**Session 01:** Adaptation of dairy and dual-purpose cattle to harsh environments

Exploring the genetic background of parasite resistance in selected lines of black and white cattle. *K. Brügemann1, K. May*1,2*, C. Scheper, C. Strube2, and S. König1,* 1Department of Animal Breeding, University of Kassel, 37213 Witzenhausen, Germany, 2Institute of Parasitology, University of Veterinary Medicine Hannover, 30559 Hannover, Germany

Regaining importance of keeping dairy cows in grassland systems implies a detailed evaluation of breeding strategies on genetic resistances against endoparasite infections. The present study aimed on i) a comparison of different black and white cattle selection lines for three endoparasite traits, and ii) the estimation of genetic parameters for parasite resistances. A research design was implemented to create three different genetic lines within herds on the basis of a German Holstein cow (GHC) population: line 1 = GHC x New Zealand (NZ) sires, line 2 = GHC x GH sires, line 3 = GHC x GH pasture sires. GH pasture sires represent bulls of German origin with high breeding values for the “grassland traits” being important in NZ. A forth genetic line (line 4) in the cross-classified research experiment included local black and white dual-purpose cows (DSN). 1995 faecal samples were taken during two farm visits from 1139 cows kept in 17 grassland farms located in North-west Germany. Endoparasite traits were the faecal egg counts for gastrointestinal nematodes (FEC\_GI) and for trematodes (FEC\_FP), and faecal larvae counts for *Dictyocaulus viviparus* (FLC\_DV). Lowest values for nematode infections were identified for the pasture adopted genetic lines 1 and 3. Heritabilities for endoparasites were 0.05±0.04 (FEC\_GI), 0.33±0.06 (FEC\_FP), and 0.05±0.04 (FLC\_DV). The genetic correlation between FEC\_GI and FLC\_DV was almost one (rg = 0.99), but close to zero between FEC\_GI and FEC\_FP (rg = -0.06), and between FLC\_DV and FEC\_FP (rg = 0.05). Antagonistic genetic relationships were identified between endoparasites and milk yield. The genetic correlation between FEC\_GI and SCS was 0.36, and also positive between endoparasites and the energy deficiency indicator fat:protein-ratio. Infections with endoparasites contribute physiological imbalances, and other health problems as well.