

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)

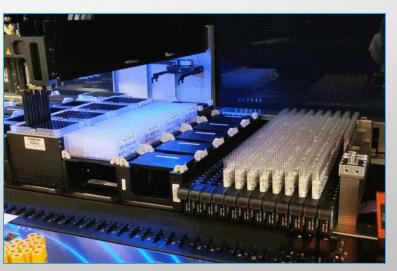
• SARS-CoV-2 Spike (Wuhan and Variants of concern)

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

ELISA - 320 samples per run

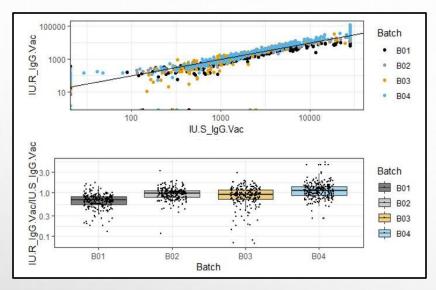
5-point Surrogate Neutralization ELISA - 248 samples per run







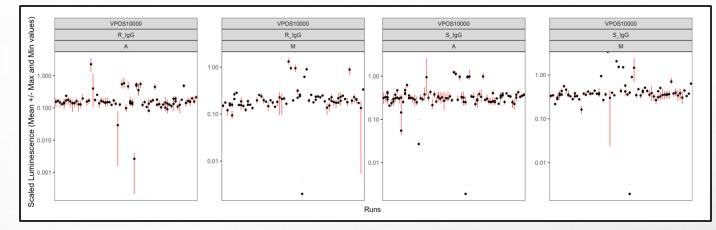
## DATA QUALITY CONTROL AND HARMONIZATION



Batch-to-batch variability

Canada

NRC·CNRC

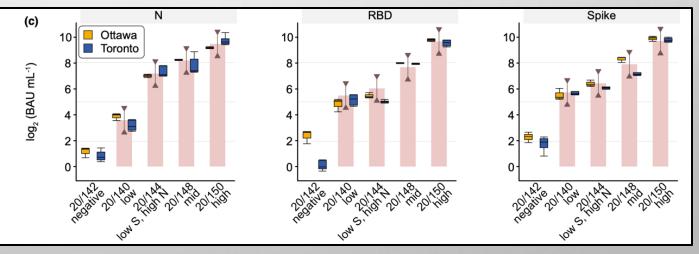


Longitudinal tracking of controls and run metadata

- 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

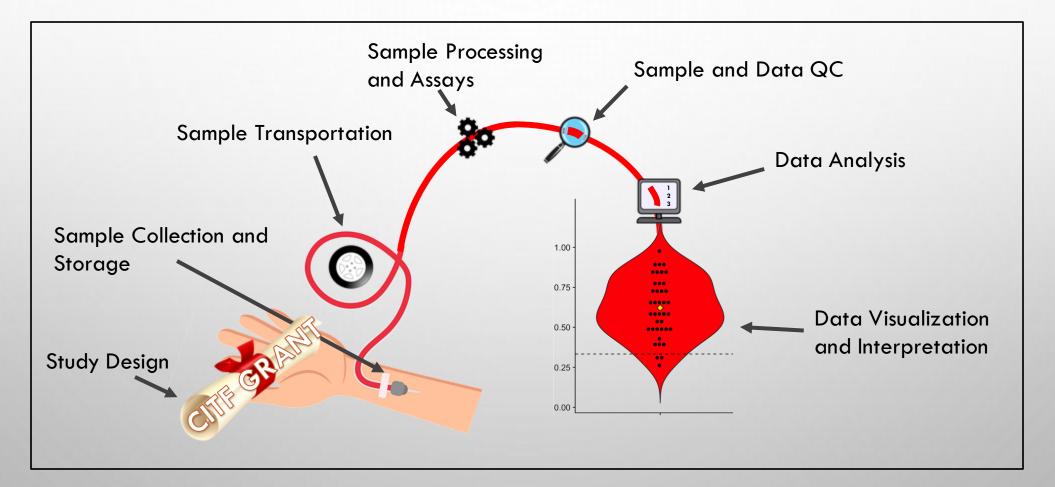
30 collaborative COVID-19 research projects with Canadian Researchers

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### 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)







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Canadian Institutes of Health Research recherche



**COVID-19 IMMUNITY** TASK FORCE