

HDA-GT12 System for Detection of Cystic Fibrosis Using Multiplex PCR* Amplification Primers

Introduction:

Cystic fibrosis (CF), a genetic inherited disorder, causes lung and pancreas failure due to the heavy secretion of mucus that may plug up ducts and tubes in the bodies. Each year approximately 3,200 babies are born with CF in the United States, and about 30,000 American adults and children are living with this disorder. Multiplex PCR* is one of methods for CF gene analysis.

BioCal provides a cost-effective multi-channel capillary electrophoresis system for high-sensitivity and high-resolution multiplex detection. This bench-type HDA-GT-12 system uses a fluorescence mechanism for nucleic acid detection. A multi-channel capillary gel cartridge used with the system can automatically inject and analyze 12 strip samples simultaneously in less than 10 minutes or a 96-well plate in 1 hour. This affordable system can be operated easily in research laboratories for different kinds of multiplex analysis.

Methods:

Sixteen-plex PCR* amplification DNA samples were analyzed in the HDA-GT12 system.

Operation Procedure:

1. Insert BioCal's gel cartridge into the system (cartridge capacity: 1200 samples) (45 seconds).
2. Place PCR solution 1:4 dilution (20 µl) in 0.2 ml tube strips (or plates) into the sample tray (60 seconds).
3. Select a method from BioCalculator software and click

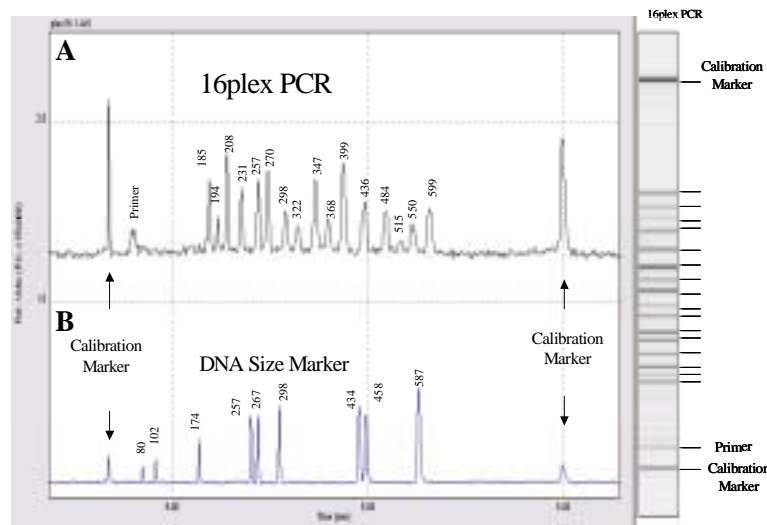


4. “run” button to run samples (45 seconds).
4. Separate and detect the multiplex PCR fragments (400 seconds at 5 kV).

*The PCR process is covered by patents owned by Hoffmann-LaRoche.

Results:

1. Sixteen-plex DNA products were detected, ranging from 185bp, 194bp, 208bp, 231bp, 257bp, 270bp, 298bp, 322bp, 347bp, 368bp, 399bp, 436bp, 484bp, 515bp, 550bp and 599bp.
2. A DNA size marker was used to determine the size of



PCR products.

Total automatic analysis time: 7 minutes

HDA-GT12 System Features:

- Automated process: no need for manual sample loading.
- Replaceable gel cartridge: no need for gel preparation.
- 10-minute electrophoresis time.
- Detection : 0.1 ng/ ul DNA concentration in the solution.
- Resolution: 1-5 bp in DNA fragment sizes between 50-500 bp.
- 96-sample capacity.
- Data view: in electropherogram or gel-view format.
- Software: digital data for analyses.
- Compact design: fits on any lab bench.
- Competitive system cost and economical consumables.
- HDA-GT12 system is for research use only.