

(54) Title of the invention : DOWN SYNDROME DETECTION STRIP BASED ON URINE SAMPLE

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(57) Abstract :
The present disclosure introduces down syndrome detection strip based on urine sample 100, which provides a non-invasive diagnostic system for detecting biomarkers in the first trimester of pregnancy. The strip comprises sample pads 102 to collect and direct urine samples onto a nitrocellulose membrane 104, which facilitates controlled flow and interaction with reagents. Amplification chambers for beta-hCG 108 and unconjugated estriol 110 are equipped with gold nanoparticles 112 for signal enhancement and 6-carboxy fluorescein dye 114 for fluorescence detection. The system includes test lines for beta-hCG 118 and uE3 120, functionalized to produce distinct visual signals for each biomarker, and a control line 116 to validate proper functioning. Absorption pads 106 ensure consistent flow by managing excess urine, while the blank urine cassette 122 houses all components, creating a portable and user-friendly diagnostic tool for early and accurate detection of Down Syndrome biomarkers. Reference Fig 1

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