

07/20/18

Agricultural Research Service  
Agricultural Research Information System  
Authorization to Apply for and Use Funds From Outside Sources  
Incoming Funds Records

Modcode/Log Number: 5030-20-15 0063648

Status: Pending

Date Created: 06/29/2018

Pre-Award Approval: 07/18/2018

Location/Management Unit Name:

AMES, IOWA  
NATIONAL ANIMAL DISEASE CENTER  
FOOD SAFETY AND ENTERIC PATHOGENS RESEARCH

ARS PI:  
Series: Microbiology

Email:

Purpose of Funds: Research > 25,000

Type of Agreement: Reimbursable Cooperative Agreement

ARS Agreement Holder: Yes

ARS Agreement Holder Log No:

ARS Proposed Total Funding: \$60,000.00

Grant Proposal: Yes Grant Awarded:

Date: Internal Comments:  
07/17/2018 Grant proposal being submitted to USDA, NIFA, AFRI, (Agriculture and Food Research Initiative). If awarded, total award is \$500,000 to Iowa State University and of those funds ARS to receive \$60,000 in sub agreement from ISU.

7-03 tmd, sent to rw for review  
7-09 rw, provided revisions to the objective and approach; tmd, made revisions per rw  
7-09 cl, provided that the \$5,000 identified for federal salaries is intended to be a summer/part-time student that would spend 100% of time on the project.  
7-09 rw, approved  
7-09 tmd, sent to chh for review  
7-09 chh, approved

Original Source of Funds:

0166 NIFA - AGRICULTURE AND FOOD RESEARCH INITIATIVE (AFRI) Type: USDA  
COMPETITIVE GRANTS PROGRAM, U.S. DEPARTMENT OF AGRICULTURE

Direct Source of Funds:

1414 IOWA STATE UNIVERSITY Type: Non-Federal

IPSC: Non Exempt

Start Date: 01/01/2019 End Date: 12/31/2020 Duration: 24 (months)

Budget Records Detail

Fed Salaries:	5,000.00	Total Proposed:	\$60,000.00
Equipment:	0.00	Other Costs:	0.00
Supplies:	44,500.00	Extramural:	0.00
Travel:	4,500.00	IPSC Amt:	6,000.00

Does ARS PI or any full-time resident of your household have any activity or financial interest (dealings) with the Cooperating Organization or are you applying as an adjunct scientist? No

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Area Ethics Advisor Review:

Confirmation and determination of 'dealings' question responded by SY.

No dealings, no conflict

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Recommended			Approved / Concurred		
Signature	A/D	Date	Signature	A/D	Date
RL: xxxxxxxx	A	07/02/2018	NPL:		
CD/LD/DAD:Kehrli, Jr Marcus I	A	07/02/2018	BPMS:		
AO:			DA: LINDSAY JAMES A	A	07/18/2018
SBFO:					
AD: xxxxxx	A	07/11/2018			
ADO:					

\*\*\*\*\* Official \*\*\*\*\*

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**Title of Proposal:**

Immunometabolism Governance of Immune Cell Function and  
Metabolic Partitioning During Health Challenge in Pigs

**Objective:**

To better understand the effect of infection on T cell metabolism as it relates to function and test the ability of metabolic substrate availability to impact immune cell function, we propose the following specific aims:

1. Fully characterize and contrast the metabolic and immunological state of activated peripheral T cells.
2. Identification of mechanisms controlling IFN-gamma transcription and translation in effector T cells.

**Approach:**

Blood samples will be collected and processed in order to evaluate metabolic state and function of T cells. T cells will be sorted from the total peripheral lymphocyte population for evaluation. Basal metabolic state and the effects of adding different amounts of metabolic substrates or pathway inhibitors to the T cell cultures will be evaluated as they relate to metabolism and function (cell proliferation and cytokine production). Blood samples will be collected from animals in both objectives 1 and 2. Recently developed methods used in immunology research that have been modified by ARS will be used for evaluation of metabolic status of porcine immune cell populations. This evaluation utilizes an extracellular flux analyzer which can assess the metabolic status of cells.

**Keywords:**

T CELLS  
IMMUNE  
METABOLIC  
CELL FUNCTION

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**Title of In-house Project:**

Intestinal Microbial Ecology and Metagenomic Strategies to  
Reduce Antibiotic Resistance and Foodborne Pathogens

**Project Number:** 5030-31320-004-00D

**Accession:** 0430363

**Relevance to Parent Project:**

Objective 1: Subobjective 1B: Test the efficacy of novel probiotics as a non-antibiotic feed additives to improve gut health. The intent of this subobjective is to provide potential non-antibiotic alternatives to improve intestinal health and subsequently limit disease. This project will evaluate the ability of metabolic substrates, glutamine and glucose, to modulate the host immune cell function and subsequently aid in resolution of disease without the use of antibiotics. Thus, the funds will enhance the OSQR-approved objective to identify non-antibiotic feed additives to improve the health of the animal, this work will test metabolic substrates as opposed to probiotics. Cooperators: Dr. Nicholas Gabler (PD), and Christopher Tuggle (CoPI) Iowa State University ARS PI Crystal Loving and her technician will spend 5% of time on this project. Grant-supported technician will spend 100% time on this project. Proposal Deadline: 7/26/2018, letter from ARS to ISU by 7/20/18.

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**Deliverables / Anticipated Products / Outcomes:**

ARS will provide data related to immune cell metabolism and cell function. ARS will be heavily involved with experimental execution, data analysis and interpretation, and reporting of results.

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<u>Sub Class</u>	<u>Code</u>	<u>Description</u>	<u>%</u>
NP	108 N	Food Safety, (animal and plant products)	

\*\*\*\*\* Official \*\*\*\*\*