UNIVERSITY OF South Carolina

INSTITUTIONAL BIOSAFETY COMMITTEE MEETING MINUTES

DATE: *August 27, 2025*
TIME: *3:00 PM*
LOCATION: *Virtual Meeting via Microsoft Teams*

The meeting for the University of South Carolina's Institutional Biosafety Committee (IBC) was called to order by the Chair, Dr. Doug Pittman, at 3:01pm.

Approved IBC minutes will be posted on the university's IBC website. This website includes meeting dates, times, locations, and guidance for the public to request to attend an IBC meeting.

MEETING ATTENDANCE

IBC Member	Member Role / Position / Department	Attendance
Doug Pittman	IBC Chair; Director, Graduate Studies in Drug Discovery & Biomedical Sciences	☑
Mark Robbins	Research Safety Bureau Chief & Senior Biosafety Officer in EH&S	☑
Shayne Barlow	Associate Vice President for Research; Director, Animal Resource Facilities	☑
Beth Krizek	Plant Expert; Professor in Biological Sciences	☑
Sujit Pujhari	Viral Vector Core Director in Pharmacology, Physiology & Neuroscience	☑
Jason Kubinak	Associate Professor in Pathology, Microbiology, and Immunology	☑
Michael Shtutman	Associate Professor in Drug Discovery & Biomedical Sciences	☑
Daping Fan	Professor in Cell Biology and Anatomy	☑
Sean Norman	Director, Molecular Microbial Ecology Lab in Environmental Health Sciences	☑
Anna Blenda	Associate Professor and Director of Research at USC SOM Greenville	☑
William Jackson	Professor/Chair in Biological, Environmental & Earth Sciences at USC Aiken	ABSENT
Ben Montgomery	Associate Professor in Natural Sciences at USC Upstate	☑
Amanda Moore	Community member; SC Department of Public Health	☑
Vida Mingo	Community member; Senior Lecturer of Biology at Columbia College	☑
Kris Kaigler	Research Specialist staff in Pharmacology, Physiology and Neuroscience	ABSENT

I. APPROVAL OF PREVIOUS MEETING MINUTES

IBC minutes from the meeting on June 18, 2025, were approved by committee vote.

- Votes: For = 13 / Against = 0 / Abstain = 0

II. ANNOUNCEMENTS

A. IBC CHAIR

i. The IBC Chair reminded all members present to identify any conflicts of interest as each registration is reviewed.

ii. The Biosafety Officer plans to visit USC Beaufort to discuss their research and any experiments that require IBC review and approval. Then she will complete initial lab inspections and offer required biosafety training later this year. Their IBC protocols will be submitted after lab inspections and training.

B. RESEARCH SAFETY BUREAU CHIEF / SENIOR BIOSAFETY OFFICER

i. The committee will review the updated IBC Charter. Recent amendments include adding oversight for research conducted at USC Beaufort, removing references to the ERM committees, updating meeting minutes description and posting minutes on the IBC website, updating the meeting frequency to every two months, updating the quorum description, and other minor changes. The IBC voted to approve the updated charter and post it on the IBC website.

III. OLD BUSINESS

Approved IBC meeting minutes are now being posted on the IBC website.

IV. PROTOCOL REVIEWS

Protocol #	1-0129-0825
Protocol Type	Amendment
PI Name	Sujit Pujhari
Project Title	Study of host-virus interaction in vertebrate and invertebrate cell lines
Section of NIH Guidelines	Section III-D-1, Section III-E-1, Section III-F-8

