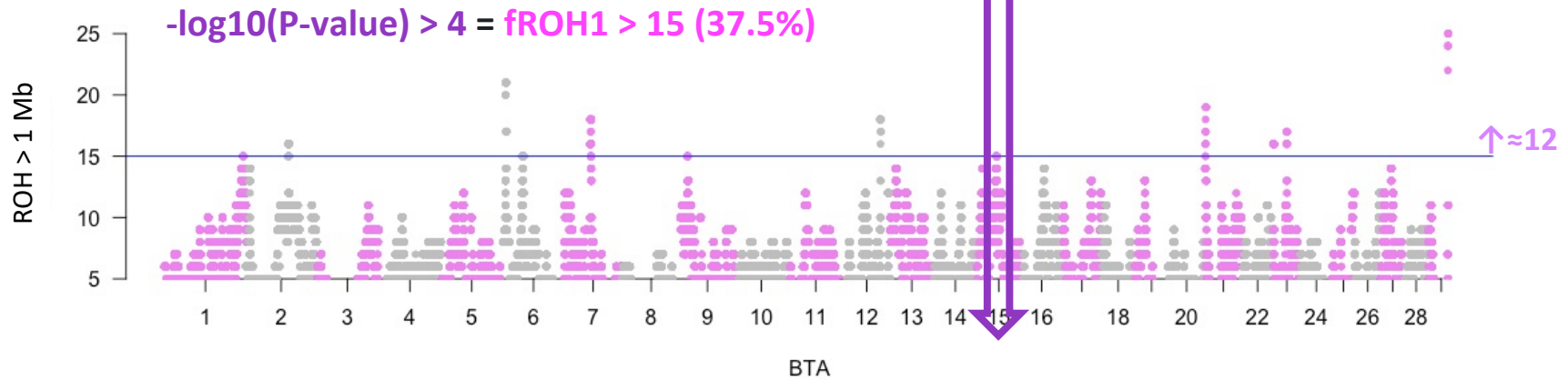


Istrian Cattle “Boškarin”

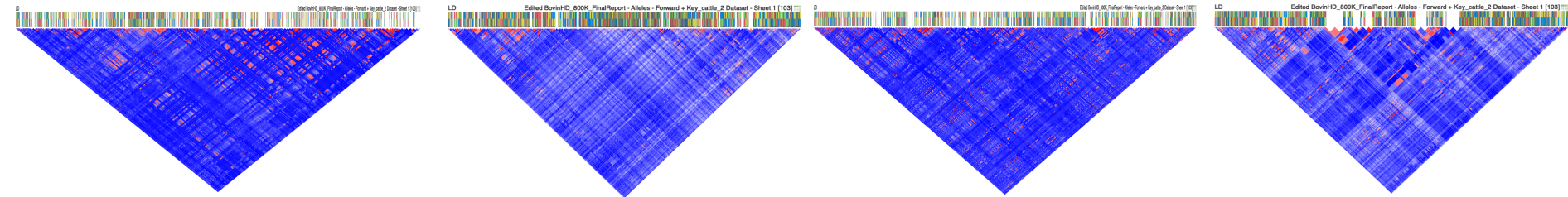
iHS



eROHi



BTA



BTA15: 34.8-36.3 Mb

SCN3B – lipid energy metabolism
TPH1 – aDNA mutation -
 reproductive rhythm (evolution)

BTA15: 41.1-42.7 Mb

MICAL2
USP47
GALNT18

BTA15: 44.0-45.6 MB

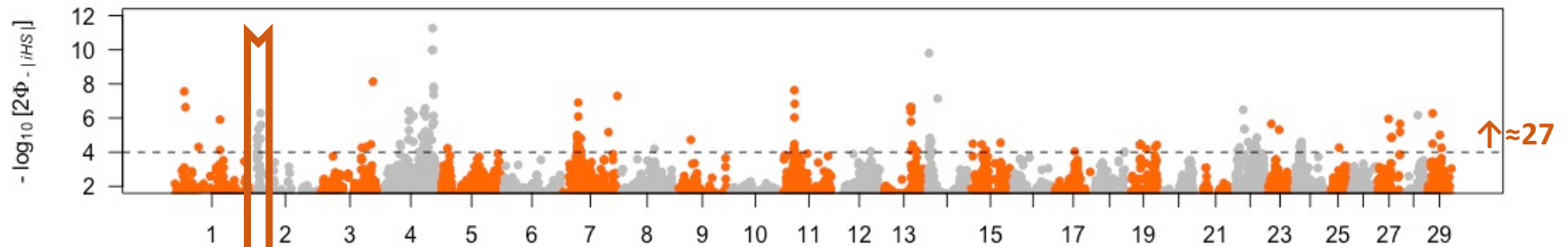
SCUBE2
STP5 – blastocystis –
 zoonotic protozoan

