



Journal Name

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Supplementary Materials

for

Development of a Functional Point-of-Need Diagnostic for Myeloperoxidase Detection to Identify Neutrophilic Bronchitis

Michael G. Wolfe,^a Qiang Zhang,^a Christy Hui,^a Katherine Radford,^b Parameswaran Nair^{b*} and John D. Brennan^{a*}

¹ *BioInterfaces Institute, McMaster University, Hamilton, Ontario, Canada, L8S 4L8*

² *Division of Respiriology, Department of Medicine, St. Joseph's Healthcare and McMaster University, Hamilton, Ontario, Canada, L8N 4A6*

*Correspondence

John Brennan, PhD

Director, BioInterfaces Institute

McMaster University

Hamilton, ON, Canada, L8S 4M1

T: (905) 525-9140 x20706

E: brennanj@mcmaster.ca

Parameswaran Nair, MD, PhD, FRCP, FRCPC

Professor of Medicine, Staff Respiriologist, Firestone Institute for Respiratory Health

St. Joseph's Healthcare

Hamilton, ON, Canada, L8N 4A6

E: parames@mcmaster.ca

Printing Information

A Scienion S5 sciFLEXARRAYER printer was used for all printing experiments. Water was degassed and only used for 24 hours before being replaced. The system was flushed using 10 000 μL of water at a speed of 60 $\mu\text{L}/\text{second}$. Speed was reduced to 10 $\mu\text{L}/\text{second}$ after completion. A “PDC 80 - Type 4 coating” syringe dispenser was used for printing with a setting of 115 Vs and a 51 μs pulse for an average droplet size of ~ 400 pL. Nitrocellulose was pretreated for 60 minutes at 60% relative humidity at room temperature before printing. Layout of the Test (T) and Control (C) lines are shown in Figure S2. Both T and C lines were produced by printing several “spots” close enough together to give the appearance of a line. Each line was comprised of four spots separated in the y-direction by 190 μm each (therefore total thickness of 570 μm). Lines are then extended by printing spots 100 μm apart on each of the four initial lines in the x-direction. Each spot was printed with 5 droplets, therefore containing ~ 2 nL of volume per spot. Each “line” was printed once for the Control line and twice for the Test line. Each test strip was 0.5 cm wide; therefore with 100 μm per spot; each test required 51 spots to cover the area.

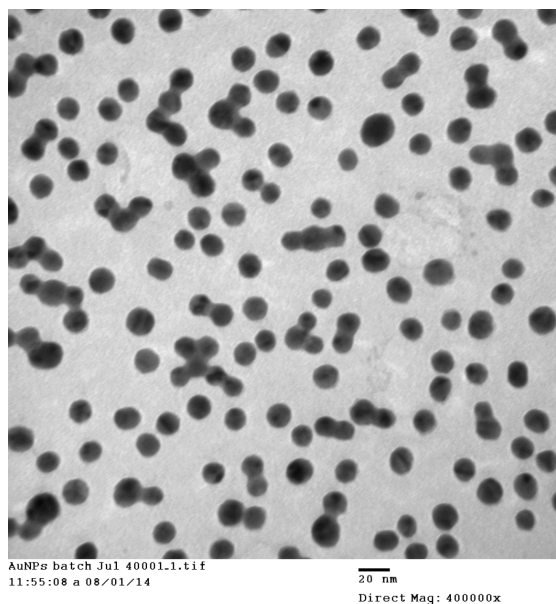


Fig. S1 Transmission electron microscopy of synthesized AuNPs. Average size is 15 ± 3 nm.

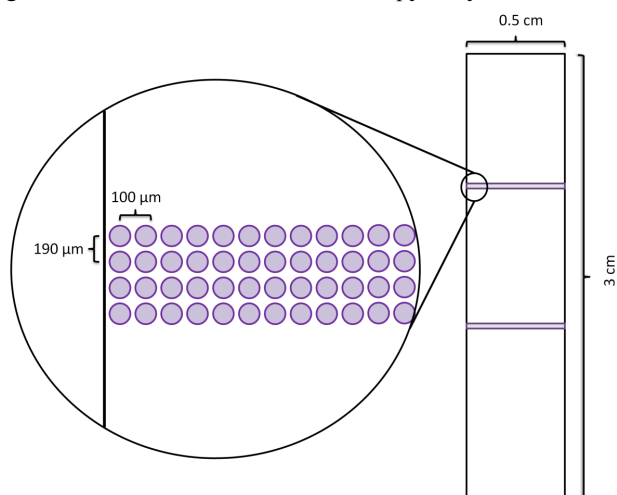


Fig. S2 Printer layout of the nitrocellulose paper with measurements shown.

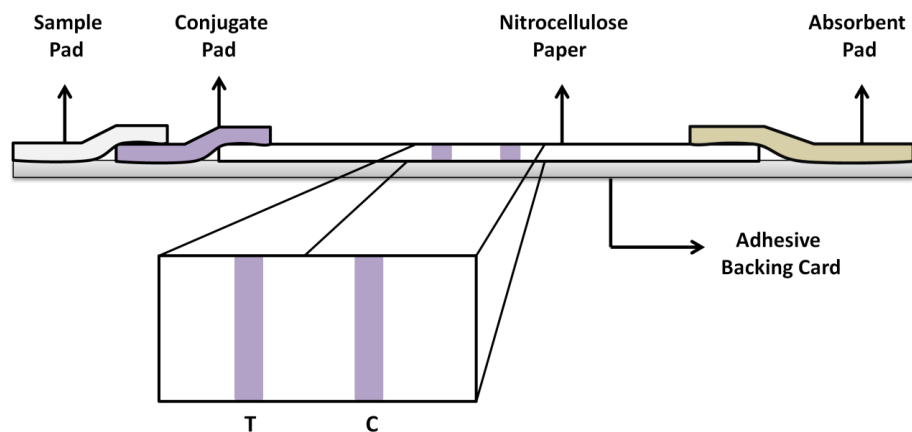


Fig S3 Horizontal layout of the immunochromatographic test strip. The enlarged area depicts an aerial view of the Test (T) line and the Control (C) line.

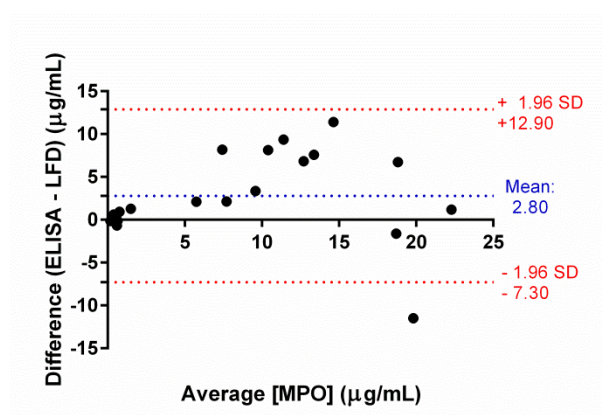


Fig. S4 Bland-Altman plot assessing the agreement between the developed LFD and a commercial MPO ELISA. A slight bias (2.80 $\mu\text{g/mL}$) is observed towards the commercial ELISA.