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Application of Pig Genomic Studies to Agriculture and Life Science

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Pigs have been used a vast number of research studies that are conducted for production of animal protein for human consumption and biomedical model of human conditions. Recent pig genomic research has made considerable advances for identifying economically important loci in swine industry and genetic variation that affects biological processes. More than 20 different pig QTL mapping populations have been developed by crossing phenotypically divergent founder breeds or populations to identify chromosomal regions that are important for pig growth and fat deposition. Pigs and humans share numerous physiological conditions and phenotypic similarities for fat deposition and food intake. Therefore, identified chromosomal regions and genes that regulate lean growth and fat deposition in pigs are applicable to the study of the genetic basis of human obesity and other related health problems. Sequencing of pig genome has been initiated and the pig genome sequence will provide an important resource for researchers studying the biology of the pig or using the pig as a model for understanding human genome biology to improve health. Recent pig genomic studies seek to integrate gene expression and genetic marker information from a swine resource population to combine the power of recombination with functional analysis for understanding biological pathways of complex genetic phenotypes.