GEORG-AUGUST-UNIVERSITY GOETTINGEN – GOETTINGEN, GERMANY (Henner Simianer hsimian@gwdg.de)

The Animal Breeding and Genetics Group at Georg-August-University Goettingen (http://www.uni-goettingen.de/tierzucht) focuses on the genome-based analysis of genetic progress in livestock breeding programs. High throughput genotyping of genetic markers at low cost and whole genome sequencing has opened completely new perspectives for animal breeding. The genomic revolution has led to a fundamental change of paradigm in animal breeding, only comparable to the impact of the advent of artificial insemination in the 1960s. Genomic breeding programs are fully implemented in dairy cattle breeding and are of growing practical relevance in other species like chicken or pig. We are a partner in extensive large-scale genotyping projects in cattle, sheep, chicken, and pig. Our research focuses on the development of efficient methods in statistical genetics (haplotyping, whole genome association mapping, and genomic breeding value estimation) and the design of efficient genomic selection schemes. Since 2016, we offer a new master programme 'Integrated Plant and Animal Breeding' which is taught in English language and is open to visitors. We do not run a wet-lab, but work exclusively with advanced methods of statistics, quantitative and population genetics applied to very large genomic data sets, mainly stemming from real breeding programs of industry partners. Students interested in an internship must have some background in statistics and a basic knowledge in data management and analysis, preferably with R. Student's projects during an internship will focus on specific questions in ongoing larger research projects and usually will be supervised by a graduate student. Typical topics can be e.g.:

- Which parts of the genome cause the genetic correlation between two complex traits?
- Can we improve genomic prediction by giving higher weight to certain genes based on prior knowledge?
- How does training set size affect the accuracy of genomic selection?

These and similar research questions can be studied in a variety of species and traits.