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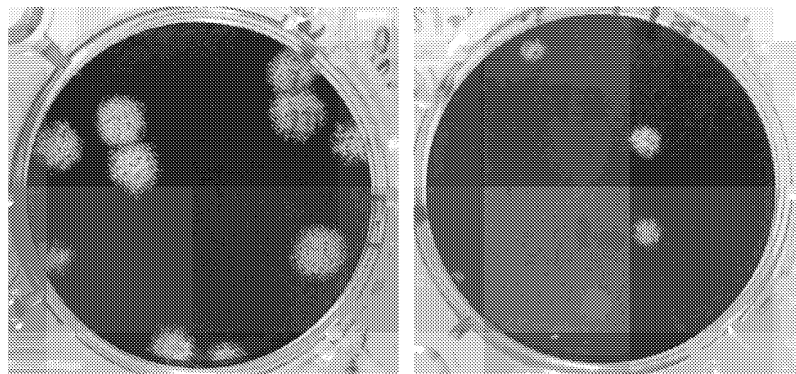
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(54) Title: DEOPTIMIZED SARS-CoV-2 AND METHODS AND USES THEREOF

FIG. 3



(57) Abstract: Described herein are modified SARS-CoV-2 coronaviruses. These viruses have been recoded, for example, codon deoptimized or codon pair bias deoptimized and are useful for reducing the likelihood or severity of a SARS-CoV-2 coronavirus infection, preventing a SARS-CoV-2 coronavirus infection, eliciting and immune response, or treating a SARS-CoV-2 coronavirus infection.

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