

# Minisequencing on Functionalised Self-Assembled Monolayer as a Simple Approach for Single Nucleotide Polymorphism Analysis of Cattle

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We have developed a genetic barcode module, based on a parallel sorting facility of single nucleotide polymorphism for secure individual identification of cattle. Biotinylated allele-specific oligonucleotides were immobilized onto the predefined spots of streptavidin tethered self-assembled monolayers with long chain alkanethiols on biochips. The target DNAs for hybridization and subsequent on-chip minisequencing were produced by multiplex PCR method. After enzymatic extension, only the moiety-modified dideoxynucleotide triphosphate, when coupled to its complementary target sequence, could be detected by the corresponding antibody to the moiety in a specific and sensitive manner. The database SNPZoo was developed for storage of the sequence information consisting of cytosine/thymidine patterns. This SNP chip system can further be used in the detection of any replaceable point mutations occurring in the human and animal genes.

*Key words:* Microarray, Minisequencing, SNP