

Report on SABRE integrating award between The Roslin Institute and Jiangxi Agricultural University.

A SABRE integrating award to Dr. Wenhua Wei allowed a unique 3-way exchange between two SABRE partners. Wenhua has been working at Roslin on the development of software for epistatic QTL analyses as part of WP1 and GridQTL. Prof. Lusheng Huang has a very large F2 cross between Erhualian and Duroc pigs which provides an excellent population to test for epistatic QTL.

During December 2008, Wenhua visited Jiangxi Agricultural University and started the epistatic analyses for carcass traits and meat quality traits. For both trait types individual QTL have been identified previously using GridQTL, another SABRE supported resource. To deal with high computational demand of these analyses, the computations were performed using the ECDF facility in Edinburgh. In April 2009, Dr. Yanyu Duan visited The Roslin Institute for 10 days during which she received training to independently run the epistatic analyses using the newly developed tools. In June, DJ de Koning completed the award by visiting Jiangxi University for a few days. During his visit, he gave a full day of lectures on imprinting, epistasis, genetical genomics as well as association studies, all with a focus on pig genomes. Further he discussed various research projects and interacted with the scientists in Prof. Huang's laboratory.

The analyses are now completed and a first observation is that the amount of epistasis (e.g. in terms of detected number of epistatic QTL pairs in relation to the number of traits) is not very large for either carcass or meat quality traits. For carcass traits, epistatic QTL were detected for organ weights and vertebrae proportions with epistatic QTL explaining up to 2% of the variation. While both the 'usual suspect' QTL on SSC4 and SSC7 showed epistatic interactions with other loci, there was no evidence for any epistasis between these two loci. The analysis of the meat quality traits showed epistasis for moisture and glycogen content. We are currently preparing manuscripts on the basis of these results.

Overall the visit has been very useful; not only in creating new publishable results but also in establishing new collaborations and providing access to the tools that are developed within WP1.