Polymerase chain reaction (PCR) is a biochemical and molecular biology technique for isolating a segment of DNA and amplifying it exponentially, by enzymatic replication, without using a living organism.Although this technique requires advanced machinery and data processing tools, the non-chemical approach could have some advantages such as lower cost and enhanced speed and portability.Despite the variety of methods used for DNA analysis, only PCR in its various formats has been widely applied in the detection and analysis of GMOs and is generally accepted by the regulator.Annealing temperatures must be optimized for each primer set to work properly within a single reaction, and the sizes of the amplicons , i.e. their base pair lengths , must be different enough to form distinct bands when visualized by gel electrophoresis .Shortcomings of current detection methods Currently, it is highly unlikely that unexpected or even unknown GMOs will be detected, as the DNA sequence of the modified gene or resulting protein must be known in order to detect them.Protein-based .methods detect the product of the transgene, for example the Bt toxin