

DTTAWA



EAMLE 9

Danielle Dewar-Darch Facility and Operations Manager Serology and Diagnostics High-Throughput Facility University of Ottawa



Coronavirus Variants Rapid Response Network



Réseau de réponse rapide aux variants du coronavirus



Faculté de médecine Faculty of Medicine

Director: Facility Head: Operations Manager: Compliance Officer: Technical Staff: Marc-André Langlois Corey Arnold Danielle Dewar-Darch Gwendoline Ward Justino Hernandez Soto Abishek Xavier Nicholas Bradette Klaudia Baumann



FACILITY PLATFORM

2 Hamilton Microlab STAR liquid handlers

• Fully integrated with plate washer and plate reader

Types of sample: **serum**, **plasma**, **dried blood spots**, saliva, amniotic fluid, breast milk

<u>Assays</u>

ELISA

- SARS-CoV-2 Spike, Receptor Binding Domain, Nucleocapsid
- Spike of Seasonal CoV strains
- IgG, IgA, IgM, IgG subtypes

5-Point Surrogate Neutralization ELISA (snELISA; AC Gingras)

• SARS-CoV-2 Spike (Wuhan and Variants of concern)

<u>Throughput</u> Perform 800,000 biochemical assays per year

ELISA - 320 samples per run

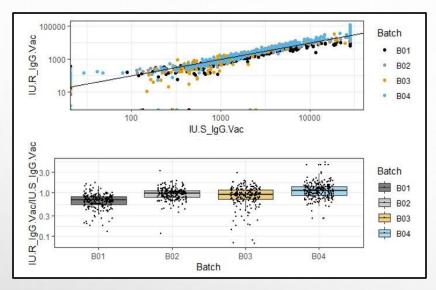
5-point Surrogate Neutralization ELISA - 248 samples per run







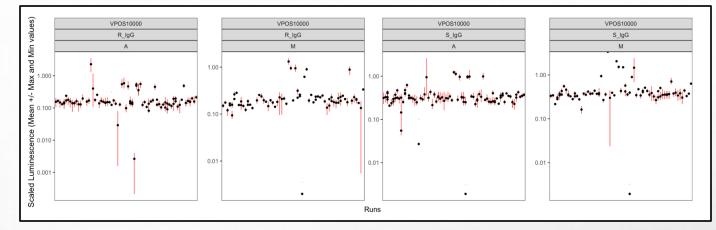
DATA QUALITY CONTROL AND HARMONIZATION



Batch-to-batch variability

Canada

NRC·CNRC

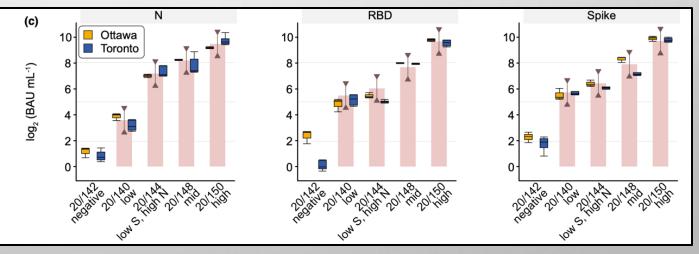


Longitudinal tracking of controls and run metadata

- On-plate standards and controls
 - Sample positions

- Material lot numbers
- Reagent preparation date
- User Environment (temperature, humidity)

Harmonization of assay performance and titer calculations with partner laboratory in Toronto



Colwill, Galipeau et al., Clinical & Translational Immunology, 2022

PARTNERSHIPS AND COLLABORATIONS

Partner for the COVID-19 Immunity Task Force (CITF)

Partner for Statistics Canada – COVID-19 Seroprevalence survey

Partnership with Public Health Agency of Canada for serological assay validations

