

Serological Science Network (SeroNet)

SeroNet Update
July 10, 2024

Dinah S. Singer, Ph.D.

Supplemental funding from Congress

- Enacted April 24th, 2020
- \$306M for NCI to **develop, validate, improve, and implement** serological testing and associated technologies
- COVID-19-focused and distinct from annual appropriation

134 STAT. 620	PUBLIC LAW 116-139—APR. 24, 2020
	Public Law 116-139 116th Congress
	An Act
Apr. 24, 2020 [H.R. 266]	Making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2019, and for other purposes.
Paycheck Protection Program and Health Care Enhancement Act. 15 USC 9001 note.	<i>Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,</i>
	SECTION 1. SHORT TITLE.
	This Act may be cited as the “Paycheck Protection Program and Health Care Enhancement Act”.
	SEC. 2. TABLE OF CONTENTS.
	The table of contents for this Act is as follows:
	Sec. 1. Short title.
	Sec. 2. Table of contents.
	Sec. 3. References.

Serological Sciences Network (SeroNet)

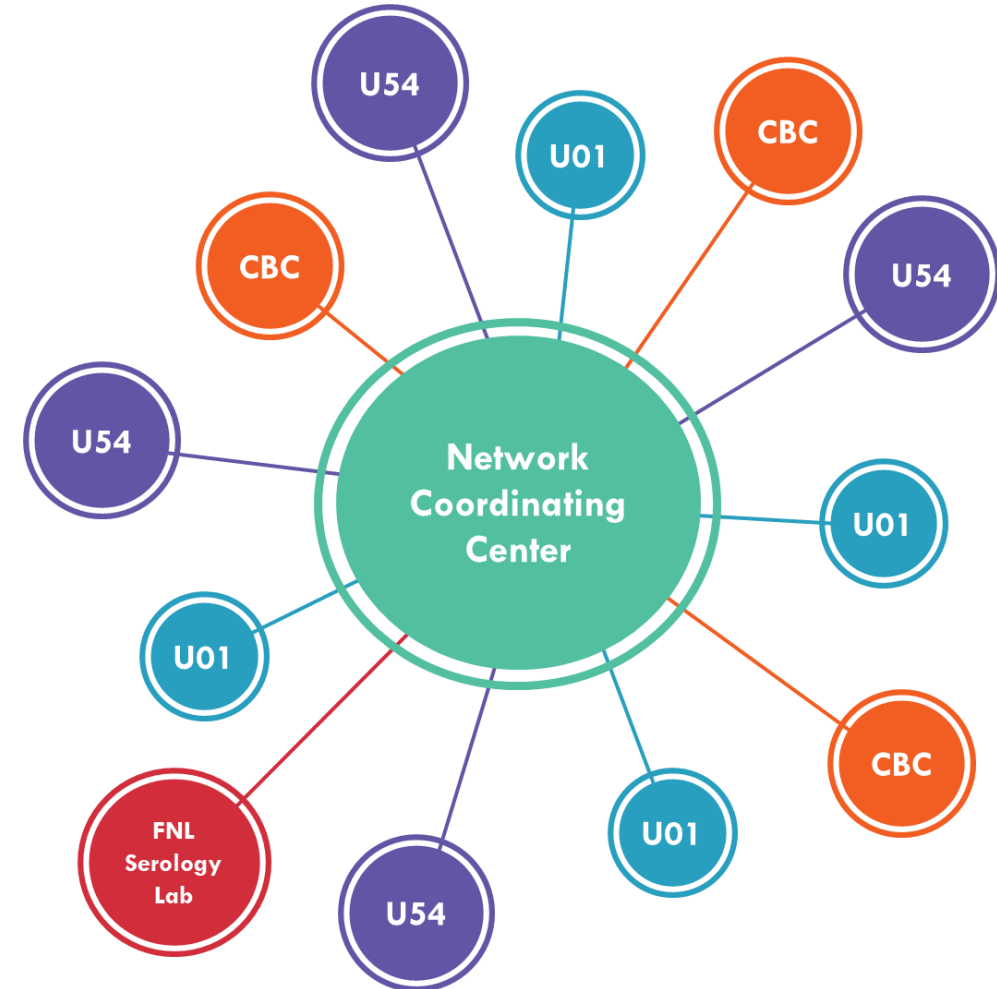
Nationwide network supporting a broad range of serological sciences research to advance understanding of all aspects of the immune response to SARS-CoV-2 infection & vaccination.

