

## **GEMINA LABORATORIES LTD.**

### **News Release**

July 25, 2023

### **GEMINA LABORATORIES ANNOUNCES MAJOR BREAKTHROUGH IN ENVIRONMENTALLY FRIENDLY LATERAL FLOW TEST DESIGN BY REMOVING THE REQUIREMENT FOR NITROCELLULOSE**

**July 25, 2023, Vancouver, British Columbia: Gemina Laboratories Ltd.** (CSE: GLAB) (FRA:8I7) (the “Company” or “Gemina”) is excited to announce another major innovation in lateral flow assay (“LFA”) test design resulting from its innovative, patented Gemina Bridge chemistry platform. Gemina Labs has deployed cellulose (paper) test strips in the lateral flow assay format, a fully biodegradable, environmentally friendly alternative to the industry-standard nitrocellulose strip.

#### **Nitrocellulose as the LFA Standard**

For the nearly 40-year history of the lateral flow assay industry, the lateral flow test strip has been made from nitrocellulose. Developed in the 1800’s, nitrocellulose is formed by treating cellulose with a mixture of nitric and sulfuric acids to produce a flammable compound that only degrades slowly in the environment, releasing nitric acid in the process.

Despite the harsh conditions and environmental impacts of nitrocellulose production, the compound is well suited to lateral flow assay development due in part, to the uniformity of the nitrocellulose pore structure, and to the binding affinity between nitrocellulose and the antibodies used in the lateral flow immunoassay format.

#### **Cellulose as a New Standard - A Critical Breakthrough for Fully Biodegradable LFA Tests**

In comparison to nitrocellulose, cellulose (paper) is derived from plant cells (cotton, wood, hemp, etc.). It is the most abundant natural polymer on Earth and is rapidly biodegraded in the environment. Unfortunately, cellulose also has a much lower binding affinity for antibodies, meaning they cannot be reliably adhered onto to the test and control lines, a critical challenge to LFA development on cellulose that has ensured nitrocellulose remained the leading choice of test strip material for 40 years.

Billions of lateral flow assays were used during the COVID-19 pandemic, many of which were self-administered by untrained users outside of a healthcare setting, resulting in a correlative rise in the amount of LFA waste in landfills. This inspired the development and deployment of paper-based alternatives to the plastic housing used for LFA tests. While this innovation is an important first step towards a biodegradable assay, these assays still house nitrocellulose testing strips, which do not allow for full biodegradability.

The Gemina team has solved this critical challenge by utilizing the Gemina Bridge molecule to anchor antibodies (and other biomolecules) to **test strips made from a variety of cellulose materials, all of which are fully biodegradable alternatives to nitrocellulose.**

One end of the Gemina Bridge binds strongly and irreversibly to the cellulose strip while the other end binds an antibody, which is used to capture the target of interest for which the test has been designed (pregnancy, infection, etc.). In addition to facilitating antibody binding to cellulose, the oriented binding imparted by the Gemina Bridge also reduces antibody requirements by up to 85%, another major breakthrough, as previously reported by Gemina.

The experimental results documenting these achievements are being presented at the 2023 American Association for Clinical Chemistry (“AACC”) Annual Scientific Meeting Poster Session in Anaheim, California on Tuesday, July 25<sup>th</sup> with the authors in attendance on Tuesday, July 25<sup>th</sup> between 1:30 pm and 2:30 pm. The poster will also be available on the Gemina website as of Wednesday, July 26<sup>th</sup> and will also be published in a supplementary issue of AACC’s Clinical Chemistry Journal.

Robert Greene, CTO of Gemina Labs stated, “We have been working towards this goal since we first built the Gemina Bridge, as the Bridge is designed with the capacity to bind to both cellulose and nitrocellulose. I am extremely pleased to see the experimental results prove the intention and potential of our design. We believe this breakthrough will not only allow for innovation in LFA design and deployment moving forward, but will allow for fully biodegradable LFA’s, solving the environmental challenge currently presented by the use of nitrocellulose.”

Brian Firth, CEO of Gemina Labs added, “In addition to Gemina’s commitment to global health, we have been keenly committed to environmental sustainability in our chemistry design – trying to unlock the vast potential for quick, simple, affordable diagnostics at the point of care, but in a way that both addresses global health needs and environmental sustainability. We believe we will lead on both fronts, as this announcement signals a major development milestone for the world’s first fully biodegradable lateral flow assay design.”

On Behalf of the Board of Directors

Robert Greene  
CTO  
Gemina Laboratories Ltd.

#### **About Gemina Laboratories Ltd.**

Gemina Labs is a biosensor and diagnostic company with a transformative, patented, proprietary chemistry that powers next-generation testing platforms for a wide range of pathogens that affect human health and wellness. Our technology drives testing platforms that are fast, affordable and accurate, and easily self-administered. Our development pipeline includes platforms for the rapid testing of COVID-19, influenza and other viruses. Additional information on the Company can be found at [www.geminalabs.com](http://www.geminalabs.com).

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