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**Introduction.** Local fat-tailed sheep breeds originated in the mountain terrain of Southern Russia are multipurpose breeds which produce milk, meat, as well as coarse wool and sheepskins. An understanding of how natural and artificial selection shaped their genomes and identification of relevant candidate genes will provide significant data to their maintenance and future prosperity.



### Materials.

- We collected ninety-seven samples from local fat-tailed sheep breeds including Karachaev, Andean, Tushin, Ossetin, and Lezgin.

### Methods.

- All sheep were genotyped using Ovine Infinium® HD SNP BeadChip (Illumina, CA, USA).
- For ROH estimation, we used a window-free method for consecutive SNP-based detection implemented in the R package “detectRUNS”.
- ROH islands were defined as the runs of homozygosity shared in more than 50% of animals.
- The genes found in the ROH islands were annotated with using Ensembl.

**Results.** ROH islands were found at OAR1 (three islands) and at OAR10 (one island). The most interesting identified genes are involved in lipid metabolism and regulation of fat deposition in the rump.

**Table. SNPs overlapped with the genes located in the ROH islands**

OAR	SNPs	Breed	Gene	Function
1	oar3_OAR1_94871345, oar3_OAR1_94871633, oar3_OAR1_94875989	Andean Lezgin Tushin	TAFA3	Immune functions, involved in nervous system development
1	oar3_OAR1_95070907, oar3_OAR1_95081335, oar3_OAR1_95082013, oar3_OAR1_95082984	Andean Lezgin Tushin	SLC16A1 (MCT1)	Lipid metabolism, transportation of mevalonate and ketone bodies
1	oar3_OAR1_250759023 - oar3_OAR1_250968614 (and 25 SNPs)	Andean Ossetin	VEPH1	Regulation of fat deposition in the rump
1	oar3_OAR1_250845832, oar3_OAR1_250846151	Andean Ossetin	PTX3	Play a role in the oocyte formation and in various endocrine processes
10	oar3_OAR10_42075590 - oar3_OAR10_43052876 (and 72 SNP)	Karachaev Lezgin	PCDH9	Mediate cell adhesion in nerve tissues in the presence of calcium.

**Conclusions.** Data is relevant for future sustainable management of native fat-tailed sheep breeds.

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