Sixth Wave Expands AMIPs(TM) Applications and Provides Update on NSERC Grant Project

written by Igor Makarov | July 27, 2021

July 27, 2021 (Source) – **Sixth Wave Innovations Inc. (CSE: SIXW) (OTCQB: SIXWF) (FSE: AHUH)** ("**Sixth Wave**" or the "**Company**") is pleased to announce an update regarding the grant sponsored by the Natural Sciences and Engineering Research Council of Canada ("**NSERC**") titled: Point-of-need Microfluidic Biosensor for Detecting Airborne Viruses using Molecularly Imprinted Polymers: Towards COVID-19 Virus Monitoring (the "**NSERC Project**"). The goal of the grant is to develop a portable, low-cost technology for rapid on-site air sampling and detection of aerosol and droplet-encapsulated viruses indoors and outdoors. The project is a collaboration between the Company and its partners, York University ("**York**") and the Centre Technologique des Residus Industriels ("**CTRI**"). The project had a start date of August 1, 2020. A copy of the proposal submitted to NSERC can be found here: https://sixthwave.com/NSERC2020.pdf

"The NSERC Project has made significant progress in advancing the capabilities of Sixth Wave's AMIP technology," explained Dr. Garrett Kraft, Vice President of Innovation at Sixth Wave. "The collaboration has progressed to producing prototype detection elements for electrochemical and fluorescent detection. These detection elements have been designed to be compatible with advanced microfluidic devices such as those developed and patented by our collaborator Dr. Pouya Rezai, Associate Professor of Mechanical Engineering at York University. The prototypes have demonstrated selective binding and detection of multiple pathogenic agents including bacteria and viruses."

Work to date has focused on designing a prototype(s) of the Company's AMIP technology to detect pathogens in airborne, water, and wastewater environments. The collaboration is part of Sixth Wave's multi-pronged R&D approach to revolutionize virus detection by being able to test individual patients as well as monitoring entire populations through proactive measures such as pathogen detection in a variety (buildings, ships, aircraft, etc.) of air handling systems (HVAC) and municipal wastewater treatment facilities.

Previous attempts to develop flow-through devices to continuously capture viruses in solution using conventional technology such as immobilized antibodies, have run into technical challenges that have not been solved. Challenges include but are not limited to low surface to volume ratio, low virus capture efficiency, poor binding-site recognition following sensor surface functionalization, decreased sensitivity and reusability. The flexibility of the Company's AMIP technology platform has the potential to overcome these technical challenges due to the robust properties of AMIPs derived from the completely synthetic components and manufacturing techniques developed. The Company's technology allows for novel product configuration not possible with traditional testing techniques. As a result, AMIP has greater stability and significantly less susceptibility to environmental variables such as heat, light, and other factors which may impact traditional testing methods.

The collaboration with York and CTRI has yielded new configurations and potential applications for the AMIP technology. The addition of new fluorescent and electrochemical detection pathways expands the scope of the AMIP technology into a larger array of device formats. Of primary interest is the integration of the technology into formats that are compatible with continuous flow processing as compared to traditional batch

testing of samples in diagnostic settings. Continuous flow processing allows for automated monitoring of a system and is a critical technical specification for integration of AMIP technology into larger complex systems. These are key components for developing devices that can be integrated into HVAC systems and wastewater treatment plants.

The research being done at York has demonstrated several of the previously disclosed potential capabilities of AMIP technology. Specifically, the integration of the technology into a variety of sensor arrays and detection mechanisms including electrochemical and fluorescent-based sensors. The work has also demonstrated the ability to detect a variety of pathogens, including viruses and bacteria. Although seemingly of similar origin, viruses and bacteria have drastically different technical challenges such as the different sizes and length scales of viruses vs. bacteria. The ability to develop the platform for different pathogens is a major milestone for SIXW. The imprinting and selective detection of multiple viruses and bacteria validate the claims of platform flexibility.

Microfluid devices or lab-on-a-chip devices are promising platforms to achieve rapid and sensitive immunological detection of pathogenic microorganisms such as bacteria and viruses. Inside these sub-microliter reactors, sample and reagent consumption can be significantly reduced, and the reaction time for target immobilization and identification can be shortened from hours to minutes or less.

By using an AMIP-based microfluidic platform, selectivity is increased by enhanced analyte separation based on channel geometry and fluid dynamics, and the tiny channels reduce the diffusion time of the analyte to the sensor. This leads to a significant decrease in response times for sensors and an increase in sample throughput for separations.

The AMIPs virus detection platform is based on Sixth Wave's core technology platform, Molecular Imprinted Polymers (MIPs). MIPs offer strategic advantages over traditional diagnostic technologies, such as immunoassay and PCR-based techniques, due to their inherent robustness and reproducibility. MIPs provide three-dimensional and highly specific receptor sites by forming a polymeric matrix in the presence of target analytes. Following template removal, vacated cavities with complementary size, shape, and chemical functionality of the analyte are obtained. Over the last decade, MIPs have been extensively used to detect small molecules, large molecules, proteins, viruses, and microorganisms, such as bacteria and yeast. Sixth Wave is using its expertise in MIP technology to bring innovative products to market and address the insufficiencies of current technologies exposed by the COVID-19 global pandemic.

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

About Sixth Wave

Sixth Wave is a development stage nanotechnology company with patented technologies that focus on extraction and detection of target substances at the molecular level using highly specialized Accelerated Molecularly Imprinted Polymers (AMIPs). The Company is in the process of commercializing its Affinity™ cannabinoid purification system, as well as, IXOS®, a line of extraction polymers for the gold mining industry.

Sixth Wave can design, develop and commercialize MIP solutions across a broad spectrum of industries. The company is focused on nanotechnology architectures that are highly relevant for the detection and separation of viruses, biogenic amines, and other pathogens, for which the Company has products at various stages

of development.

For more information about Sixth Wave, please visit our website at: www.sixthwave.com

ON BEHALF OF THE BOARD OF DIRECTORS

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Cautionary Notes

This press release includes certain statements that may be deemed "forward-looking statements" including statements regarding the planned features, capacity, and performance of the AMIPs technology and the planned Air Monitoring System. All statements in this release, other than statements of historical facts, that address future events or developments that the Company expects, are forward-looking statements. Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance, and actual events or developments may differ materially from those in forward-looking statements. Such forward-looking statements necessarily involve known and unknown risks and uncertainties, which may cause the Company's actual performance and financial results in future periods to differ materially from any projections of future performance or results expressed or implied by such forward-looking statements. In particular, successful development and commercialization of the AMIPs technology are subject to the risk that the AMIPs technology may not prove to be successful in detecting virus targets

effectively or at all, the uncertainty of medical product development, the uncertainty of timing or availability of required regulatory approvals, lack of track record of developing products for medical applications and the need for additional capital to carry out product development activities. The value of any products ultimately developed could be negatively impacted if the patent is not granted. The Company has not yet completed the development of a prototype for the product that is subject to its patent application and has not yet applied for regulatory approval for the use of this product from any regulatory agency.