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Project II: Immunity to Influenza in Primary Lung Dendritic Cells

Parent Project Number	Sub-Project ID	Contact PI/Project Leader	Awardee Organization
5U19AI117873-05	8767	SEALFON, STUART C.	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI

Description

Abstract Text

Project Summary Relatively little is known about the functional distinctions and coordination of roles of the cell types comprising the resident dendritic cell (DC) network in the human lung. The CD1c+ DC subtype has been implicated in cellular immunity to influenza A virus (IAV), which is important for clinical outcome, heterosubtypic broad IAV immunity and immunity in the elderly. We propose to elucidate the mechanisms underlying the immunological responses to IAV of the CD1c+ primary DC subtype. In concert with mathematical modeling in Project III, we will test the hypothesis that the programmatic responses and maturation state of the CD1c+ DC during IAV infection emerges from the interplay of factors including differences among single cells, differences among individual infectious particles as well as among IAV strains, and the effects of CD1c+ crosstalk and that originating from other lung cells during infection mediated by the secreted factor microenvironment. In Aim 1, we will study the mechanisms of single cell response variation to IAV infection in primary circulating CD1c+ DC using single cell assays including mass cytometry, FISH during flow cytometry, and single cell RNA sequencing. In Aim 2, we will investigate mechanisms of primary circulating CD1c+ DC responses to infection by seasonal and **pandemic** IAV using a panel of wild-type and recombinant H1N1 IAV. In Aim 3, we will investigate how the microenvironment modulates the early responses to IAV infection in experiments with fresh human lung tissue and circulating CD1c+ DC. We expect this work to provide insight into the complex integrated immunity to IAV initiated in the lung that will further the rational development process for treatment of IAV infections and improved immunity to mucosal vaccines.

Public Health Relevance Statement

Data not available.

NIH Spending Category

Biodefense Clinical Research Emerging Infectious Diseases Health Disparities Infectious Diseases Influenza Lung Minority Health Pneumonia & Influenza

Project Terms

Antiviral Agents Biological Assay Blood Blood Circulation CD8-Positive T-Lymphocytes Cell Death Cell Death Induction Cells Cellular Assay Cellular Immunity Cellular Structures Clinical Code Complex Cytometry DNA-Directed RNA Polymerase Data Dendritic Cells Development Elderly Enzyme-Linked Immunosorbent Assay Epithelial Cells Exposure to Flow Cytometry Follow-Up Studies Gene Expression Genomics Heterogeneity Human Image Immune response Immunity In Situ Individual Infection Inflammatory Influenza Influenza A Virus, H1N1 Subtype Influenza A virus Interferons Joints Kinetics Lung Mediating Minority Modeling Molecular Mus Noise Outcome Pathogenicity

Read More

Details

Contact PI/ Project Leader

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Other PIs

Not Applicable

Program Official

Name
Contact
Email not available Email not available

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SEALFON, STUART C.

Awardee Organization
ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI

UNITED STATES (US)

Other Information

FOA
RFA-AI-14-028

Study Section
ZAI1-QV-I

Fiscal Year
2019

Award Notice Date
17-April-2019

Administering Institutes or Centers
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

DUNS Number
078861598

CFDA Code

Project Start Date

Project End Date

Budget Start Date
01-May-2019

Budget End Date
30-April-2021

Project Funding Information for 2019

Total Funding
$241,685

Direct Costs
$142,587

Indirect Costs
$99,098

Year	Funding IC	FY Total Cost by IC
2019	NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES	$241,685

NIH Categorical Spending

Click here for more information on NIH Categorical Spending

Funding IC	FY Total Cost by IC	NIH Spending Category
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES	$120,843	Health Disparities; Minority Health;
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES	$241,685	Biodefense; Clinical Research; Emerging Infectious Diseases; Infectious Diseases; Influenza; Lung; Pneumonia & Influenza;

Sub Projects

No Sub Projects information available for 5U19AI117873-05 8767

Publications

No Publications available for 5U19AI117873-05 8767

Patents

No Patents information available for 5U19AI117873-05 8767

Outcomes

The Project Outcomes shown here are displayed verbatim as submitted by the Principal Investigator (PI) for this award. Any opinions, findings, and conclusions or recommendations expressed are those of the PI and do not necessarily reflect the views of the National Institutes of Health. NIH has not endorsed the content below.

No Outcomes available for 5U19AI117873-05 8767

Clinical Studies

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Related News Releases

No news release information available for 5U19AI117873-05 8767

History

No Historical information available for 5U19AI117873-05 8767

Similar Projects

No Similar Projects information available for 5U19AI117873-05 8767

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