

SABRE Placement Report on the short term placement (9 weeks) of Dr. Elena Todorovska at the ARK-Genomics, The Roslin Institute and R(D)SVS, University of Edinburgh.

I would like to express my gratitude to the SABRE Integrated Project for financing my short term placement during the period:17.05-20.07.2009 in Roslin Institute.

I would like, also, to address my deep gratitude to Mr. Richard Talbot from ARK Genomics for the acceptance and giving me a chance to learn SNP genotyping and microarray in cattle and chicken as well as for the possibility to develop a good base for further collaboration on genomic studies in livestock.

The aims of this placement were: 1) to learn the SNP genotyping and 2) to learn microarray hybridization and analysis of data.

Task 1: During my stay in the ARK-Genomics I was included in the research on the project G0052 Cattle Traceability Unit: extraction of DNA from blood samples of cattle, quantification of DNA using Fluoroscanner and SNP genotyping of DNA samples using 96SNP panel (Illumina Veracode GoldenGate assay kit) including also calling and identification of SNP's with BeadStudio 3.2. Also the importance sample tracking and processing when dealing with large numbers from geographically scattered sources.

Some improvement of the method for extraction of DNA was performed for to increase the concentration of DNA. The procedure includes preliminary lysis of red cells followed by isolation of DNA from white cells with Maxwell 16 DNA Purification Kit (Promega).

Task 2: The microarray analysis in a project "Gene expression in chickens after gastric challenge", included RNA amplification with MessageAmp Kit (Ambion) and Spike-in Kit from Agilent for using on two colours probed Agilent Arrays, RNA quality control assay with RNA6000 Lab chip kit on the Agilent 2100 Bioanalyser, dye coupling reaction using amplified cRNA incorporating aminoallylUTP and RNA fragmentation, hybridization and scanning of Agilent two color array experiments on Axon scanner and data analysis. A second project using one colour Affymetrix microarray to examine gene expression during chicken's development, was also performed.

The action of this placement has allowed me study the most promising molecular genetics techniques in the field of Animal Breeding and Genetics. I had a great opportunity to increase my lab skills in functional genomics (microarray analysis) and application of multiplex SNP assay. The experience I obtained from this placement will help me in further development of the research projects with the Bulgarian livestock breeds. Based on the obtained skills in genotyping a project on the genetic diversity within and among Bulgarian indigenous sheep breeds and the development of effective strategy for their conservation was written and submitted for evaluation to the Bulgarian National Scientific Fund – Ministry of Education and Science. In the case of approval of this project, an enhancement of the collaboration between both institutions - AgroBioInstitute, Bulgaria and Roslin Institute UK is expected. The results we expected from this project will also give their impact to the SABRE project results.

Furthermore, I am able now to transfer the knowledge and technology I have got from advanced research institution such as Roslin Institute to research/teaching institutions and universities in Bulgaria. On the other hand, my stay in Roslin opens new opportunities to initiate networking and communications with researchers and scientists in relevant institutions in UK and Europe for future collaboration in the area of genomic studies in livestock.

I am thankful to **SABRE project**, for generously offering a grant to me to get trained on the molecular genetic techniques and funding my placement project in Roslin.

I would like to express my sincere gratitude also to all people in the ARK-Genomics, Roslin institute and especially to David Morrice, Alison Downing, Karen Troup for their valuable assistance in learning the techniques and Richard Talbot and prof. Stephan Bishop for their helpful comments on Bulgarian project “Genotypic and phenotypic characterization of the diversity of Bulgarian indigenous sheep breeds and their sustainable preservation” submitted for evaluation and approval by Ministry of Education and Science, Bulgaria.

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