Part of CoVaRR-Net, in close collaboration with CoVaRR-Net BioBank

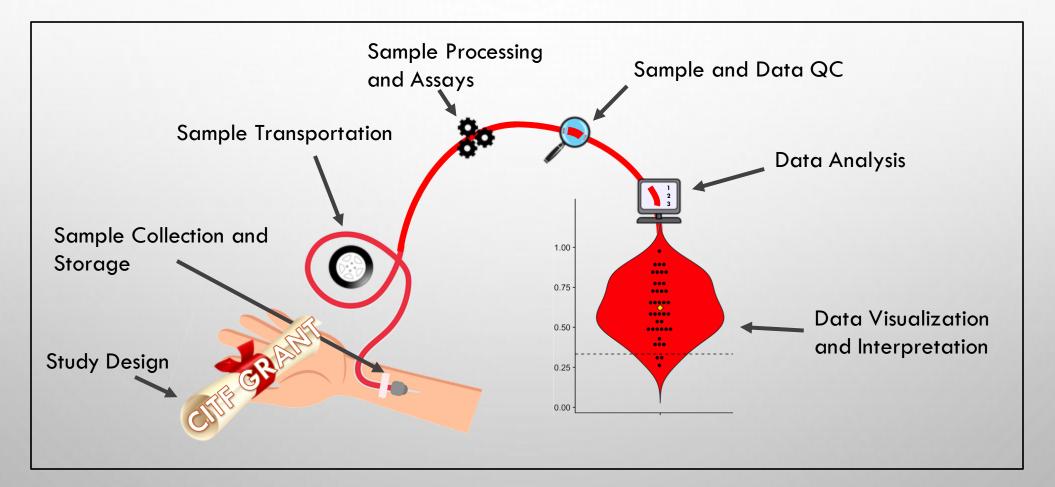
30 collaborative COVID-19 research projects with Canadian Researchers

Comparative performance data for multiplex bases of dried blood sport speciment anato of dried blood sport speciment anato of dried blood sport speciment blood sport speciment	neurost na. hundi na. kui garen hundi na tundi na hundi	ECCEPTION CONTRACTOR OF CONTRA	COVID NAMENTS Antibody Seronegativity in COVID-19 Children With Will Sealen M., Bisli 1 Zenek, Roger L. Mill, Tang, Ken Pall, Market Mill Sealen M., Market Pall, Michaenn, Candres Bis, Verlag, Mark Sich Langton, Market Will Mither Weinerstande		EXPENSION OF A CONTRACT O
Trendence of LABS CaV-2 inflection nameng obstatric patients in Ottown, Carenda: a beautyptice shady	The Larger reachy Langer? Sum S	ORIGINAL ARTICLE A scalable serology solution for responses to SARS-Cov-2 infection Ravisha Rathod', Kento T Abe'l- Jenny Kiang' Ad- Lynda Rochetaav, Martin Palohat's Mahya Razel-Zaz Minam Brotetaav, Martin Palohat's Mahya Razel-Zaz	le ³ , Christian Gervais ³ , Corey Arnold ² , drian Pasculescu ³ , Mariam Matteux ²	prospective conditioned and infection and vaccination () () () () () () () () () () () () ()	Sold Status Basevents ⁴ , Lassa Landys ⁴ , Agates Varges Market M. Caving St. M. Caving ¹ , a. (b. (b)) and Angels M. Caving ¹ , a. (b. (b)) and Angels Langesh ¹ , (b. (b)), Durise L Caving at 1, a. (b), (b)

LESSONS LEARNED

Our expertise needs to go beyond just running assays

Involvement in collaborations from "Vein to Violin" is necessary for success



LESSONS LEARNED

Setting up the facility amid the COVID-19 pandemic was challenging, educational, and rewarding

• "Building the plane as we fly it"

Established infrastructure for pandemic response will greatly benefit Canadian researchers and health initiatives in the future





Serology Team:

Marc-André Langlois **Corey Arnold** Danielle Dewar-Darch **Gwendoline** Ward Justino Hernandez Soto Abishek Xavier Nicholas Bradette Klaudia Baumann

App and Data Analysis Support:

Martin Pelchat Lynda Rocheleau

ACKNOWLEDGEMENTS

Partners/Collaborators:

Anne-Claude Gingras (Lunenfeld Tanenbaum Research Institute) Karen Colwill (Lunenfeld Tanenbaum Research Institute) Curtis Cooper, Clinical lead for Stop the Spread Ottawa Angela Crawley, Director of the CoVaRR-Net Biobank Yves Durocher (National Research Council of Canada) John Kim - Public Health Agency of Canada (PHAC) COVID-19 Immunity Task Force (CITF) **Statistics** Canada

Special Technical Support:

Yannick Galipeau (Assay development) Pauline McCluskie (SOPs)

Chris Clouthier (Hamilton Applications Support)







Réseau de réponse rapide aux variants du coronavirus



Canadian Institutes of Health Research recherche



COVID-19 IMMUNITY TASK FORCE