SeroNet Goals

- Develop and deploy serological assays
- Characterize innate, adaptive and humoral responses to SARS-CoV-2
- Determine confounding host factors that might modulate the immune response
- Determine serological correlates of disease pathogenesis and protection
- Identify and address barriers to vaccination

SeroNet is a Coordinated Research Network

- **Grants (U54s [8] and U01s [13])**
 - Characterize immune responses
 - Basic & applied serological research
- **FNL Contracts (Capacity Building Centers, CBCs [4])**
 - Capacity for serological testing
 - Acquire biospecimens for standards and research community use
 - Conduct serosurveillance studies
- **FNL Serology Lab**
 - Help FDA assess commercial serology devices submitted for EUA
 - Develop serology assays and resources, including the U.S. national serology standard
- **FNL Network Coordinating Center**
 - Organize steering committee and investigator meetings
 - Manage communication and outreach
 - Coordinate reagent sharing and distribution
 - Coordinate data management



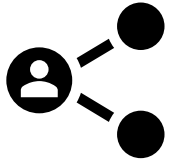
Special populations studied across SeroNet

- Cancer
 - Hematological malignancies
 - Solid tumors
 - Hematopoietic cell transplant recipients
- Immune-mediated inflammatory disease
 - Rheumatoid arthritis
 - Lupus
 - Inflammatory bowel disease
- Solid organ transplants
- People living with HIV
- Health care workers
- Elderly
- Underserved communities
- Pregnant women
- Children

SeroNet Principles



Research funded through SeroNet must be published in an Open Access format



Data underlying the research must be shared immediately upon publication



SeroNet-wide network agreement promotes pre-publication data sharing and collaboration

Frequent assessments for adjustments to meet current research needs

Solicited feedback from SeroNet Leadership and conducted an NIAID/NCI internal assessment on:

- Four Capacity Building Centers and their alignment to network needs and pandemic status (2023)
- Transition review of U01 and U54s after first two years of award (2022) for their scientific progress and new areas of opportunity

CBC assessment & implementation

- Feedback from the Panel included:
 - Serological testing: Clinical demand no longer present nationally
 - Serosurveillance: CBCs conduct important, but not unique research
 - Biospecimens: Limited interest from SeroNet investigators for CBC data and samples
- Recommendation: Maintain 1 CBC through 2024 for breadth of longitudinal study cohorts and ongoing research, discontinue efforts at other 3 CBCs

Transition Review After 2 Years

- **All** U01s (13) and U54s (8) reviewed for scientific progress and pandemic relevance after 2 years
 - One grant was disapproved for transition and two grants were on no-cost extensions, demonstrating NCI's fiscal responsibility in administering the funds.
- Allowed flexibility to adjust scientific aims within scope to pivot with the pandemic
 - Rapid availability of SARS-CoV-2 vaccines necessitated pivots to account for vaccination in longitudinal cohort studies
 - Viral variants and their impact on vaccine induced immune responses/protection
 - Inclusion of Long-COVID research

SARS-CoV-2 Immune Response



Scott Boyd
Stanford

- Vaccination confers broader IgG binding of variant RBDs than SARS-CoV-2 infection and imprinting from initial antigen exposures alters IgG responses to viral variants.

Cell, Mar 2022



Daniela Weiskopf
La Jolla Institute

- Report a comprehensive map of epitopes recognized by CD4+ and CD8+ T cell responses across the entire SARS-CoV-2 viral proteome.

Cell Rep Med, Sep 2021

- Characterized viral variant neutralization against SARS-CoV-2 mRNA vaccinations in the context of assessing current vaccine measures.

Cell, Feb 2024



Shan-Lu Liu
Ohio State

- SARS-CoV-2 ORF6 polymorphisms antagonize IFN-induced signaling during infection contributing to viral pathogenesis.

Host Cell Microbe, Oct 2023



Adolfo Garcia-Sastre
Mount Sinai

SARS-CoV-2 Vaccine Responses in Patients with Cancer



Rafi Ahmed
Emory

- Antibody binding and function against SARS-CoV-2 was substantially lower in vaccinated patients with **NHL/CLL** compared with healthy participants.

J Clin Oncol, Apr 2022

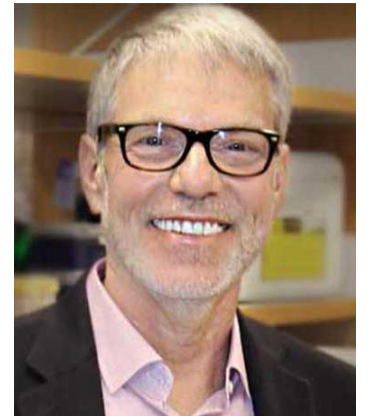


Jane Figueiredo
Cedars-Sinai

- Patients with solid tumors attained higher peak levels and sustained antibody levels 4 to 6 months after vaccination compared with those with **hematologic malignancies**.

Cancer Res, Dec 2021

- **Lung cancer** patients on immunotherapy show a substantial qualitative deviation from non-cancer subjects in their CD4+ T-cell response to mRNA vaccine *J Immunother Cancer, Jan 2024*



Eugene Oltz
Ohio State

SARS-CoV-2 Vaccine Responses in Other Special Populations



Andrea Cox
Johns Hopkins

- COVID-19 vaccination induces distinct T-cell responses in **pediatric solid organ transplant recipients** and immunocompetent children.

