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### **Identification of established genetic variants associated with milk traits**

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The present study investigated the genetic diversity of small ruminant breeds of Cyprus, regarding  $\beta$ -lactoglobulin ( $\beta$ -LG) genotypes and the existence of bovine single nucleotide polymorphisms (SNPs). In total, 366 animals belonging to the Chios and Cyprus fat-tailed sheep breeds, and to the Damascus and Machaeras goat breeds, were genotyped for the identification of the most common  $\beta$ -lactoglobulin variants (A and B), as well as for the presence of the growth hormone receptor (GHR) F279Y and the acylCoA:diacylglycerol acyltransferase 1 (DGAT1) K232A SNPs.

With regard to  $\beta$ -lactoglobulin genotypes, two genetic variants (A and B) were identified for the sheep breeds and only one variant (A) for the goat breeds. The results showed that variant B of  $\beta$ -LG gene was not present in any caprine sample and therefore a fixed A-allelic genotype was suggested for both goat breeds. However, the present study showed that the Cyprus fat-tailed sheep was predominantly of the  $\beta$ -LG B type demonstrating significant differences in allelic frequencies ( $P < 0.001$ ) and genotypic distributions ( $P < 0.05$ ) compared to Chios sheep, revealing unusually high distribution of the BB genotype (38.5% of the total genotypes) as compared to Chios (4.5%) or other Mediterranean sheep breeds.

With regard to bovine SNPs, the present study investigated the existence of GHR F279Y and the DGAT1 K232A SNPs, which have both been previously well documented in cattle as having strong effects on milk yield and composition. Although we were able to confirm the presence of both of these mutations in bovine sample controls by both allele specific PCR reactions and direct DNA sequencing, we were unable to detect them in all four major pure breeds of sheep and goats supporting the small ruminant dairy industry in Cyprus.