BTA15: 47.3-48.9 Mb

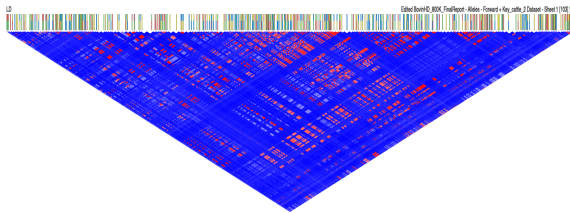
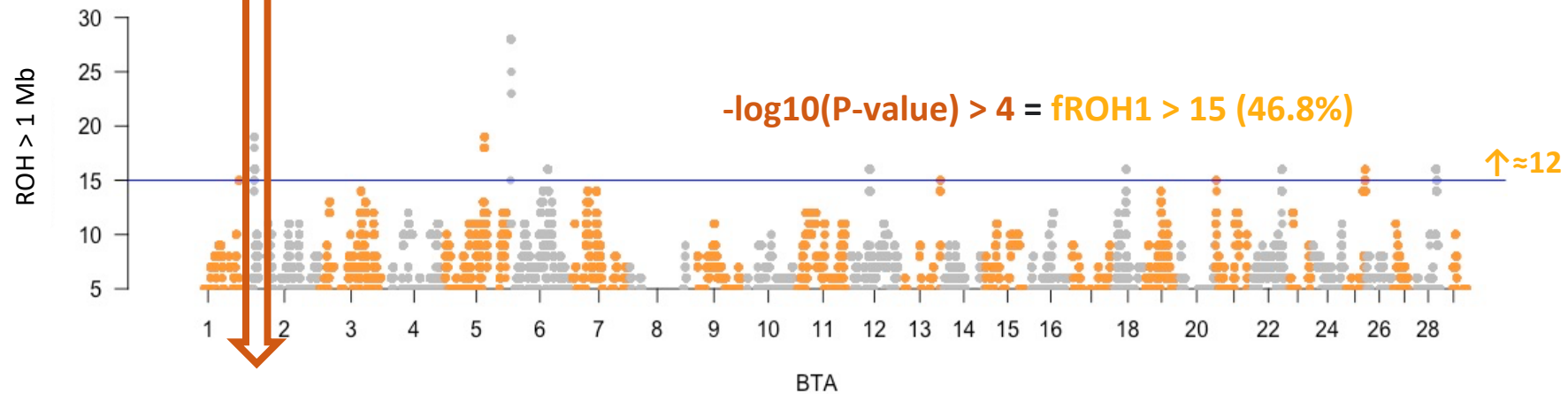
group of OR* genes
***OR52HI** – olfactory receptor

Slavonian Syrmian Podolian Cattle

iHS

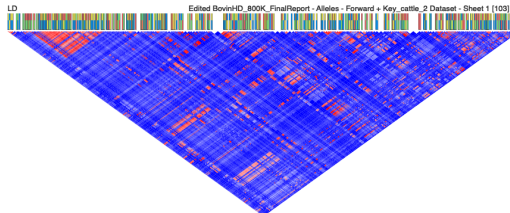


eROHi



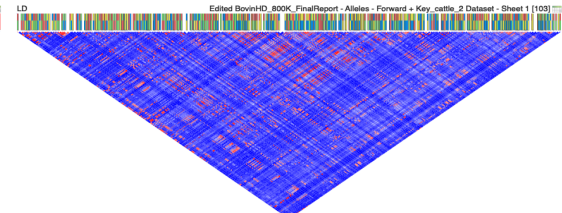
BTA2: 9.4-11.4 Mb

**FAM171B, FSIP2,
ZSWIM2, ITGAV**



BTA2: 11.5-13.5 Mb

ZNF804A, NUP35



BTA2: 16.8-18.7 Mb

**TTN – marbling; FKBP7 – adipose tissue
PLEKHA3 – lipid synthesis**

Conclusion



We have identified positive selection signals in the in three indigenous Croatian cattle breeds



Combined analyses of **eROHi** and **iHS**, together with **LD visualisation**, improve understanding of positive selection signals

Future work

- inclusion of other world cattle breeds for the inter-population analyses (versus production and environmental characteristics)

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Ministry of Science and
Education



HRZZ
Croatian Science
Foundation

Sir je IN - 20.12.2019. – 20.12.2022. “Potencijal mikroinkapsulacije
u proizvodnji sireva” K.K.01.1.1.04.0058



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Thank you for your attention!