NPJ Vaccines, Apr 2024

- Patients with **severe asthma** on biologic therapies have lower antibody levels, and virus specific B and CD8 T cell counts after SARS-CoV-2 mRNA vaccination.

J Allergy Clin Immunology, Jun 2024



F. Eun-Hyung Lee
Emory



Galit Alter
Ragon Institute

- Humoral immunity to an endemic coronavirus is associated with PASC in individuals with **rheumatic diseases**

Sci Transl Med, Sep 2023

- Inflammatory bowel disease patients** receiving immunomodulatory therapy have inefficient induction of neutralizing antibodies against SARS-CoV-2.

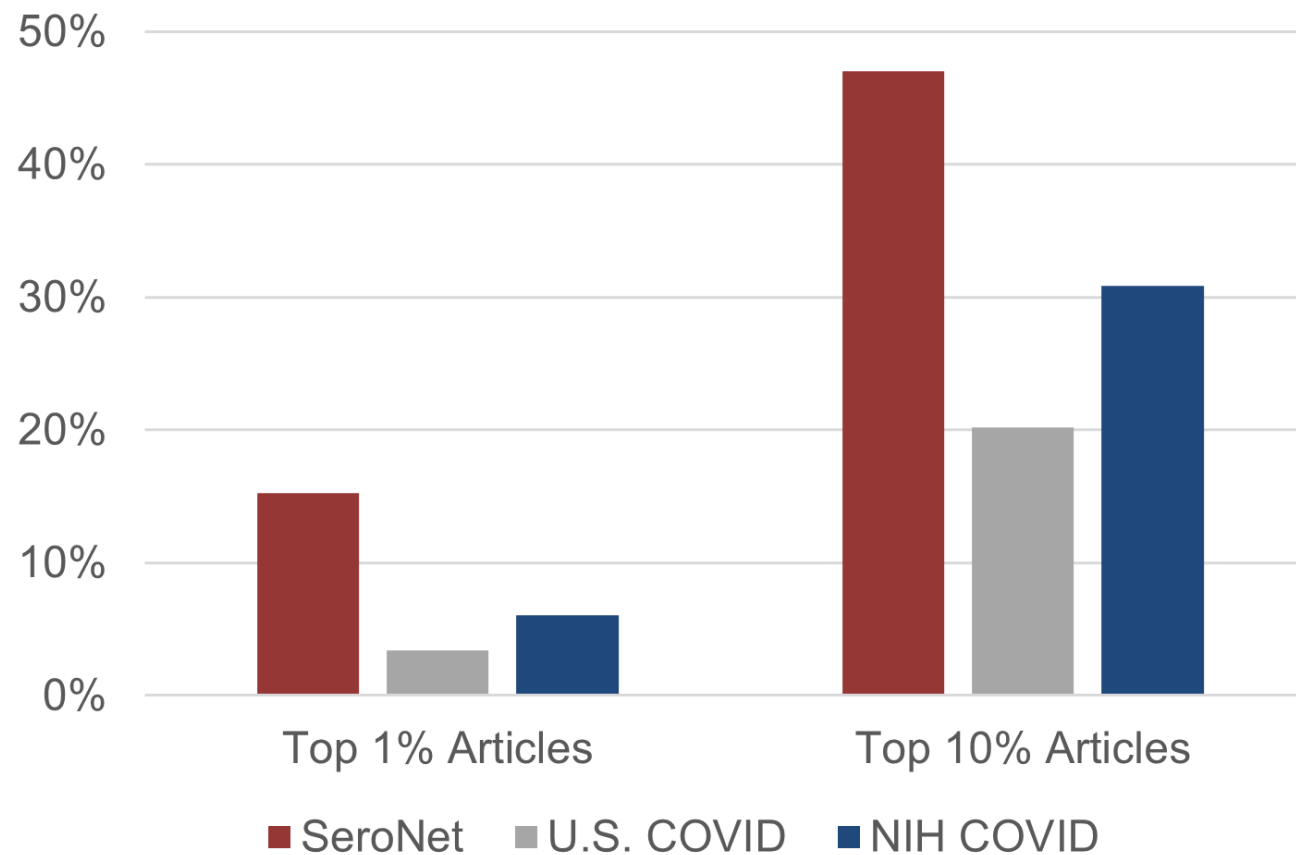
Vaccines, Aug 2022



Carlos Sariol
U Puerto Rico

SeroNet Program Assessment Findings

SeroNet articles have a higher percent of highly-cited articles compared to other COVID articles coauthored by U.S. researchers (Comparator 1) or funded by NIH (Comparator 2)



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DEA

Shamala Srinivas
Caterina Bianco
Ananda Gupta
Paulette Gray

NCI Program Directors

Kelly Blake	Tram Lam
Danielle Carrick	Angela Mariotto
Ray Harris	Guillermo Marquez
Indu Koohar	Christos Patriotis
Lillian Kuo	Betsy Read-Connole
Yin Liu	Anju Singh

NIAID

Joe Breen
Erik Stemmy
Cristina Cassetti

Questions

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