Sixth Wave Imprints First Polymer for Detection of SARS-CoV-2

written by Raj Shah | February 9, 2021

February 9, 2021 (Source) – **Sixth Wave Innovations Inc. (CSE: SIXW) (OTCQB: ATURF) (FSE: AHUH) ("Sixth Wave", "SIXW" or the "Company")** is pleased to announce a material achievement in the development of its Accelerated Molecular Imprinted Polymers ("**AMIPs™**") technology for the rapid detection of SARS-CoV-2, the virus that causes COVID-19.

As previously reported, SIXW has filed two patents regarding the AMIPs™ platform, and has established a collaborative research team for the development of COVID-specific AMIPs detection technology (the "**Research Team**"), comprised of:

- Canadian Technology Research Institute ("**CTRI**")
- York University ("**York U**")
- University of Alberta, Edmonton ("**UofA**")
- Li Ka Shing Institute of Virology ("**LKSIV**")

Sixth Wave Senior Scientist, Dr. Garrett Kraft has been working at the UofA laboratories, in cooperation with Dr. Michael J. Serpe (UofA Department of Chemistry) and Dr. Michael Joyce (UofA Department of Medical Microbiology), to achieve proof-of-concept for the AMIPs™ virus rapid detection platform.

Please see SIXW Press Releases dated April 3, 2020; April 17, 2020; May 15, 2020; June 15, 2020; Aug 5, 2020; Oct 20, 2020; Oct 27, 2020; Nov 23, 2020, and Feb 2, 2021 for more information on AMIPs™, the Research Team, and associated patent

filings.

Announcement of Initial Imprinting

SIXW is pleased to report that the Research Team has completed the first molecular imprint of the Virus using its AMIPs™ patent-pending process and technology (the "**Imprint**"). The AMIPs™ Imprint is the first-generation polymer imprint prototype, amounting to a detailed topographical impression of the Virus and associated chemical binding sites required to recapture the Virus.

The Imprint will now enter a series of validation tests at UofA to quantify the accuracy of the imprinting process (or "**Validation Testing**", discussed below). Using this feedback, successive iterations will be generated, until a precise master imprint, capable of identifying the Virus with exceptional accuracy, has been derived (the "**Definitive Imprint**").

Once the AMIPs™ achieve the clinical efficacy targets, the Definitive Imprint will then form the basis of AMIPs™ virus detection products. The AMIPs™ polymer is expected to be useful in the manufacture of an extensive array of rapid, durable, and versatile virus detection tools, including handheld devices, wearables, and airborne detection tools (see SIXW Press Release dated April 3, 2020, for additional details of the proposed practical uses of AMIPs™).

"This is an important accomplishment in the AMIPs development cycle," said Dr. Jonathan Gluckman, President and CEO of Sixth Wave. *"With the completion of the initial imprint, we've demonstrated the process of making this polymer. More importantly, we now have an AMIPs prototype customized for SARS-CoV-2, which we can run through a battery of tests, optimizing*

its design with each successive imprint version. At the end of this process, we aim to have a Definitive Imprint with an extremely high affinity, or attraction, to the Virus, with clinically relevant detection levels and reliability."

"Such a Definitive Imprint, will be a powerful diagnostic tool, capable of detecting COVID-19 both quickly and accurately," said Dr. Garrett Kraft, SIXW's Lead Researcher for AMIPs. *"By comparison to the majority of rapid detection technologies based on immunoassay techniques, the AMIPs platform utilizes the entire virus profile for detection and capture rather than biologically derived antibodies. This is an important prospective advantage for AMIPs. As multiple variants emerge, there is growing evidence that the evolution of the Virus is making it less recognizable to identified antibodies, the utility of existing rapid immunoassay tests may also be compromised or totally invalidated."*

"AMIPs changes the calculus and has the promise of being immune to relatively minor mutations of the outer shell of the Virus since it is not based on antigen/antibody binding," said Dr. Gluckman. *"Moreover, multiple variants or multiple different viruses can potentially be tested on a single test strip providing greater flexibility and lower overall costs to the healthcare system. This potential all-in-one feature, along with the speed at which novel mutations can be added, makes for a flexible and obsolescence resistant platform, evolving in tandem with new pathogenic threats."*

The company is not making any express or implied claims that its product has the ability to eliminate, cure, detect, or contain the COVID-19 (*SARS-CoV-2*) at this time.

