

Research title

Genomic discovery and screening of complex traits in domestic animals

Identificazione genomica e screening di caratteri complessi negli animali domestici

Tutor

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State of the art and aims of the project)

The availability of innovative high throughput technologies such as next generation sequencing and single cell analysis, allows the production of large amount of “omic” data. Bioinformatic tools and on-line annotation resources make increasingly possible to outline the meaning and network interaction of large quantity of variability data. These are the premises to disclose the genetic basis of complex disease in domestic animals. Even if the genetic control of several complex diseases has already been known for years, only recently some studies revealed first insights on the genetic features controlling them. The PhD project aims to produce whole genome sequencing data (structural DNA) and transcriptomic data to identify the genetic features controlling specific important disease such as cardiomyopathies and hepatic disorders in pets. The project will actively network with national and international research groups and with sequence and annotation international efforts.

Recent publications of the tutor in the field

1. Genova F, Longeri M, Lyons LA, Bagnato A; 99Lives Consortium, Strillacci MG. First genome-wide CNV mapping in FELIS CATUS using next generation sequencing data. BMC Genomics. 2018 Dec 10;19(1):895. doi: 10.1186/s12864-018-5297-2..
2. Gandolfi B, Alhaddad H, Abdi M, Bach LH, Creighton EK, Davis BW, Decker JE, Dodman NH, Grahn JC, Grahn RA, Haase B, Haggstrom J, Hamilton MJ, Helps CR, Kurushima JD, Lohi H, Longeri M, Malik R, Meurs KM, Montague MJ, Mullikin JC, Murphy WJ, Nilson SM, Pedersen NC, Peterson CB, Rusbridge C, Saif R, Shelton GD, Warren WC, Wasim M, Lyons LA. Applications and efficiencies of the first cat 63K DNA array. Sci Rep. 2018 May 4;8(1):7024.
3. Strillacci MG, Gorla E, Cozzi MC, Vevey M, Genova F, Scienski K, Longeri M, Bagnato A. A copy number variant scan in the autochthonous Valdostana Red Pied cattle breed and comparison with specialized dairy populations. PLoS One. 2018 Sep 27;13(9): e0204669.
4. O'Rourke BA, Kelly J, Spiers ZB, Shearer PL, Porter NS, Parma P, Longeri M. Ichthyosis fetalis in Polled Hereford and Shorthorn calves. J Vet Diagn Invest. 2017 Nov;29(6):874-876. doi: 10.1177/1040638717724186.
5. Gandolfi B, Grahn RA, Creighton EK, Williams DC, Dickinson PJ, Sturges BK, Guo LT, Shelton GD, Leegwater PA, Longeri M, Malik R, Lyons LA. COLQ variant associated with Devon Rex and Sphynx feline hereditary myopathy. Anim Genet. 2015 Dec;46(6):711-5