A unique rapid test to determine neutralizing antibodies directed against SARS-CoV-2

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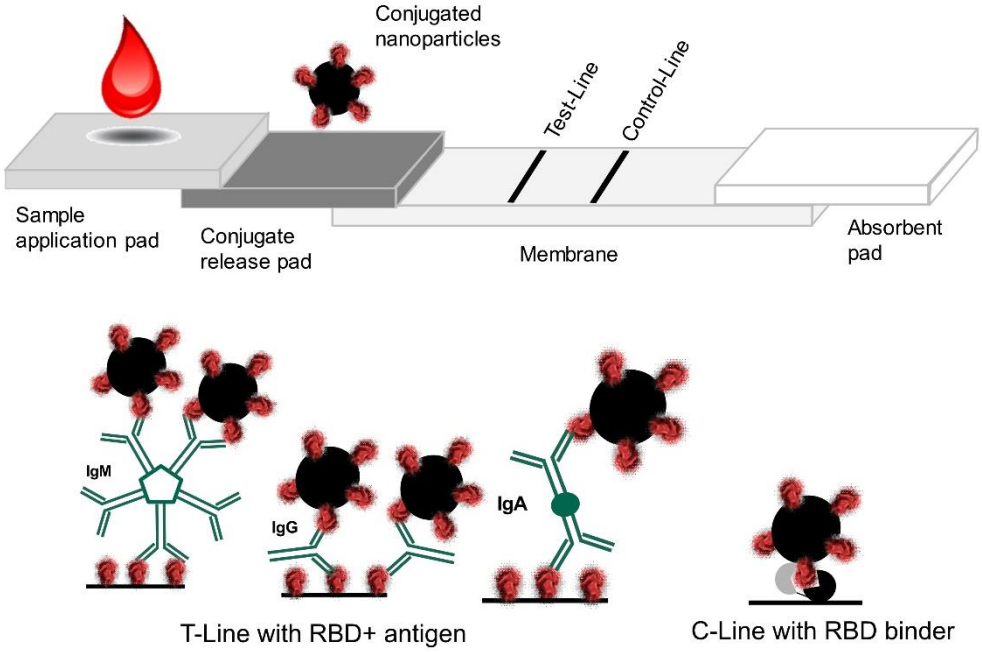
BÜHLMANN Laboratories AG developed a unique serological rapid test to assess neutralizing antibodies directed against the novel beta coronavirus SARS-CoV-2. The BÜHLMANN Quantum Blue® SARS-CoV-2 RBD+ Lateral-Flow assay is a qualitative test with high specificity and sensitivity due to the simultaneous detection of antibodies of various isotypes (IgM, IgA, IgG) directed against the SARS-CoV-2 Spike RBD domain. The RBD+ antigen is a highly thermostable, extended RBD that, unlike canonical RBD constructs, does not form disulfide-bridged dimer artefacts in solution. Therefore, this antigen can be used as capture molecule on the test line (T-line) as well as conjugate on nanoparticles in parallel. In this set-up, bi- or multivalent antibodies that are specific to the SARS-CoV-2 RBD efficiently bridge the antigen on the T-line with antigen conjugated nanoparticles irrespective of their isotype. The antibodies that are recognized by the Quantum Blue® SARS-CoV-2 RBD+ rapid test generally interfere with ACE2 binding of the Spike protein and thus with cell entry of the virus. This rapid test highly correlates with the heterogeneous neutralizing antibody titers of former Covid-19 patients and vaccinated persons and can serve as diagnostic tool to predict their current immune status and susceptibility to infection. The antigen on the control line (C-line) is a synthetic binder pair based on the nanobody scaffold that specifically recognizes the SARS-CoV-2 Spike RBD.


Conjugated
nanoparticles
Test-Line
Control-Line
Sample
application pad
Conjugate
release pad
Membrane
Absorbent
pad
IgM
IgG
IgA
T-Line with RBD+ antigen
C-Line with RBD binder