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Book of Abstracts

**Guest Editors: Andrea Piva, Paolo Bosi (Coordinators)
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Roberta Davoli, Giovanna Martelli,
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P-013

Evaluation of the trend of the inbreeding from 1970 to 2011 in the Bracco Italiano dog breed

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The Bracco Italiano is one of the oldest pointing dog breed, used for hunting ever since the Renaissance time. In this study we analysed the pedigree information to evaluate the trend of the inbreeding of the breed in the course of time since 1970 to 2011. Pedigree records of 24,613 animals were considered. 16,832 dogs were inbreds. The average inbreeding coefficient in the reference population (23,997 animals) resulted 4.1%, while the average inbreeding of the inbreds was 6%. The inbreeding coefficient was <0.05 in 9849 dogs (58.51%) whereas it was >0.20 in 623 dogs (2.53%). The percentage of inbreds per year increased from 2.44% in 1976-1980 to 100% in 2003. 16 traced generations were highlighted. The evolution of inbreeding indicates a steady increase over time, from a mean value of 0.5% for dogs born in 1979, to an average value of 7.6% in dogs born in 2011. Nevertheless a regular monitoring of genetic variability of the population is important and must be adopted, in order to avoid the danger of an excessive increase of inbreeding in the future, which would result in significant inbreeding depression and in significant loss of genetic variation.

P-014

Genomic analysis for the valorization of Nero Siciliano swine breed

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Local breeds are a resource of great interest both from the genetic point of view, since they can be a repository of allelic combinations rare or absent in the selected breeds, and for the maintenance of marginal areas, since they can easily be associated to typical products helping farmers manage and protect the environment. *Nero Siciliano*, an autochthonous black pig reared in the natural park of the Nebrodi Mountains, is an example of such possibility. Used to produce high quality meat, including salami and cured ham, it has known an important increase in the number of farms and in sow reared in the last ten years thanks also to the creation of a Protected Designation of Origin label for *Nero Siciliano* meat and other related products. Genetic characterization is a fundamental prerequisite for managing genetic resources and can be exploited for setting up molecular authentication protocols. To characterize the breed a representative

sample of 93 *Nero Siciliano* pigs was selected from 22 farms well distributed in the Nebrodi area and analyzed using the PorcineSNP60 Genotyping BeadChip v2 (Illumina, San Diego, CA, USA), containing 61,565 SNP. Descriptive parameters were calculated (heterozygosity, LD, etc.) and a comparison with data obtained from the Italian Large White, Landrace and Duroc breeds using the same genotyping platform was performed. Different SNP sets (200, 150, and 100 randomly selected SNP, a subset of 100 SNP monomorphic in the *Nero Siciliano* or in the other three breeds) were tested with Structure and GeneClass2 software in order to distinguish the *Nero Siciliano* from the cosmopolitan breeds. The results suggest that a 100 random SNP dataset is sufficient to discriminate among the four breeds. Structure software was also used on 80 samples for which microsatellite data were also available to evidence potential population structures among the *Nero Siciliano* breed. Similar results were obtained with both microsatellite and SNP markers.

P-015

The Rough Collie dog breed: a depth of the pedigree of eighty traced generations

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The Rough Collie is a dog breed of ancient origins. In Italy, about 1000 dogs per year were recorded to ENCI in the period 1980/1995 while nowadays about 400 puppies/year are registered. The aim of the present study was to determine the depth of the pedigree and the genetic structure of the breed starting from a single dog born in 2012 and belonging to an Italian breeder. The complete genealogy included 2713 dogs (1012 males and 1701 females) distributed among 80 traced generations. 1582 dogs were inbreds (636 males and 946 females) and the inbreeding coefficient was <0.05 in 374 dogs whereas it was >0.25 in 276 dogs. Four stallions had more than 30 descendants. The average inbreeding coefficient over all animals excluded the base of the population (496 animals) resulted 8.4% (47.7% as maximum value). Starting from the animals with 64 traced generations all animals were inbreds. The evolution of inbreeding indicates a steady increase over time, from a mean value of 0.24% for dogs belonging to the 2nd traced generations, to an average value of 28.84% in dogs belonging to the 73rd generations. Despite the attention of the breeders in the accuracy of genealogical records, the levels of inbreeding that can be deducted from this dog are very high, thus a regular monitoring of genetic variability of the population must be adopted, in order to safeguard the genetics health of the breed.