

The Influence of the Moving Speeds of DNA Droplet on Polymerase Chain Reaction

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Abstract : In this work, a reaction chamber is reciprocated among three temperature regions by using an oscillatory thermal cycling machine. Three cartridge heaters are collocated to heat three aluminum blocks in order to achieve PCR requirements in the reaction chamber. The effects of various chamber moving speeds among different temperature regions on the chamber temperature profiles are presented. To solve the evaporation effect of the sample in the PCR experiment, the mineral oil and the cover lid are used. The influences of various extension times on DNA amplification are also demonstrated. The target fragments of the amplification are 385-bp and 420-bp. The results show when the forward speed is set at 6 mm/s and the backward speed is 2.4 mm/s, the temperature required for the experiment can be achieved. It is successful to perform the amplification of DNA fragments in our device.

Keywords : oscillatory, polymerase chain reaction, reaction chamber, thermal cycling machine

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