## Project C: Post-weaning diarrhea I

Post-weaning diarrhea (PWD) is a worldwide economically important disease in pigs in piggeries. The disease is characterised by increased mortality, weight loss, retarded growth, increased treatment costs and higher use of antibiotics. Enterotoxigenic Escherichia coli is considered to be the most important cause of the disease.

Currently the disease is often controlled by using antimicrobials, but the emergence of antimicrobial resistence in E. coli urges the need for alternative control strategies. For example, inclusion of additional dietary fiber and reduction of crude protein levels, but also the addition of zinc oxide (ZnO) has been demonstrated to have beneficial effects. However, by 2022 this zinc may no longer be used (EU legislation).

Another strategy is to vaccinate the piglets. In this study we are interested in the effect of vaccination as compared to the addidition of ZnO and nutraceuticals (e.g. fibers) to the feed. In particular the following treatments are considered (in the dataset this variables is names Treatment):

A: normal feed + ZnO

B: normal feed + nutraceuticals

C: vaccination + high energy/protein in phases 2 and 3 (time periods)

D: vaccination + high energy/protein in phases 1, 2 and 3

E: vaccination + high energy/protein in phases 1, 2 and 3 + nutraceutics

We are interested in the following outcomes:

ADWG0021, ADWG2150, ADWG0050: average daily weight gain (g/day) in the period between 0 and 21 days post-weaning, between day 21 and day 50 post-weaning and in the period between 0 and 50 days post-weaning, repectively.

A few details about the design of the study:

* Piglets live in pens (≈ cages) (16 piglets in one pen).
* We only have the total weights of the piglets living together in a pen.
* In this study each treatment group consists of 128 piglets (thus 8 pens of 16 piglets).
* The five treatments were randomised over the the 5×8=40 pens