

# Virus Entry Receptor Binding – VERB kit

## Application note

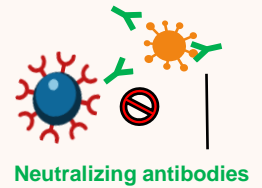
VERB assay as an innovative tool to detect SARS-CoV-2 neutralizing antibodies

### Introduction

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 as well as the determination of the presence of neutralizing antibodies and spike protein in a biosafety level 2 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).

The application note focuses on the determination of viral neutralizing antibodies, that can be used to monitor immune responses, vaccine efficiency, the response to variants of concern (VOCs) and the screening of SARS-CoV-2 viral entry inhibitors.



### Procedure

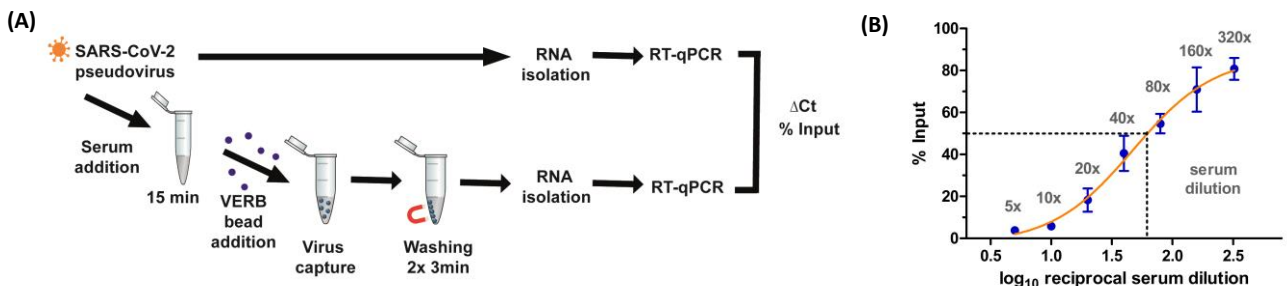
- Add VERB beads**  
Nasal swab, Serum
- Viral capture**  
≤ 30 min
- Viral RNA extracted**

- Automatic mode for medium and high throughput
- Manual mode for low sample numbers

### Key Features

<b>Characteristics</b>	<ul style="list-style-type: none"><li>• Comparable to the labor-intensive viral plaque assay</li><li>• Determine viral neutralizing antibodies (nAb) using pseudovirus of VOCs</li><li>• Covirabio also offers alternatives to the pseudovirus to be used in the VERB assay</li></ul>
<b>Kit components</b>	<ul style="list-style-type: none"><li>• Magnetic beads functionalized with recombinant human ACE2</li></ul>
<b>Required material</b>	<ul style="list-style-type: none"><li>• Magnetic devices (block or automatic device e.g. TANBead Maelstrom, KingFisher Flex)</li><li>• Sample mixer (e.g., benchtop shaker, rotary wheel)</li><li>• Working solutions (0.9 % NaCl, PBS (pH 7.4))</li></ul>

### Performance



**Fig. 2 Neutralizing antibodies 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 subsection to the VERB assay. The titer of neutralizing antibodies determined by captured RNA on VERB beads. The  $IC_{50}$  by VERB is 47.3. Mean and standard deviation of three biological replicates are shown.