(SD2022-260) Selective Imaging and Inhibition of SARS-CoV-2 Infected Cells, Using A Tunable Protease-Responsive Modular-Peptide-Conjugated AIEgen

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OTHER INFORMATION

KEYWORDS

SARS-CoV-2, EISA, AIE, Selective Imaging and Inhibition, main protease, mitochondrial targeting, peptide-conjugated AIEgen, virus theranostics

CATEGORIZED AS

- **Medical**
  - Diagnostics
  - Imaging
  - Therapeutics

RELATED CASES

2021-Z08-1

BACKGROUND

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a serious threat to human health without effective treatment. There is an urgent need for both real-time tracking and precise treatment of the SARS-CoV-2 infected cells to mitigate and ultimately prevent viral transmission. However, selective and responsive triggering and tracking of the therapeutic processin infected cells remains challenging.

TECHNOLOGY DESCRIPTION

Researchers from UC San Diego have leveraged a series of main protease (Mpro)-responsive and modular-peptide-conjugated probes for the selective imaging and inhibition of SARS-CoV-2 infected cells via enzyme instructed self-assembly (EISA) and aggregation-induced emission (AIE). In summary, this technology exploits the potential advantages of EISA and the AIE effect for selective detection and treatment of the virus infected cells. When combined with SARSCoV-2 replication characteristics, a Mpro-responsive modular peptide with conjugated AIEgens named PSGMR offers selective imaging and inhibition of the Mpro plasmid transfected HEK 293T cells and SARS-CoV-2 infected TMPRSS2-Vero cells.

APPLICATIONS

This patent-pending strategy will open new avenues for the development of theranostic agents against COVID-19 and other emerging diseases.

ADVANTAGES

STATE OF DEVELOPMENT

INTELLECTUAL PROPERTY INFO

RELATED MATERIALS

▶ Cheng Y, Clark AE, Zhou J, He T, Li Y, Borum RM, Creyer MN, Xu M, Jin Z, Zhou J, Yim W, Wu Z, Fajtová P, O'Donoghue AJ, Carlin AF, Jokerst JV. Protease-Responsive Peptide-Conjugated Mitochondrial-Targeting AIEgens for Selective Imaging and Inhibition of SARS-CoV-2-Infected Cells. ACS Nano. 2022 Aug 23;16(8):12305-12317. doi: 10.1021/acsnano.2c03219. Epub 2022 Jul 25. - 07/25/2022

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