Back to Search Results

Description

Details

Sub-Projects

Publications

Patents

Outcomes

Clinical Studies

News and More

History

Similar Projects

Role of type 1 fimbrial mutations in the pathogenesis of pandemic E. coli

Project Number	Contact PI/Project Leader	Awardee Organization
1R21AI147575-01	SOKURENKO, EVGENI VENIAMINOVIC	UNIVERSITY OF WASHINGTON

Description

Abstract Text

ABSTRACT Adhesion is an essential trait for the pathogenesis of urinary tract infections and intestinal colonization by E. coli and mannose-specific type 1 fimbriae (T1F) is the most critical adhesive factor. Our goal is to understand how some of the unique features in T1F of the **pandemic** uropathogenic clonal group, ST131-H30, are adaptive for this sub-clone's urovirulence and intestinal fitness. We will concentrate on the structure-functional analysis of the mannose-binding adhesive subunit of the fimbriae, FimH, and the regulatory mechanism of fimbrial expression that are specific to ST131-H30. We will characterize in great detail the functional properties of the fimbrial adhesin, FimH, by comparing its ability to mediate adhesion under various flow and inhibitory conditions. We also will determine the functional significance of genetic insertion that inactivated the gene coding for positive regulator of T1F, FimB. We will attempt to understand in what way this mutation affected expression of T1F itself as well as other genes across the genome and the E. coli's virulence and colonization properties. Finally, we will use animal studies to determine the adaptive significance of the T1F and its variants in ST131-H30.

Public Health Relevance Statement

The bacterial attachment traits are called type 1 fimbriae and are critical for the pathogenesis of E. coli virulence in the urinary tract infections. This project will study how is one of the most successful uropathogenic E. coli differ from others in the fine attachment and regulation mode. This will be investigated by using genetically manipulated strains and animal models.

NIH Spending Category

Digestive Diseases | Genetics | Infectious Diseases | Urologic Diseases | Women's Health

Project Terms

Adhesions | Adhesives | Affect | Animal Model | Animals | Antibiotic Resistance | Bacterial Adhesins | Bacterial Attachment Site | Binding | Blood Circulation | Code | Data | Escherichia coli | Fimbrial Adhesins | Gene Expression | Genes | Genetic | Genetic Enhancement | Genetic Transcription | Genome | Goals | Horizontal Gene Transfer | Human | IS Elements | Individual | Intestines | Invaded | Mannose | Mediating | Microbial Biofilms | Modeling | Morphology | Mus | Mutate | Mutation | Nature | Pathogenesis | Phenotype | Point Mutation | Population | Probiotics | Property | Regulation | Role | Seminal | Structure | Urinary tract

Details

Back to Search Results

Description

Details

Sub-Projects

Publications

Patents

Outcomes

Clinical Studies

News and More

History

Similar Projects

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Project Number
1R21AI147575-01

Contact PI/Project Leader
SOKURENKO, EVGENI VENIAMINOVIC

Awardee Organization
UNIVERSITY OF WASHINGTON

ASSOCIATE PROFESSOR

Contact
EVS@U.WASHINGTON.EDU

Organization

Name
UNIVERSITY OF WASHINGTON

City
SEATTLE

Country
UNITED STATES (US)

Department Type
MICROBIOLOGY/IMMUN/VIROL(

Organization Type
SCHOOLS OF MEDICINE

State Code
WA

Congressional District
07

Other Information

FOA
PA-18-489

Study Section
Special Emphasis Panel[ZRG1 IDM-V (02)]

Fiscal Year
2019

Award Notice Date
10-July-2019

Administering Institutes or Centers
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

DUNS Number
605799469

CFDA Code
855

Project Start Date
15-July-2019

Project End Date
30-June-2021

Budget Start Date
15-July-2019

Budget End Date
30-June-2020

Project Funding Information for 2019

Total Funding
$233,250

Direct Costs
$150,000

Indirect Costs
$83,250

Year	Funding IC	
2019	NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES	$233,250

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	$174,938	Women's Health
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES	$233,250	Digestive Diseases; Genetics; Infectious Diseases; Urologic Diseases;

Sub Projects

No Sub Projects information available for 1R21AI147575-01

Thank you for your feedback!

Back to Search Results

Description

Details

Sub-Projects

Publications

Patents

Outcomes

Clinical Studies

News and More

History

Similar Projects

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Project Number	Contact PI/Project Leader	Awardee Organization
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Patents

No Patents information available for 1R21AI147575-01

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 1R21AI147575-01

Clinical Studies

No Clinical Studies information available for 1R21AI147575-01

News and More

Related News Releases

No news release information available for 1R21AI147575-01

History

No Historical information available for 1R21AI147575-01

Similar Projects

No Similar Projects information available for 1R21AI147575-01