

AVDANCES IN OMICS – RELEVANCE FOR POULTRY PRODUCTION AND GUT HEALTH

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Poultry is one of the fastest growing agricultural sub- sector. Demand for animal source food is increasing because of population growth, rising income and urbanization, and poultry meat has shown the fastest trend in the last decades. Part of the One Health approach, recognizing that the health of humans is connected to the health of animals and the environment, the removal of antibiotic growth promoters (AGPs) has increased the pressure to advance our understanding even further to maximise full performance potential of commercial broilers in the AGP-free era. Fortunately, the integration of the main *Omics*-technologies in poultry science has started to generate detailed information about animal-feed-gut microbiota interactions improving our understand of molecular changes in response to internal and external environmental factors. Here we provide an overview of the latest scientific understandings of the chicken genome potential, the diversity and the dynamics of the gut microbiota in relation to the immune system as well as its functions under normal or stressful conditions. The information obtained from using this integrative approach can be used to implement feeding strategies that improve gut health and bird performances. Probiotics will be used as an example to illustrate how the *Omics*-technologies can also support the development of Next Generation Feed additives which are more robust, accurate and targeted.

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