



Improvement of molecular techniques: A multidisciplinary vision

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The advances in molecular technologies since the discovery of the PCR (Polymerase Chain Reaction) and their association with the use of molecular markers, allowed a rapid progress in the development of technologies and equipment able to generate and analyze data on a large scale, revolutionizing research that until recently was only based on single marker, like the analysis of Single Nucleotide Polymorphism (SNP), and nowadays with the genomic era is already possible in a few hours genotyping millions or even thousands of SNPs.

This evolution has allowed improvements in research to the knowledge of genomes creating expectations and real possibilities of application of these techniques in various fields, from medicine to animal production. These new technologies of molecular analysis of DNA variability determining points of interest in chromosomes, which are technically called as molecular markers. These markers can be used in various applications, including paternity test, construction of genetic maps, mapping of quantitative inheritance of characteristics, isolation of genes, marker-assisted selection and characterization of the genetic diversity of different species.

The improvement of sequencing and bioinformatics technologies were crucial to studies with characteristics of interest using high-density genetic information. The SNP genotyping panels stimulated researches in the human area, especially in studies of cancer and exoma, and also in agribusiness, aiming the search for superior genotypes for domestic plants and animals. The differential use of the panels is the possibility to seek complex characteristics, once the wide distribution of markers favors through the linkage disequilibrium, the identification of genomic regions associated with expression phenotypes in study.

Therefore, this advance has become essential for greater accuracy and speed in molecular diagnostics, increasing the accuracy in the selection of individuals with genotypes of economic interest, allowing identification of these genotypes before to their expression and even possible diseases before their manifestation. The gain for the genetic improvement was significant enabling the increase in the productive chain in order to reduces costs and production space. The topics covered in this issue is to provide valuable information to readers in a clearly and comprehensively, enabling the dissemination of such knowledge in the *Journal of the Selva Andina Research Society*

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