

Pulse-field gel electrophoresis (PFGE) of large DNA molecules - Elektroforeza pulsacyjna dużych cząsteczek DNA

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Gel electrophoresis is one of the most commonly used separation techniques in the modern molecular biology laboratory. The molecular weight range of DNA molecules which can be separated using conventional agarose gel electrophoresis is limited to sizes smaller than 50 kilobase pairs (kb). In 1982, Schwartz *et al.* introduced the concept that DNA molecules larger than 50 kb can be separated by means of two alternating electric fields (pulsed-field gel electrophoresis - PFGE). Since that time a number of instruments based on this principle have been demonstrated for separating DNAs with size range from a few kb to over 10 megabase pairs (mb). In this review, we discuss the following areas: 1) The history and development of pulsed-field gel electrophoresis, 2) Theoretical aspects of pulsed field gel electrophoresis, 3) Factors that effect pulsed-field gel electrophoresis, 4) Applications of the pulsed-field gel electrophoresis. This information should provide researchers with adequate perspective to evaluate this technique and the instruments for application in their laboratories.