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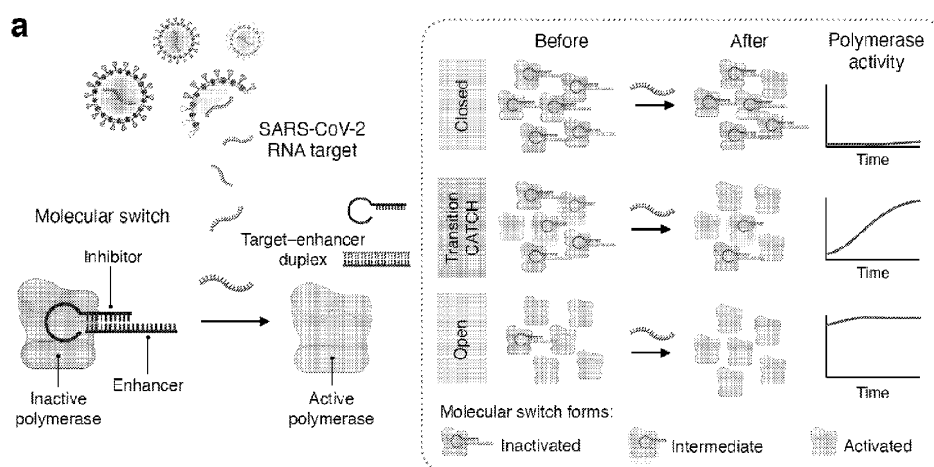
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(54) Title: CATALYTIC AMPLIFICATION BY TRANSITION-STATE MOLECULAR SWITCHES FOR DIRECT AND SENSITIVE DETECTION OF SARS-COV-2

Figure 1



(57) Abstract: The present invention relates to the detection of target nucleic acids using enzyme-assisted nanotechnology. More specifically, the present invention provides a molecular nanotechnology in the form of a transition-state DNA-enzyme molecular switch and methods of use that enables direct and sensitive detection of viral RNA targets in native clinical samples. In one embodiment, the detection comprising steps of providing a composition comprising at least one DNA polymerase enzyme, at least one enhancer, and at least one DNA polymerase inhibitor, wherein the DNA polymerase inhibitor is recognized and bound by the DNA polymerase enzyme via its conserved region, and is complementary to a portion of the enhance via its variable region. In another embodiment, the detection method comprising steps of providing a signalling nanostructure and detecting signal development, wherein a change in the intensity of signal. In an alternative embodiment, the target nucleic acid is a SARS-CoV-2 polynucleotide.

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