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Sus Flora project: a genetic and genomic study of gut microbiota and immune system homeostasis in swine

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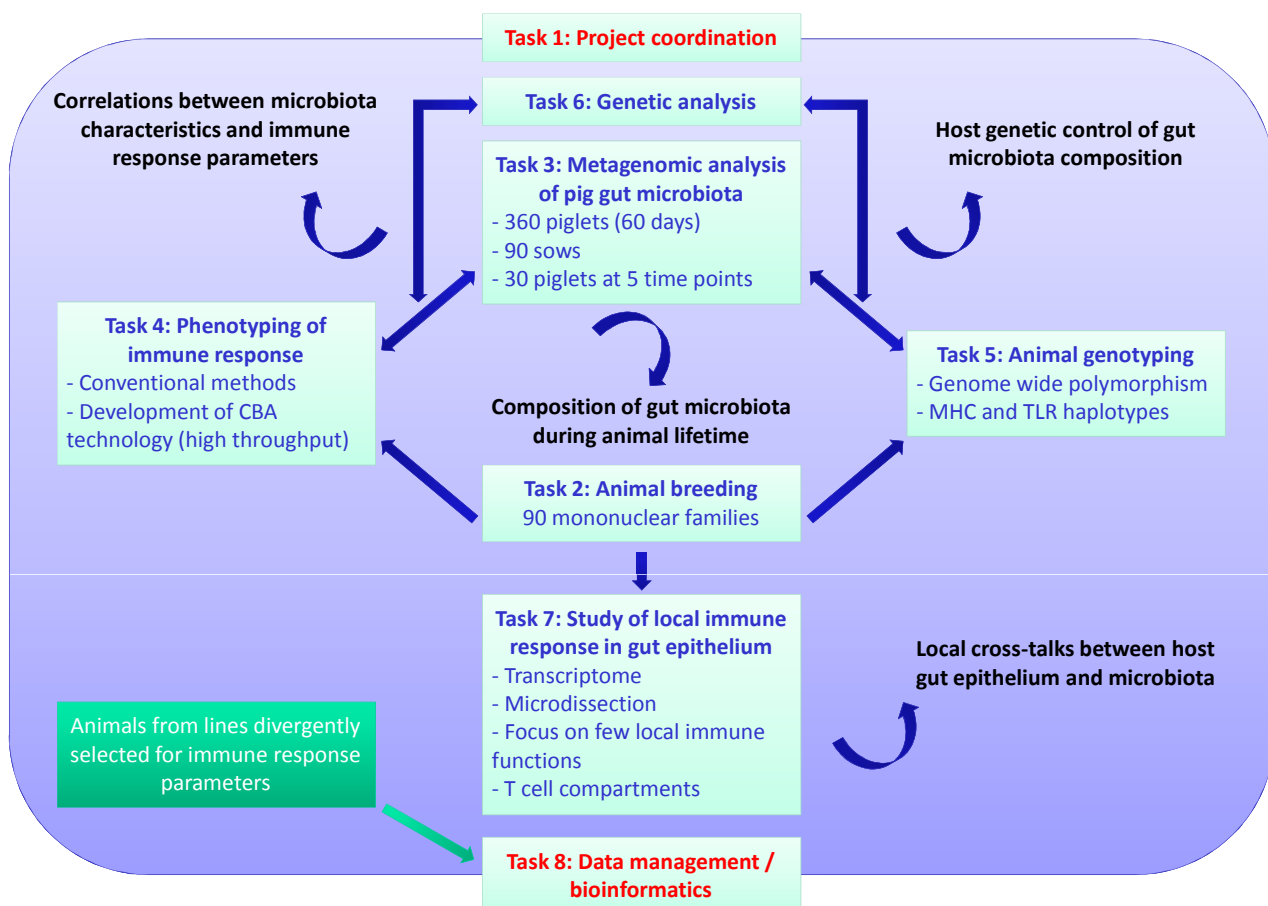
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In the near future, a broader definition of breeding goals in agronomic sectors should balance productivity with improved functional traits such as health, considering animals as a fully integrated component of sustainable production systems. Analyzing microbiota as a potent relevant phenotype acting in the development and maintenance of immunocompetence represents a prospective and original approach in the pig species, *Sus scrofa*.

The aim of the ANR-funded Sus Flora project (2011-2013) will be to study gut microbiota in pigs that are scored for innate and adaptive immunity traits and consider the gut microbiota as a new parameter to include in genetic analysis. This project will generate new data on inter-relations between immunity and microbiota homeostasis in swine. It is expected to provide interesting conclusions for porcine production and health and could be considered as a good model for research in human.



Ninety families will be produced and four piglets per family will be studied. Microbiota of 60 days-old piglets will be characterized together with the microbiota of the sows after piglet birth. Variation of microbiota during early lifetime will be studied for a subset of piglets from birth to growing period. Microbiota heritability and correlations between gut microbiota and immune response parameters will be calculated. The 360 piglets and the 90 boars will be genotyped using the genome-wide porcine 60K iSelect chips in order to accumulate data for further genome-wide association studies. In addition, interactions between gut epithelium and microbiota will be investigated for a subgroup of piglets.