



Aristotle University of Thessaloniki



Ministry of Rural Development
and Food

Greek National Working Document

The aim of the project is to provide scientific evidence for genetic selection to control goat TSEs and mobilize goat sector for implementing genetics-based resistance breeding programs, by:

- strengthening scientific data on link between TSE resistance and candidate PrP alleles.
- involving goat sector to generate a reservoir of resistance allele carriers & recording production trait information
- providing information towards policy makers & goat sector about strategies to control TSEs in goat herds at national or regional scale.

The expected results of the project are:

- 1) Collection of experimental data to support goat TSE resistance breeding based on 222K and 146S/D carriers.
- 2) Goat data base of 222K and/or 146S/D allele carriers in Greece
- 3) Information dissemination on TSE resistance related topics and breeding strategies towards stakeholders on regional and national level.

Partners

1. Dr. L. Ekateriniadou, Dr. E. Boukouvala and a young researcher from NAGREF,
2. Prof. T. Sklaviadis, Prof. N. Papaioannou, Prof. M. Papanastopoulou, Assist. Prof. N. Giadinis, Lect. C. Dovas and Mrs. E. Kanata from the Aristotle University of Thessaloniki,

will work in field case surveillance, resistance allele search, diagnostic and biochemical strain typing activities, and maintenance and farmer/breeder interactions for Greece.

They will systematically study both the genetic and pathological features of Greek goat scrapie. To collect more data on *PRNP* gene polymorphisms they will collaborate with Mr. S. Doudounakis and Mrs. V. Palaska from the Ministry of Rural Development and Food- Greek National Reference Laboratory.

Dr. Ekateriniadou, Dr. Boukouvala, the young researcher, Prof. Papaioannou and Assist. Professor Giadinis in collaboration to the Greek Ministry of Rural Development and Food will select and collect data from the six herds and they will be responsible for samples management.

Histological and immunohistochemical confirmation of positive and negative samples will be carried out by Prof. Papaioannou – when it is necessary.

Greek partners will collaborate a) with six Greek farmers in the introduction of 222K goats and with the Greek Association of Farmers to ensure the dissemination of the results and recommendations from project implementation.

More analytical

WP1: Three goat herds and 3 mixed herds with low and high scrapie prevalence will be selected for genotyping analysis, emphasising the 222K and 146S/D alleles frequencies associated with scrapie resistance. The 6 herds are located in Central and Northern Greece, in the areas of Pella (high prevalence), Drama (medium prevalence) and Ellassona (no signs of the disease). The mixed herds all are located in the area of Ellassona. The area of Ellassona is that with the highest scrapie prevalence in Greece. Selected herds will be under continuous monitoring for the 3 years of the project to follow negative/resistant animals. (NAGREF, AUTH). The 6 herds will be fully genotyped for PRNP gene polymorphisms in both positive and negative animals (about 1200 animals). NAGREF will work on the identification of polymorphisms.

Positive/negative samples will be examined by TeSeE™ sheep/goat detection kit (BIORAD) and the diagnosis will be confirmed by the Confirmatory TeSeE Western Blot, and the Discriminatory kit of BIORAD at the Greek National Reference Laboratory for TSEs. 222K carrier goats will be introduced in the above herds, to follow the scrapie (hopefully decreasing) incidence during project implementation.

Prof. Papanastasopoulou, and Lect. Dovas will try to find and analyse negative samples with distinct proteinase K resistant prion protein fragment in goats with no signs of disease (AUTH).

Detailed isolate analysis by molecular strain typing will be further performed in the scrapie positive cases (AUTH). This technique of isolate typing will use discriminatory immunoblotting methods with state of the art approaches in consultation with partner laboratories (P1,P2). Selection of the herd and 3 years data collection (including production traits) will be done by AUTH and NAGREF in collaboration with the Greek Ministry of Rural Development and Food. NAGREF and AUTH will collect and store the samples will be responsible for samples management. Histological and immunohistochemical confirmation of positive and negative samples will be carried out by AUTH.

WP2: To collect more data on PRNP gene polymorphisms: 1) Scrapie-positive samples (\approx 300) derived from slaughterhouse screenings already in archive will be analyzed by DNA sequencing and scrapie typing techniques at NAGREF. In the same study, scrapie-negative samples derived from slaughterhouse screenings already in archive will be analyzed by DNA sequencing at NAGREF and subjected to western blotting to exclude presence of protease resistant fragments (AUTH). All samples will be obtained from the National Reference Laboratory. 2) The recent special findings in Greece revealing scrapie infected 222K carriers, resistance allele carrier goats (goats with 222K, 146S, or 146D) will be searched for by sampling and DNA analysis around 1500 goats in a random selection from 30 herds located in the areas with the highest prevalence and especially from herds with no signs of disease. (NAGREF, AUTH). The sampling will be focused on bucks. From the above selected herds, data including milk production traits will be collected. The samples analysis from the 30 herds will give the possibility to establish a data base of farmers – carriers of resistant bucks. The breeding of such animals will give them an extra value.

WP3: Greek partners will support the management with individual annual reporting and maintenance of a Greek page on website www.goattse.eu. It will participate in project consortium meetings. The partners will collaborate with Greek farmers in the introduction of 222K goats and with the Greek Association of Farmers – the only organization at national level - to ensure the dissemination of the results and implementation of project recommendations. To achieve this, one meeting or two meetings per year will be organized in the areas of Thessaloniki, Drama, Pella or Ellassona, for presentations, documentation and preparing plans for WP2. To transfer

approaches to policy makers a Working Group will be established in which experts from the Ministry of Rural Development and Food as well as from the Regional Authorities will participate.

Contact Person

Dr. Loukia Ekateriniadou

Associated Researcher

Veterinary Research Institute of Thessaloniki – NAGREF

Hellenic Agricultural Organization – DEMETER

Campus of Thermi

57001 Thermi

Greece

ekateriniadou@vri.gr

1. Veterinary Research Institute of Thessaloniki

Dr. Loukia Ekateriniadou

Dr. Evridiki Boukouvala

2. Aristotle University of Thessaloniki, Veterinary School

Assoc. Prof. Maria Papanastasopoulou

Assoc. Prof. Nikolaos Papaioannou

Assist. Prof. Nektarios Giadinis

Assist. Prof. Chrisostomos Dovas

3. Aristotle University of Thessaloniki, School of Pharmacy

Prof. Theodoros Sklaviadis

Mrs. Eitrini Kanata

Ministry of Rural Development and Food

Mr. Spyros Doudounakis

Mrs. Vaia Palaska