Revolutionary Aptamer-Based Pathogen Technology from Zentek Unveils Rapid and Inexpensive Pathogen Detection Capabilities

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A Canadian company and their laboratory partner have developed a low cost simple and much faster way to better detect pathogens causing infections in our bodies. In recent weeks the team found a way to dramatically improve the effectiveness of this technology, which is really a medical breakthrough you won't likely see on the news, at least not just yet. Their technology uses 'aptamer' based diagnostics from a simple saliva test.

What is an aptamer?

Aptamers are short sequences of artificial DNA, RNA, XNA, or peptide that bind a specific target molecule or family of target molecules. In the case of today's company, they are using single-stranded DNA molecules capable of binding specifically with target proteins on the surface of pathogens such as SARS-CoV-2 to detect if a person has COVID-19 or potentially other pathogens.

Zentek Ltd.

Zentek Ltd. (NASDAQ: ZTEK | TSXV: ZEN) ("Zentek") is a certified graphene technology company focused on the research, development and commercialization of graphene-based novel products,

typically using nanotechnology.

Zentek's aptamer-enabled **Pathogen Detection Technology** is a low-cost, rapid, saliva testing, scalable technology initially to be used for COVID-19 testing, but can be adapted to detect other pathogens. Zentek has exclusive worldwide rights to commercialize their COVID-19 antigen testing aptamer-enabled technology. The technology is being developed by Zentek and their technology partners at McMaster University Li Lab, led by Dr. Yingfu Li.

Zentek's collaboration with McMaster University extends beyond its exclusive license and now encompasses all aptamer and DNAzyme uses, including diagnostics, therapeutics, and neutralization agents, not limited solely to SARS-CoV-2 applications.

Aptamer technology breakthrough, up to 250 times increase

Zentek recently announced a breakthrough in the team's aptamer-enabled technology, stating:

> *"Dr. Yingfu Li and his team at the Li Lab have developed a novel aptamer technology that increases the binding affinity of aptamers by up to 250 times. The increased binding affinity enhances the limits of detection for aptamer-based diagnostics. In addition, the enhanced binding affinity may lead to the successful adaptation of these same aptamers for new therapeutic and prophylactic treatments. Binding affinity is a key metric in both diagnostic and therapeutic applications."*

Understandably most people will not understand the implications of what is going on here, so I will spell it out. Effective

Aptamer-based pathogen technology opens up a whole new potential to ‘rapidly and cheaply’ detect pathogens. In time this can be expanded to potentially detect other markers of disease in the body. Furthermore, it has the potential to more effectively treat diseases. But that’s the next chapter, best discussed another time and assuming Zentek continues down that pathway.

Dr. Yingfu Li recently stated:

> *“The novel aptamer technology platform developed in my lab at McMaster University is demonstrating a robust increase in binding affinity to every aptamer we have tried so far. Combining this technology with aptamers that have high specificity* ***has created a very exciting potential for new therapeutics and diagnostics****. The enhanced binding affinity from these new aptamers has led to* ***consistent and successful in vitro testing*** *in my lab and the lab of Dr. Leyla Soleymani for diagnostic applications, and more recently, with in vivo testing in the lab of Dr. Matthew Miller for therapeutic applications. These early results are very exciting, and we look forward to future work that applies the technology to other potential therapeutic and diagnostic targets.”*

Note: Bold emphasis by the author.

The advantages of Zentek’s aptamer technology for detecting Covid-19 or potentially other pathogens

Source: Zentek website

The potential for aptamer-based disease detection is truly remarkable. There is also potential one day that aptamers can be used to much more precisely target disease treatment or prevention in the body.

Greg Fenton, CEO of Zentek commented:

> *"Initially, we were working to develop aptamers for diagnostic purposes……Dr Li's initial breakthrough was important for diagnostic purposes, and now early testing points to the potential to create new therapeutics and prophylactics. I can't emphasize enough how unexpected these results were to our team and how significant this development is if it is confirmed through future testing."*

For more details, investors can watch the recent Zentek CEO interview here.

Zentek is now at the stage of commercializing their aptamer-enabled technology stating that they are "*commercial prototyping readiness, and working with Halteres Associates, a world-leading bioscience consultancy, to assist us in our commercialization process.*"

Zentek's product pipeline

Source: Zentek company presentation

Closing remarks

There is no more exciting company than Zentek. Apart from their aptamer technology Zentek has many other applications for their graphene nanotechnology including: ZENGuard™ (a graphene coating applied to PPE to prevent Covid and other infections; also used for air filtration (HVAC) systems), icephobics (to prevent ice build up on planes etc), ZENArmor (corrosion resistance), fuel additives (helping reduce carbon emissions), Graphene-wrapped silicon anodes, conductive inks, intumescent coatings, and anti-inflammatory therapies.

Furthermore, Zentek makes their own graphene oxide at their Guelph facility and owns the Albany Graphite Deposit (planned to be spun out).

Zentek Ltd. trades on a market cap of C$216 million. With commercialization of ZENGuard™ underway and Zentek's aptamer technology potentially to follow soon, Zentek is at a great stage to rapidly grow from here. Stay tuned in 2023 to see how Zentek performs and if they can successfully start to monetize their technology.