
Repurposing Aminoadamantane Nitrate Compounds to Inhibit SARS-CoV-2 Viral Activity and to Protect the Brain from Viral-Related Damage

Grant Award Details

Repurposing Aminoadamantane Nitrate Compounds to Inhibit SARS-CoV-2 Viral Activity and to Protect the Brain from Viral-Related Damage

Grant Type: Discovery Research Projects

Grant Number: DISC2COVID19-11811

Project Objective: To screen a series of aminoadamantane nitrate compounds for their effect in (i) inhibiting NMDAR-mediated currents in hiPSC-derived cerebrocortical neurons, and (ii) directly blocking SARS-CoV-2 viral activity.

Investigator:

Name:	Stuart Lipton
Institution:	Scripps Research Institute
Type:	PI

Disease Focus: COVID-19, Infectious Disease

Human Stem Cell Use: iPS Cell

Award Value: \$150,000

Status: Active

Grant Application Details

Application Title: Repurposing Aminoadamantane Nitrate Compounds to Inhibit SARS-CoV-2 Viral Activity and to Protect the Brain from Viral-Related Damage

Public Abstract:**Research Objective**

The objective is to screen a series of aminoadamantane nitrate compounds for their ability to protect hiPSC-derived neurons from SARS-CoV-2-related damage and to block SARS-CoV-2 activity.

Impact

If successful, our screen would identify a drug candidate for further development that would protect neurons from SARS-CoV-2-related damage and also inhibit SARS-CoV-2 activity.

Major Proposed Activities

- Screening of nine (9) aminoadamantane nitrate congeners for ability to inhibit NMDAR-mediated current in hiPSC-derived cerebrocortical neurons.
- Moderate-throughput screening of nine (9) aminoadamantane nitrate congeners in BSL3 facility for cytopathic effect (CPE) of SARS-CoV-2 live virus in monkey Vero cells.
- Moderate-throughput screening of 'hits' of aminoadamantane nitrate congeners in BSL3 facility for cytopathic effect (CPE) of SARS-CoV-2 live virus in monkey Vero cells with full dose-response curve.
- Viral plaque assays for SARS-CoV-2 for viral titer and full dose-response curve of drug candidates. Field of view microscope provides dynamic tracking of plaques at individual cell death event level.
- Assess synaptic integrity of hiPSC-derived neurons in co-cultures of SARS-CoV-2-infected monocytoïd cells and astrocytes with full dose-response curve of drug candidates.

Statement of Benefit to California:

Finding a drug that positively affected the course of COVID-19 infections by protecting the nervous system AND limiting viral infectivity or virulence would have tremendous benefit for all Californians as well as everyone in the world.

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