

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202511069172 A

(19) INDIA

(22) Date of filing of Application :20/07/2025

(43) Publication Date : 08/08/2025

(54) Title of the invention : A GENETIC SAMPLE PRESERVATION CARTRIDGE WITH PASSIVE COOLING AND CONTAMINATION ALERT FEATURES

(51) International classification :B01L0003000000, G21C0015180000, C02F0001280000, G01N0033480000, G01N0001000000

(86) International Application No :NA  
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA  
Filing Date :NA

(62) Divisional to Application Number :NA  
Filing Date :NA

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(57) Abstract :

The invention relates to a genetic sample preservation cartridge (100) equipped with a passive cooling system (110) and contamination alert features (120). The cartridge includes a thermally insulated housing (112), a contamination detection strip (121), a sample holder tray (130), and a humidity regulator (140). The passive cooling mechanism (110) maintains 2°C to 8°C for 72 hours without electricity, while the biosensor strip (121) visually indicates microbial contamination. The cartridge (100) provides reliable, portable, and reusable sample preservation for clinical, forensic, and research applications.

No. of Pages : 16 No. of Claims : 5