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(57) Abstract :

The present disclosure relates to a medical micro-trench based diagnostic device and method for screening of infectious disease causing pathogens using DNA hybridization of the disease causing pathogen. In an aspect, the device includes a chip having a substrate that is configured with a plurality of micro trenches that are configured to facilitate hybridization of a target nucleic acid of a disease causing pathogen, and an oligonucleotide that bears signature of the target nucleic acid of a disease causing pathogen, wherein the plurality of micro trenches are configured with micro metal coating and the oligonucleotide is coupled to the micro metal coating to prevent diffusion and spreading of the oligonucleotides from the confined space of the plurality of micro trenches and to facilitate entrapment of high concentration of the oligonucleotide in the trench to increase the hybridization with target nucleic acid.

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