Validation Testing

Initial Validation Testing of the Imprint will take place at UofA laboratories in the coming weeks, using at least two advanced verification technologies:

1. **Atomic Force Microscopy ("AFM") – This technique employs advanced microscopic analysis to assess the congruity of the Imprint to the target Virus, contrasting the topography of the Imprint against the Virus. AFM is a type of scanning probe microscopy (SPM), with demonstrated resolution on the order of fractions of a nanometer, more than 1000 times better than the optical diffraction limit. The information is gathered by "feeling" or "touching" the surface with a mechanical probe. Piezoelectric elements facilitate tiny but accurate and precise movements on computer-controlled command enabling precise scanning. For imaging, the reaction of the probe to the forces that the sample imposes on it by changes in the surface being mapped can be used to form an image of the three-dimensional shape (topography) of a sample surface at a high resolution. The major difference between atomic force microscopy and competing technologies such as optical microscopy and electron microscopy is that AFM does not use lenses or beam irradiation. Therefore, it does not suffer from a limitation in spatial resolution due to diffraction and aberration. Preparing a space for guiding the beam (by creating a vacuum) and staining the sample is also not necessary. SIXW will continue the use of this analytical tool to identify the location and degree of variances, to be eliminated in successive imprinting iterations.**

Visit https://amips.com/imprinting/ to view images of AFM topographies generated from the AMIPs™ research.

2. Quartz Crystal Microbalance ("QCM") – This technique involves

introducing the Imprint into a quartz crystal resonator to establish a baseline resonance frequency reading. The frequency is then "disturbed" by the addition of a small mass (in this case, the Virus itself), thereafter measuring the changes in mass-per-unit-area caused by the re-adsorption of the Virus into the Imprint. The before and after readings are then contrasted to infer the overall selectivity and sensitivity between the Imprint and the target Virus. In liquid, QCM is well documented as a means of assessing the compatibility of target molecules (such as proteins and viruses) to media that has been functionalized with recognition sites (such as AMIPs™).

With the achievement of this first Imprint, SIXW has demonstrated the three initial components required for AMIPs™ sensor development: *(i) Virus Template Formation, (ii) Reactive Film Processing, and (iii) Imprinting.* Notably, the initial Imprint has been completed in slightly under two months of active laboratory time.

Ultimately, SIXW proposes to create a comprehensive library of molecular imprints for other viral pathogens and variants (the "**AMIPs™ Library**"). This database of sensor templates could be readily "tuned" to recognize ever-changing viral mutations, minimizing the lag between the mutation event and the distribution of upgraded detection tools. The AMIPs Library will contain polymer formulations protected under patent provisions, and capable of being licensed for all manner of Rapid Detection Test ("**RDT**") devices and wearables. The spectrum of prospective products is considerable and includes SIXW's SmartMask™ offerings (see SIXW Press Release dated May 15, 2020), smart-clothing and PPE applications, airborne sensors, breathalyzers, ELISA-based technologies, cartridge/lateral flow designs, and others.

For more information on the AMIPs™ and associated molecular imprinting technology, please visit: https://www.amips.com.

About Sixth Wave

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

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 web site at: www.sixthwave.com.

ON BEHALF OF THE BOARD OF DIRECTORS

"*Jonathan Gluckman*"
Jonathan Gluckman
Ph.D., President & CEO

***For information, please contact the Company*:**
Phone: (801) 582-0559
E-mail: info@sixthwave.com

Cautionary Notes

This press release includes certain statements that may be deemed "forward-looking statements" including statements regarding the planned use of proceeds and performance of the AMIPs™ technologies. 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 of its patent application and has not yet applied for regulatory approval for the use of this product from any regulatory agency.