WAGENINGEN
UNIVERSITY & RESEARCH

Programme

Gut health in pigs and poultry

The influence of nutrition and immunology

Campus Wageningen University & Research

Course leader: Prof. dr. ir. W.H. (Wouter) Hendriks
Date: 7 June 2018

Course leader

Prof. dr W. H. (Wouter) Hendriks	Wageningen University & Research, The Netherlands

Lecturers

Dr A.J.M. (Alfons) Jansman	Wageningen Livestock Research, The Netherlands
Prof. dr G.P.J. (Geert) Janssens	Universiteit Gent, Belgium
Dr A. (Aart) Lammers	Wageningen University & Research, The Netherlands
Prof. dr T.A. (Theo) Niewold	Katholieke Universiteit Leuven, Belgium
Prof. dr ir. H.F.J. (Huub) Savelkoul	Wageningen University & Research, The Netherlands
Prof. dr H. (Hauke) Smidt	Wageningen University & Research, The Netherlands

Programme

Thursday 7 June 2018

08.30 **Registration / coffee and tea**

09.00 **Opening**
Maarten van Rees, MSc, Programme manager Wageningen Academy

09.05 **Introduction**
Prof.dr W.H. (Wouter) Hendriks, Wageningen University & Research

09.30 **Enhancing the power of the immune system in pigs and poultry**
Prof.dr H.F.J. (Huub) Savelkoul, Wageningen University & Research

Chronic inflammation, including that in the gut and triggered by nutritional and husbandry factors, can lead to extensive non-specific damage, showing that inflammation and immune dysfunction are intimately tied.
Immunomodulation by food refers to the consequences of exposure to dietary components steering the immunological defence system in a preferred manner. The immunomodulatory activities of specific dietary components on DC and T-cell subsets, and the tolerogenic capacity of these, provide a basis for potential application as a dietary supplement resulting in an improved and specifically directed immune responses. Healthier foods and novel dietary based immunotherapy approaches can play a crucial role in preventing infections and diseases, provide alternatives for the use of antibiotics.

10.15 Discussion and questions

10.30 Break

10.45 **Interplay of Gastro-Intestinal Microbiota with its Animal Host**
Prof.dr H. (Hauke) Smidt, Wageningen University & Research

The gastrointestinal tract is colonized by a myriad of microbes, referred to as microbiota, which plays an important role in host development after birth, as well as nutrition and health throughout life. Molecular approaches based on 16S rRNA, as well as meta-omics addressing in situ microbial functionality, have improved our understanding of the interplay of microbiota and animal health, and effects of dietary additives.

11.30 Discussion and questions

11.45 **Lessons learned from immune modulatory interventions in poultry**
Dr A. (Aart) Lammers, Wageningen University & Research

In chicken a strong interplay exists between the intestinal microbiota and the developing mucosal immune system. Administration of specific dietary compounds may be a tool to improve immune development as well as microbiota composition in poultry. However, a clear rationale for successful dietary interventions in poultry is lacking. Factors that may determine the outcome of dietary interventions will be discussed.

12.45 Lunch

13.45 **The intestinal innate immune response, mechanisms and implications for feed composition and feed additives**
Prof. dr T.A. (Theo) Niewold, Katholieke Universiteit Leuven

In this part, the importance of the intestinal innate immune responses as a determinant for health and growth is discussed. The basic mechanisms involved and the metabolic consequences for production animals are shown, as well as the way in which we can attenuate the negative effects by changing and adapting feed composition.

13.30 Discussion and questions

14.45 Break

15.00 **Effect of the diet on intestinal health in pigs and poultry**
Dr A.J.M. (Alfons) Jansman, Wageningen Livestock Research

The development of intestinal microbiota in the gut of pigs and poultry in the immediate post-natal period may have profound effects on the functional development of the gut and the local and systemic immune system. There are indications that interventions at early age (e.g. antibiotic treatment and diet composition) have long lasting effects on microbiota composition in the gut which in turn have effects on gut function. Feeding strategy and composition diet (e.g. level of fermentable carbohydrates, non-enzymatically digestible protein and inclusion of specific functional ingredients) can modulate the different functions of the gut and influence gut health.

15.45 Discussion and questions

16.00 **Intestinal health: what is there to add?**
Prof. dr G.P.J. (Geert) Janssens, Universiteit Gent

A myriad of potential feed additives have been tested for their effect on gut health, but many studies have a black-box approach. Digging into the less investigated mechanisms of gut health modulation might reveal unexpected opportunities for additives.

16.45 Discussion and questions

17.00 Wrap up and evaluation

17:30 Network drink