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The APPRISE Virtual Biobank for Infectious Diseases

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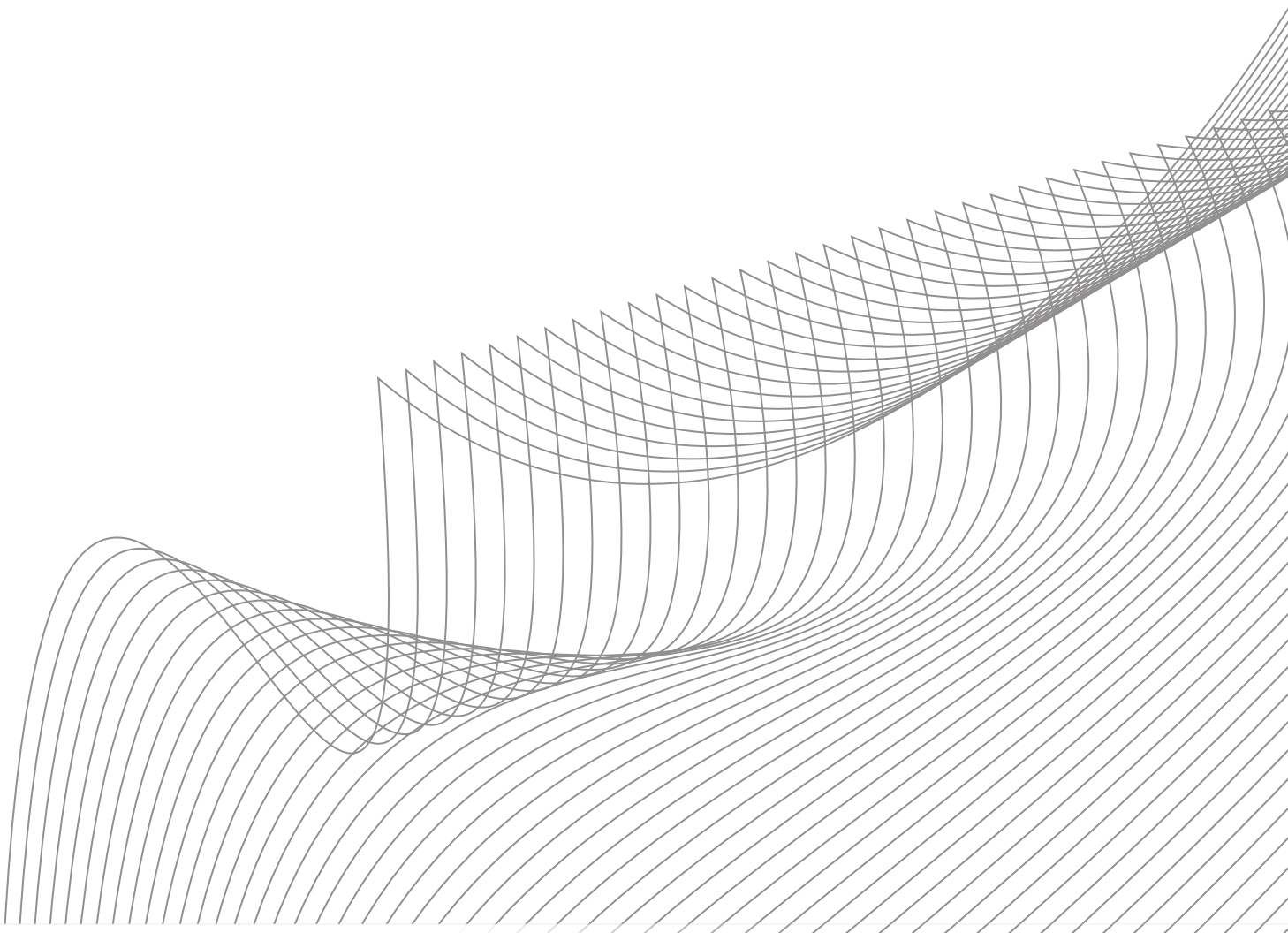

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Notice to readers

The APPRISE Virtual Biobank for Infectious Diseases

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Abstract

The Australian Partnership for Preparedness Research on InfectiouS disease Emergencies (APPRISE) has developed a virtual biobank to support infectious disease research in Australia. The virtual biobank (https://apprise.biogrid.org.au) integrates access to existing distributed infectious disease biospecimen collections comprising multiple specimen types, including plasma, serum, and peripheral blood mononuclear cells. Through the development of a common data model, multiple collections can be searched simultaneously via a secure web portal. The portal enhances the visibility and searchability of existing collections within their current governance and custodianship arrangements. The portal is easily scalable for integration of additional collections.

Keywords: Infectious disease; virtual biobank; biospecimens; collaboration; preparedness; COVID-19

Overview and description

Public health emergencies, including the ongoing SARS-CoV-2 pandemic, highlight the need for pre-existing, sustainable and collaborative biobanks.[1] Access to high-quality biological specimens is essential for many aspects of infectious disease research, including basic pathogenesis and immunological investigations and for supporting diagnostic and treatment development.[2,3]

We would like to introduce the APPRISE virtual biobank as a first step towards a more nationally co-ordinated biobanking effort for infectious diseases in Australia. The ethics approved portal[i] enables users to securely find and apply for access to diverse and distributed existing specimen collections. Through the implementation of a minimum information model based on the Minimum Information About Biobank Data Sharing (MIABIS) standard,[4,5] information from participating collections is harmonised for viewing and searching. This enables, for the first time in Australia, the discovery of infectious disease-related biospecimens and basic related data across institutions and geographic locations. This enables better visibility of existing resources and is easily extendable to include additional biospecimen collections and more granular detail on the specimens and data already collected.

The virtual biobank has initially engaged with six coronavirus disease 2019 (COVID-19)-related collections with over 58,000 samples from more than 2,700 participants. These include pre-existing,[6] clinical trial,[7] state-based,[8] and research study-based collections.[9–11] The biobank will expand over time both in terms of collection and sample numbers.

The virtual biobank is designed for minimum impact on the existing arrangements for participating collections. No data from participating collections is stored centrally in the portal. Separate Application Programming Interfaces (APIs) are used at each site to apply the minimum information model and to interact with

i Ethics approval: Melbourne Health HREC/78249/MH-2021-292485.

the virtual biobank website. The data custodianship and specimen governance arrangements remain the responsibility of each collection custodian. The virtual biobank enables specimen searching and contact with collection holders for more detailed information and access applications.

This virtual biobank portal provides a user-friendly platform for wider discovery and use of existing biospecimen collections.[ii] This is an important development for infectious disease research in Australia. We encourage researchers to use the virtual biobank to search for biospecimens and consider joining existing or new collections to the portal.

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ii https://apprise.biogrid.org.au.

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