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## Microbiota changes and immune-modulation by feed in zebrafish

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As the demand of fish proteins in diets steadily increases worldwide, a more experimentally feasible *in vivo* fish model to test novel and more sustainable (both economically and environmentally) diets is required. Zebrafish are small cyprinids extensively used as a model in molecular biology with vast potential to elucidate the role of feed in modulating the microbiota and fish health. The general assumption is that feed additives can alter the fish gut microbiota which, in turn, interacts with the host immune system. Zebrafish have been used to study host-microbe-immune interactions because of their optical transparency in larval stages which allows for *in vivo* imaging of specific (immune) cell populations in whole transgenic organisms. We aim to set up a screening toolbox to assess whether novel feeds are capable to reduce previously established gut inflammation or protect from disease. In our previous study we described how upon exposure of an anti-nutritional factor (soy saponin) zebrafish larvae presented with an increased number of neutrophils recruited to the gut area. These changes were accompanied by an increase of pro-inflammatory cytokines expression (*il1b*, *tnfa2*, *mmp9*, *il22*). Furthermore, saponin exposure changed the microbiota by increasing the relative abundance of Burkholderiaceae, Comamonadaceae, Cytophagaceae, Nocardioideaceae among others at the expense of Enterobacteriaceae (López Nadal, et al. 2018). In our new study, we incorporated saponin into dry feed and investigated whether, as in larvae, juvenile fish also develop intestinal inflammation upon exposure. If so, this saponin model can be used as a challenge model to test novel diets for their potential to prevent or treat inflammation. In this presentation I will present the latest (promising) results of this feeding trial using juvenile zebrafish.