Virus Entry Receptor Binding – VERB kit

An innovative tool to isolate intact SARS-CoV-2 particles and detect the presence of neutralizing antibodies

Assay Principle

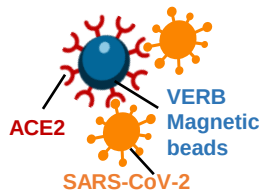
The highly efficient binding of SARS-CoV-2 via its spike protein to its cellular entry receptor ACE2 is the basis for the successful initiation of the viral infection cycle and forms the molecular principle of the VERB (Virus Entry Receptor Binding) approach developed by Covirabio. A capture matrix has been developed which allows the highly efficient isolation of intact SARS-CoV-2 particles and the determination of the presence of neutralizing antibodies in a routine lab environment.

The VERB assay is a stand-alone sample preparation method compatible with downstream detection methods such as RT-qPCR and thus can be easily integrated into existing laboratory procedures. The product is for research use only (RUO).

Applications

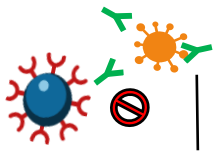
Numerous publications and recent research highlight the potential applications of harnessing interactions between ACE2 and spike proteins for COVID-19 research, such as, but not limited to:

Isolation of intact SARS-CoV-2 virus from patient samples



- **Enriching SARS-CoV-2 viral particles**
- **Isolating SARS-CoV-2 viral genome**
- **Enhancing RT-PCR and LAMP performance**
- **Isolation of ACE2-interacting molecules**
- **Isolation of soluble spike proteins**

Detect the presence of SARS-CoV-2 neutralizing antibodies

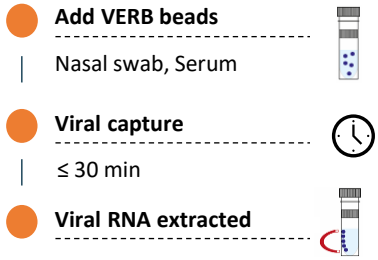


- **Determining viral neutralizing antibody titers**
- **Detecting immune response to variants of concern**
- **Monitoring vaccine efficiency**
- **Screening for SARS-CoV-2 viral entry inhibitors**

Key Features

Characteristics	• **Capture and enrich only intact virus from patient samples** • **Free of viral RNA fragments and debris** • **Comparable to the labor-intensive viral plague assay**
Components	• **Magnetic beads functionalized with recombinant human ACE2**

Procedures



- Automatic mode (e.g. Maelstrom and King Fisher systems) for medium and high throughput
- Manual mode for low sample numbers

Performance

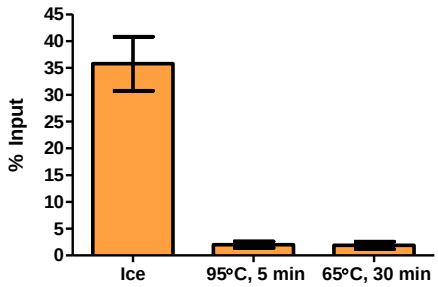


Fig. 1 Data supporting the isolation of intact virus particles with VERB beads. Heat inactivation of a SARS-CoV-2 containing clinical sample abolishes the isolation of RNA captured by VERB beads (< 5% input), when compared to the captured RNA from the sample kept on ice (ca. 35% input). The data is normalized to the total RNA of the sample without VERB bead capture process (input).

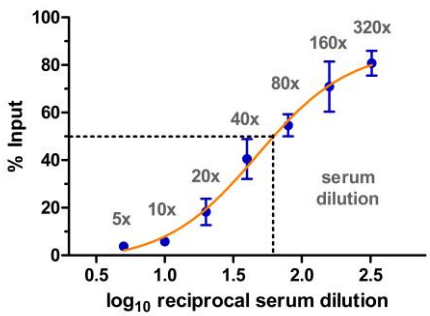


Fig. 2 Presence of neutralizing antibodies can be detected with the VERB beads. Reference serum with neutralizing antibodies against SARS-CoV-2 (EURM017) was serially diluted and incubated with SARS-CoV-2 pseudovirus before subjection to the VERB assay. The titer of neutralizing antibodies was determined by how much VERB-captured RNA could be detected. The IC_{50} determined by the VERB kit was at serum dilution of 47.3.

Order information
Cat. COV007-RUO

COVIRABIO

Further information
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