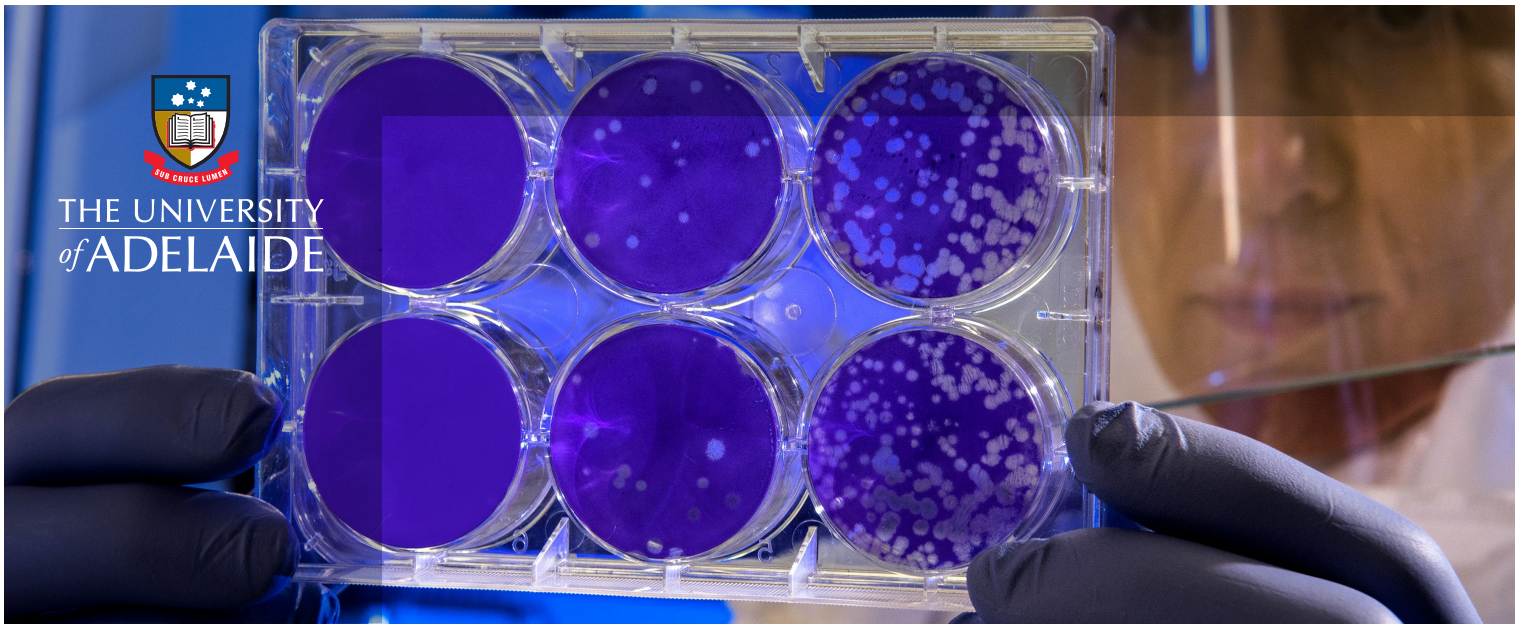

ANTIVIRAL AGENTS

Proposal to screen several naturally occurring nucleoside analogues and their derivatives for antiviral activity.

Background

Circumstances associated with the COVID-19 pandemic are affecting the whole Australian community. We have access to sources of naturally-occurring nucleoside analogues which show biological activity in prokaryotic assay systems.

The structures of these small molecules resemble antiviral agents, also nucleoside analogues, which are being evaluated against SARS-CoV2 and showing some initial signs of promise.

While we recognise that small differences in chemical structure can have major impacts on biological activity, we propose to screen several naturally occurring nucleoside analogues and their derivatives for anti-viral activity. We have evidence, for some of these compounds, that they can cross mammalian cell membranes.

Proposed subjects for screening

Nucleoside analogue 1 and its derivatives

An adenosine analogue resembling the antiviral agent Remdesivir, also an adenosine analogue, developed by Gilead Sciences P/L. Molecular weights less than 800 Da.

Remdesivir is the subject of numerous current trials to evaluate its activity against COVID-19 and attracting attention as it appears to alleviate disease symptoms.

Nucleoside analogue 2 and its derivatives

A cytosine analogue that resembles the antiviral agent β-D-N4-hydroxycytidine (NHC) and its pro-drug EIDD-2801. Molecular weights less than 700 Da.

NHC and its pro-drug EIDD-2801 are currently being evaluated and showing some promise as inhibitors of SARS-CoV-2 (Mestres 2020; Sheahan et al. 2020). The second proposed subject for testing is also a cytidine analogue.

Proposal

- Isolate & (partially) purify nucleoside analogue 1 and its toxic derivative (sources and methods available).
- Isolate & (partially) purify nucleoside analogue 2 and its derivatives (sources and methods available).
- Introduce nucleoside analogues and/or derivatives into mammalian cell culture systems, to test for antiviral activity (and for potential negative or side-effects).

Opportunity

We are seeking research funding (Budget $100,000AUD) and development partners.

Stage

The nucleoside analogies have been validated in prokaryotic assay systems. There is no mammalian data.

IP status

Due to the fast moving pace of COVID-19 and other anti-viral research, this opportunity is pre-patent.

Inventors

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