P13.ANALYSIS OF DNA FINGERPRINT DATA BY CLUSTERING-BASED ALGORITHMS

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DNA fingerprinting is a technique which allows the analysis of genomic relatedness between DNA patterns. Various DNA fingerprinting techniques have multiple applications in the area of molecular diagnostics, medical diagnosis, forensic science, epidemiological analyses, parentage testing, food industry, agriculture, environmental microbiology, ecology, and many others. After fingerprinting of DNA by several techniques such as RFLP, ARDRA, rep-PCR, RISA, DGGE, there is a major difficulty for aligment of multiple peak sets of DNA fingerprinting image. Although bioinformatics software applications are commercially available for gel analyses (e.g., BioNumerics and GelCompar, Applied Math. Sint-Martens-Latem, Belgium), they are usually expensive and the types of analysis included are limited. In order to analyse the DNA fingerprint data, several clustering-based algorithmic techniques are widely used such as self-organizing maps, hierarchical clustering, graph-theoretical approaches and model-based clustering. These are free and flexible programs, therefore desirable techniques for the analysis of DNA fingerprinting data.

The choice of the clustering algorithm is generally dependent on both evaluation criteria and the user's experience. Data distrubition and requirements of application are the main performance tools for different clustering algorithms.

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