Zentek and Triera Biosciences Ltd. Achieve Positive Results Against Avian Influenza (H5N1) using Multivalent Aptamer Technology

written by Raj Shah | May 6, 2024

May 06, 2024 (Source) – **Zentek Ltd. ("Zentek" or the "Company") (Nasdaq:ZTEK)(TSX-V:ZEN)**, announces that its wholly-owned subsidiary Triera Biosciences Ltd. ("Triera") has prioritized the development of a prophylaxis and therapeutic for highly pathogenic avian influenza ("HPAI") and reports initial test results.

Background and Highlights:

Universal aptamer has been selected for influenza virus, including H5N1

Binding affinity of influenza aptamer is better than aptamer used for SARS-CoV-2, which has demonstrated improved protection over leading monoclonal antibodies in animal models

Development prioritized given current global HPAI H5N1 outbreak. In vivo testing to begin immediately

World Health Organization deems current H5N1 outbreak "enormous concern," priority target for numerous governments around the world

Provisional patent filed on influenza virus-targeting aptamer

The recent avian influenza H5N1 outbreak which began in 2020, has reached a critical stage, according to the World Health Organization. Recently, the world has been placed on watch as H5N1 has crossed into livestock in the U.S. and H5N1 RNA sequences have been detected in the milk supply. The chief scientist of the World Health Organization, Dr. Jeremy Farrar, has expressed “enormous concern” to public health as the transmission of the virus has increased amongst livestock. H5N1 has the potential to lead to a severe pandemic with a historic mortality rate as high as 52% in the limited human cases to date.[1] Over the last few years, H5N1 has led to the death of millions of poultry with wild birds and land and marine mammals also infected.

Government agencies have expressed their concern of an H5N1 outbreak and their interest to develop further assets that could either treat or prevent further transmission of H5N1 to the human population. There is also interest for new options to mitigate the spread of H5N1 amongst livestock as this could have a potentially devastating impact on the food supply and the economy – along with providing an opportunity for the virus to better adapt to mammals, which increases risk to humans.

Due to the growing concern of HPAI, Triera has recently prioritized the development of a universal aptamer for influenza. The mechanism of neutralizing the H5N1 virus is comparable to the mechanism used by C19HBA against the SARS-CoV-2 virus. More specifically, the aptamer is believed to bind to and neutralize multiple subtypes of the HA surface protein (e.g., H1, H2, H5, etc.), preventing the virus from entering healthy cells and spreading infection.

Lead aptamer sequences for influenza have already been selected by the Li Lab at McMaster University for the creation of a universal influenza aptamer. These lead candidates have been

tested using a dot blot assay and biolayer interferometry to assess the binding affinity to the H5 protein for avian influenza. The lead monomer candidates for influenza are binding with an affinity less than one nanomolar, which compares favourably to the monomer used to form C19HBA.

The team at McMaster have used the proprietary multivalent aptamer technology to synthesize lead therapeutic and prophylactic candidates. In the coming weeks, the neutralization and therapeutic potential of these lead candidates will be assessed through *in vitro* and *in vivo* testsconducted by the Miller Laboratory. These results will be used to guide further optimization with the goal of having a final lead therapeutic candidate ready for pre-clinical testing as soon as possible.

If the H5N1 high binding aptamer program generates promising results, Triera will provide regular updates to government agencies responsible for the management and response to H5N1. Triera's ultimate goal is to develop an avian flu infectious management system that combines the use of diagnostics, prophylaxis and therapeutics leading to a simple strategy that detects, protects and treats based on the same multivalent aptamer agent.

"Our aptamer platform technology has produced robust safety and efficacy results using Covid as a proof of concept. And with the mechanism of neutralizing the H5N1 virus very comparable to that which neutralizes SARS-CoV-2, we are confident we can further prove out our platform's ability to more rapidly respond to outbreaks compared to traditional treatments. Longer term, we have the potential to offer a complete program that could minimize the impact from numerous infectious diseases by providing prophylaxis, therapeutic and rapid detection using the same aptamer" said Greg Fenton, CEO of the Company and Triera. "Outbreaks and associated repercussions – both human and

economic – will be an ongoing reality for society. Based on results achieved to date with Dr. Yingfu Li's world-leading aptamer selection capabilities, we believe Triera is uniquely positioned to most effectively develop assets that could either treat or prevent further transmission of H5N1 and many other infectious diseases in the years ahead."

Triera's advisor, Dr. Matthew Miller, who supports the SARS-CoV-2 research program and is a Canada Research Chair in Viral Pandemics and expert in pandemic influenza and has served on several federal committees related to pandemic readiness. He noted, "I believe that Triera's decision to prioritize avian influenza is sound. This aptamer solution could radically reduce the impact from a pandemic outbreak in a timely and efficient manner. Based on the SARS-CoV-2 experience, I believe that Triera can find a solution to mitigate avian influenza in Canada and globally."

About Triera Biosciences Ltd.

Triera holds an exclusive, worldwide royalty bearing license from McMaster University to use and practice all aptamer and DNAzyme uses developed through the collaboration with the Li Lab by McMaster University for the next 20 years. Triera and McMaster's combined expertise and capabilities in aptamer technology offer significant potential to reduce the cost and time required for the development of new treatments.

About Zentek Ltd.

Zentek is an ISO 13485:2016 certified intellectual property technology company focused on the research, development and commercialization of novel products seeking to give the Company's commercial partners a competitive advantage by making their products better, safer, and greener.

Zentek's patented technology platform ZenGUARD™, is shown to have 99-per-cent anti-microbial activity and to significantly increase the bacterial and viral filtration efficiency of both surgical masks and HVAC (heating, ventilation, and air conditioning) systems. Zentek's ZenGUARD™ production facility is located in Guelph, Ontario.

Zentek, through its wholly-owned subsidiary Triera Biosciences Ltd., has a global exclusive license to the aptamer-based platform technology developed by McMaster University, which is being jointly developed by Zentek and McMaster for both the diagnostic and therapeutic markets.

The Company is not making any express or implied claims that its aptamer technology has the ability to eliminate, cure or contain the COVID-19 (or SARS-CoV-2 Coronavirus) at this time.

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To find out more about Zentek, please visit our website at www.Zentek.com. A copy of this news release and all material documents in respect of the Company may be obtained on Zentek's SEDAR+ profile at http://www.sedarplus.ca/.

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[1] https://www.canada.ca/en/public-health/services/diseases/avian-influenza-h5n1/health-professionals.html

SOURCE: Zentek Ltd.