
Newsletter # 1

COST Action FA1401 “PiGutNet”

This is the first newsletter of our network and, even if the activities has just started, I am glad to wish to all the partners a fruitful collaboration during the next 4 years.

The PiGutNet proposal has been born thanks to the collaboration between many colleagues come from Europe, Canada, China and Australia working in companies, breeder associations and research institutions, moreover is a pleasure that the European Federation of Animal Science (EAAP) agree to take part of the network. During the set-up of the network, each stockholder, thanks to its peculiar point of view, contributed to disclose the main gaps needed to increase the knowledge on the host-pathogen interaction building as new starting point to design productive strategies to give a contribute for the pig productive sector to face the post-antibiotic era. The PiGutNet network is addressed at a wide audience, included each person interested in this topic, for this reason, is appropriate to briefly introduce the context in which PiGutNet can contribute.

The European Union was among the first in the world to introduce strong limitations in the use of antibiotics in livestock breeding. Since 2006 the use of antibiotic as in feed growth promoter has been banned. Furthermore, several restrictions in the use of antibiotics for therapy have been progressively introduced in the last decade. Similar to guidelines for the use of antibiotic drugs in human medicine, the use of these molecules should be motivated and carefully supervised also in pig. The reasons of this policy are founded in the goal to contain the spread of the antibiotic resistance that is the main threat to reduce the effectiveness of the antibiotic therapy in livestock, increasing the risk of zoonosis occurrences in humans. Another important action was the decision not to permit the overlap of drug molecules between humans and animals. This action aims to reduce the spread of antibiotic resistance against molecules used for human therapy.

This policy strongly impacts the livestock productive systems, in special ways, for species reared in intensive conditions, like pigs. In fact, gastro intestinal, disorders GIT disorders remain major

problems, and the use of therapeutic intervention is still being widely used in the control of infectious intestinal and other diseases. On the other hand, antibiotic resistance is recognized as a world threat, and for this reason, FAO's Animal Production and Health Division (AGA) supports measures to minimize and contain antimicrobial resistance.

The European Union supported research to increase animal health and individuate alternative to in feed antibiotic. Thanks to these projects, new knowledge was acquired on the gut physiology, immunology and microbiology of pigs. Many scientific papers were published and a large number of data are available.

It was evident for example that a proper balance in the gut microbiome is important to reduce the need for therapy in the breeding of young pigs, and also that several management factors affect the abundance of some dominant bacteria species in the porcine GIT, including manipulation very early in pig's life and antibiotic supplementation of the mother. Thus, improper management procedures can contribute to a sub-inflammatory condition and bacterial dysbiosis in the gut.

However these studies also often highlighted the limit of traditional analytical tools and showed the opportunities created by new molecular high-throughput technologies, and thereafter the need for new standardization. Moreover, it intensively discussed within some research groups that it is also difficult to integrate all the new potential knowledge related to the extraordinary quantity of genomic data that are becoming available for domestic animal species.

This was also evident in several International meetings, where a large number of the promoters of this initiative participated. On these occasions the need emerged for an integrative network among scientists of different disciplines and of more opportunities to focus on a possible common starting point on the problem related to porcine gut health. This was the first seeding of the idea to explore the COST Action as a suitable instrument to work together. This structure creates opportunities to bring together several professionals having the pig as a main interest, from a large number of research/industrial fields to establish a multidisciplinary network with the necessary critical mass to translate the acquired knowledge into practical applications.

Afterwards, contacts were established with the major players in Europe working in pig, in order to create an international framework that will benefit European scientists.

The objectives were defined according to the needs of the sector – in the new scenario derived by the sequencing of the pig genome – that should be pushed in a post genomic context in order to fully exploit this resource in an integrative manner to quickly progress in promote the natural defense of the pigs against pathogen.

PiGutNet invite all the interested parties to join the Action to work tougher to deeply understand the microbiota implication in the gut health of pigs.

Thank you for your contribute!

Chair - Paolo Trevisi

Vice-Chair - Jürgen Zentek