



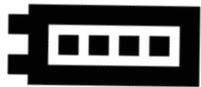
ZEN Graphene Solutions Next-Gen Nanomaterials

Aptamer-Enabled Rapid Detection

TSXV: ZEN

OTCQB: ZENYF

Simple, affordable and accurate results *without discomfort* in under 10 minutes



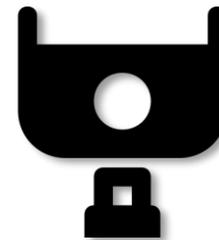
Binding, washing and buffer
solution for sensor readout
5-6 minutes



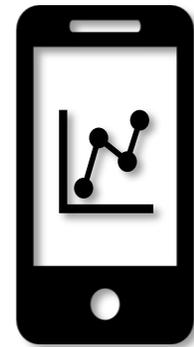
Sensor inserted
into mobile
reader



Acquire electric readout
~2 minutes



Insert mobile
reader into
smart phone



Result provided

- ✓ **Next-Gen Technology:** Newly developed, patent-pending DNA aptamer that recognizes SARS-CoV-2 spike protein
- ✓ **Speed:** Many other rapid saliva tests require complicated and time-consuming separation, RNA extraction or amplification, have not been validated with clinical samples or require long assay times (> 1 hour)

How We're Different

Why it Matters

Why Saliva?

Scalability

Our simple and affordable, electric readout can provide a rapid, single-step detection method with high sensitivity using a simple handheld reader and smart phone

Affordability and less discomfort reduces testing aversion, allowing more frequent testing with fewer risks to other people compared to swab-based methods

Easier, Affordable Sampling + Less Discomfort + Fast, Accurate Results = enormous potential for widespread usage at home and in numerous public places

What's Changed?

Accuracy

Extremely low detection limits (<1,000 copies per ml) and increased accuracy compared to other rapid saliva-based tests (>10,000-50,000 copies per ml)

Lower detection limits significantly increase the likelihood of identifying positive cases in people with low viral loads at the early stages of infection when they may be asymptomatic

This has been a significant challenge for saliva-based testing to date

What happens post-COVID?

Solution Longevity

Technology can be used as a platform for development of new aptamers to detect new pathogens; new aptamers can be applied to sensors but use the same reader

Ability to detect new variants, other coronaviruses, viruses more generally – like the seasonal flu – and other pathogens using the same technology

Our technology has the potential for significant value post-COVID

Rapid Test Market Overview*

	Nasal		Plasma	Saliva
	Rapid PCR (Abbott ID NOW)	Rapid Antigen (Abbott Panbio)	Rapid Antibody (BTNX Rapid Response)	ZEN Aptamer-Based Antigen Test
Sensitivity/Specificity %	93.3/98.4	98.1/99.8	94.6/100	82 ¹ /100
Speed	< 13 minutes	~15 minutes	~15 minutes	< 10 minutes
Equipment	Testing equipment required; intended for point-of-care use in healthcare settings	Cassette, buffer, collection tube	Cassette, buffer solution, lancet	Cell phone, mobile electric reader, sensor, other components TBD
Cost	Equipment \$4,500-\$5,000	\$16 per test ²	\$19 per test ²	Highly competitive

Note: FDA regulations for sensitivity and specificity are ≥80% and ≥99%, respectively

We believe our combination of accuracy, speed, simplicity, scalability and affordability is a differentiator based on what is available today

* Comparator data represents a subset of publicly available information for a sample of commercially available rapid test products in Canada

¹ Saliva samples for sensitivity tests were provided by hospitalized COVID patients – it is likely their samples contained spike-binding antibodies which inhibited aptamer binding. It is expected that sensitivity would increase for a randomized clinical population, which is typically where less sensitive saliva-based rapid tests are expected to be less effective.

² Per rapidtestandtrace.ca

>2.6B

COVID Tests Administered Globally

<https://www.worldometers.info/coronavirus/>

\$23.4B

2020 Global Rapid Test Kit Market Estimate

<https://www.researchandmarkets.com/reports/5238566>

- Our experience during the pandemic has highlighted the importance of rapid, accurate testing
- We expect this awareness will contribute to a secular trend supporting adoption of rapid testing and continued strong demand
- By alleviating the aversion to testing associated with cost and the discomfort of nasal-based methods, we anticipate testing to become even more widespread further supporting demand
- With more widespread testing and availability of data, we can reduce the transmission risk of COVID now, and many other pathogens in the future

We believe our technology will play a significant role in this compelling and enduring growth story

- Additional testing to build on accuracy profile and further differentiate our solution
- Discussions with potential partners for manufacturing, marketing and distribution
- Working with Health Canada to explore interim order no. 2 to sell medical devices related to COVID-19 and expedite approval and time to market
- Exploring government funding and partnership options