Recent Advances in Molecular Genetic Linkage Maps of Cultivated Peanut (*Arachis hypogaea* L.).

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The competitiveness of peanuts in domestic and global markets has been threatened by losses in productivity and quality that are attributed to diseases, pests, environmental stresses and allergy or food safety issues. Narrow genetic diversity and deficiency of polymorphic DNA markers have severely hindered construction of dense genetic maps for effective QTL analysis to deploy linked markers in marker-assisted peanut improvement. Peanut Genome Initiative (PGI) was formed in 2004 and expended to a global effort in 2006 to coordinate the research in molecular marker development and improvement of map resolution and coverage, which would enhance genetic map utilization and facilitate QTL analysis for marker-assisted selection in peanut breeding programs. Thereafter, recent years have witnessed accelerated development of genomic resources in peanut such as generation of expressed sequenced tags (ESTs) (252,832 ESTs as March 2012 in the public NCBI EST database), development of molecular markers (over 6,000 SSRs), and cultivated peanut genetic maps that facilitate the identification of QTLs and discovery of markers/genes associated with resistance to biotic and abiotic stresses and agronomic traits. As a result molecular marker-assisted breeding for several traits has been successfully initiated. Based on 11 genetic maps, an international reference genetic map comprising of 897 marker loci has been developed. As a part of the Peanut Genome Project, the international peanut community has initiated genome sequencing. Developed reference genetic map together with SNP-based genetic maps for diploid species and BAC-based physical map will assist the assembly of the whole genome sequences. The ultimate goal of genome research is to find all the genes or gene spaces and to develop tools for using in genetic improvement and genetic study of peanut. Soon availability of peanut genome sequences and genomic tools will accelerate the use of biotechnological approaches for peanut improvement.