Accurate and instant COVID-19 antigen test to challenge RT-PCR

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Just completed studies confirm CAST's sensitivity and specificity.

An infected individual can be identified at the time of test.

Montreal (QC), April 28, 2021 – Two-Photon Research announces completion of internal studies of its CAST COVID-19 Test. The studies followed the guidelines set by the Clinical and Laboratory Standards Institute (CLSI), Second Edition.

CAST's **sensitivity** was determined by measuring **Limit of Detection** (LoD) as prescribed by the EP17-A2 standard. This was determined to be 5,000 S1 spike molecules per mL (since each SARS-CoV-2 contains over 300 S1 molecules, an estimated LoD is less than 100 viruses). This was measured twenty times in two batches using TPR's Aptamer Molecular Photonic Beacon™ in a buffer solution.

Limit of Blank (LoB) was NIL with 100% accuracy. This shows how consistently CAST can determine the absence of the virus.

The studies demonstrated the aptamer binds to the virus instantly with **Time to Results** (TTR) of less than ten seconds (by reaching 80% of peak sensitivity).

Specificity was 100% for SARS-CoV-2 and 0% for SARS-CoV. **Stability** is two (2) years and the temperature range for storage and use is room temperature of 15°C to 30°C, as defined by FDA.

"The implications are significant. An infected individual can be identified at the time of test, instead of waiting 24 to 72 hours for PCR test results, so the virus can be prevented from spreading during the latent period, when the person is likely to be most contagious," says Najeeb Khalid, the company's CEO, "Thus an infected person can be isolated, and tracing commenced right away."

CAST is simple to use. It uses a non-aggravating saliva sample and does not require a specially trained staff to be present during the test. The smartphone computes and displays the results and, if required, communicates them to the health authorities and tracing apps.

These tests will become part of the submissions to FDA and Health Canada for an antigen self-administered non-laboratory test. "This will permit a broad use of CAST in places where high volume testing is required, such as schools, offices, airports, border crossings, sport or entertainment events," adds Najeeb Khalid.

# # #

About the CAST COVID-19 Test

The TPR CAST COVID-19 Test is an antigen test. However, as opposed to other antigen tests it relies on the detection mechanism used by the most sophisticated RT-PCR systems. The tests announced today indicate CAST's Limit of Detection (LoD) surpasses those of the leading RT-PCR systems.

CAST uses aptamer molecular beacons to detect, bind and broadcast presence of viruses by emitting photons. CAST targets the S1 spike glycoprotein found on the surface of SARS-CoV-2, the same protein that attaches itself to human ACE2 receptors for the virus to enter and multiply. Aptamers are well suited for finding and binding to pre-defined sequences of biological molecules, guaranteeing high specificity and affinity.

The TPR Aptamer Molecular Photonic Beacon™ (AMPB) starts emitting photons as soon it binds to the S1 protein and is excited by the smartphone's flashlight. The AMPBs emit light at a different wavelength so they can be distinguished from the flashlight.

The smartphone's optics guide the light emitted by the AMPBs onto millions of its camera sensors, turning the sensors into a sophisticated photon collection system. The virus detection is realized by

proprietary image processing software that relies on advanced mathematics and computing power of the smartphone. The software ensures that sufficient amount of saliva is collected for the test.

*For more information about **CAST**: www.twophotonresearch.com/news/cast*

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Press Release for immediate release For further information contact: Maks Wulkan Phone: +1 (802) 777-4480 mwulkan@twophotonresearch.com www.twophotonresearch.com Accurate and instant COVID-19 antigen test to challenge RT-PCR Just completed studies confirm CAST's sensitivity and specificity. An infected individual can be identified at the time of test. Montreal (QC), April 28, 2021 – Two-Photon Research announces completion of internal studies of its CAST COVID-19 Test. The studies followed the guidelines set by the Clinical and Laboratory Standards Institute (CLSI), Second Edition. CAST's sensitivity was determined by measuring Limit of Detection (LoD) as prescribed by the EP17-A2 standard. This was determined to be 5,000 S1 spike molecules per mL (since each SARS-CoV-2 contains over 300 S1 molecules, an estimated LoD is less than 100 viruses). This was measured twenty times in two batches using TPR's Aptamer Molecular Photonic Beacon™ in a buffer solution. Limit of Blank (LoB) was NIL with 100% accuracy. This shows how consistently CAST can determine the absence of the virus. The studies demonstrated the aptamer binds to the virus instantly with Time to Results (TTR) of less than ten seconds (by reaching 80% of peak sensitivity). Specificity was 100% for SARS-CoV-2 and 0% for SARS-CoV. Stability is two (2) years and the temperature range for storage and use is room temperature of 15°C to 30°C, as defined by FDA. "The implications are significant. An infected individual can be identified at the time of test, instead of waiting 24 to 72 hours for PCR test results, so the virus can be prevented from spreading during the latent period, when the person is likely to be most contagious," says Najeeb Khalid, the company's CEO, "Thus an infected person can be isolated, and tracing commenced right away." CAST is simple to use. It uses a non-aggravating saliva sample and does not require a specially trained staff to be present during the test. The smartphone computes and displays the results and, if required, communicates them to the health authorities and tracing apps. These tests will become part of the submissions to FDA and Health Canada for an antigen self-administered non-laboratory test. "This will permit a broad use of CAST in places where high volume testing is required, such as schools, offices, airports, border crossings, sport or entertainment events," adds Najeeb Khalid. # # # About the CAST COVID-19 Test The TPR CAST COVID-19 Test is an antigen test. However, as opposed to other antigen tests it relies on the detection mechanism used by the most sophisticated RT-PCR systems. The tests announced today indicate CAST's Limit of Detection (LoD) surpasses those of the leading RT-PCR systems. CAST uses aptamer molecular beacons to detect, bind and broadcast presence of viruses by emitting photons. CAST targets the S1 spike glycoprotein found on the surface of SARS-CoV-2, the same protein that attaches itself to human ACE2 receptors for the virus to enter and multiply. Aptamers are well suited for finding and binding to pre-defined sequences of biological molecules, guaranteeing high specificity and affinity. The TPR Aptamer Molecular Photonic Beacon™ (AMPB) starts emitting photons as soon it binds to the S1 protein and is excited by the smartphone's flashlight. The AMPBs emit light at a different wavelength so they can be distinguished from the flashlight. The smartphone's optics guide the light emitted by the AMPBs onto millions of its camera sensors, turning the sensors into a sophisticated photon collection system. The virus detection is realized by proprietary image processing software that relies on advanced mathematics and computing power of the smartphone. The software ensures that sufficient amount of saliva is collected for the test. For more information about CAST: www.twophotonresearch.com/news/cast

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