Characteristics of Agent(s) or Material(s)	Cloning and plasmid propagation using E. coli K-12 strains (DH5a, DH10B, DP50, EMG2, EPI100-T1R). Study aims to clone the viral envelope proteins and the host-interacting partners identified. Lab will handle both wild-type and recombinant viruses, depending on specific experimental requirements. Recombinant viruses will be generated using infectious clones of ZIKV, MAYV, ONNV, SINV, and DENV. These may include insertions of reporter genes to facilitate mechanistic studies. Modifications are not known or expected to increase the virus pathogenicity. Any additional genetic changes will be introduced solely to address research objectives and will not increase the hazardous nature of the recombinant viruses. Arboviruses are primarily transmitted through mosquito bites. The primary exposure risk for arboviruses in a lab setting is parenteral inoculation. Lab will not be using any sharps, so the risk of this route of exposure is low. Infection could also occur by mucous membrane and non-intact skin exposure, but these risks will be mitigated by wearing safety goggles and a face mask if there is a potential to generate splashes or droplets for any experiments conducted outside a biosafety cabinet. All anticipated virus experiments will be conducted inside a BSC. Lab personnel will also wear gloves and a lab coat to cover the skin. For individuals previously exposed to the dengue virus, the consequences of exposure are higher, but the probability of lab exposure and infection remains low with proper precautions. The PI outlined the clinical significance of exposure to each virus (Zika virus, Mayaro virus, Sindbis virus, O'nyong virus, Dengue virus) and small probability of more severe symptoms or disease (e.g. Zika causing Guillain-Barré syndrome and adverse impact on fetal brain). There is no prophylaxis treatment available for arboviral infections, so symptomatic treatment is provided. The PI outlined post-exposure procedures. Prior to handling dengue viruses, individuals are informed of the high potential risks of secondary infection involving a different serotype than the initial infection (e.g. dengue hemorrhagic fever) and are encouraged to consult with a physician if they have any concerns.
Manipulations/Procedures & Risk Assessment	Generation of mosquito KO cell lines: CRISPR/Cas9 used to generate knockout (KO) cell lines by transfecting CRISPR/Cas9 and selected sgRNA into mosquito cells. Visual markers introduced and flow cytometry used to sort the cells expressing the visual markers and establish the KO lines. Western blotting to validate KO efficiency. Viral infection and replication assessed in KO cell lines. Cell culture experiments (<30ml) to prepare virus stocks, and titration of the viruses. All virus handling procedures will be conducted inside a biosafety cabinet, with PPE such as double-layered gloves, a lab coat, and goggles for eye protection. No needles or sharps used. Restricted access facility for authorized personnel only. Virus-infected cells may be shipped to proteomic facilities by personnel with shipping training. Commercial iPSC lines derived from healthy donors used to generate microglia and brain organoids. ZIKV infections (wild-type) performed

	on microglia monocultures; then in co-culture with organoids. Analyses include cytokine assays, Western blot, and methylation PCR. All viral infections are done in biosafety cabinets. No animal work involved. All solid and liquid contaminated waste decontaminated before disposal. Surfaces disinfected using freshly prepared 10% bleach solution or other approved virucidal disinfectants.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences includes DEN-1, DEN-2, DEN-3, DEN-4, Zika virus, Sindbis virus, Mayaro virus, Aedes aegypti The nature of nucleic acids and function of proteins produced include viral envelope proteins, viral structural proteins, and autophagy
Host(s) & Vector(s) Used	Aedes aegypti Aag2 cell line, Aedes albopictus C6/36 cell line, African green monkey Vero cell line, human kidney cell line (293T) E. coli (K-12 strain), human-derived, commercially available iPSCs
Viral Vectors	None
Biosafety Level(s)	BL2
Work Practices	Verified proper work practices for experiments conducted at BL2.
Laboratory Facilities	Verified proper lab facilities for experiments conducted at BL2.
Training and Expertise of Research Personnel	PI provided CV/biosketch for IBC to verify PI's training and expertise. PI completed training on *NIH Guidelines* for Principal Investigators. PI indicated plans to make biosafety protocols available to lab staff and train lab staff in safe work practices and procedures for incidents.
Major Discussion Points	PI added clarifications on modifications to recombinant viruses used. PI clarified that iPSCs are derived from healthy donors (not diseased).
Motion to Approve	A motion was made to approve this protocol as is

Votes For:	Votes Against:	Abstained:	Conflict of Interest:
12	0	1	Dr. Pujhari abstained from voting on this project

Protocol #	1-0126-0825
Protocol Type	New
PI Name	Daniel Foster
Project Title	Regulation of Striatal Biology

<table>
<tr><td>Section of NIH Guidelines</td><td>Section III-D-4, Section III-E-1 & III-E-3, Section III-F-8</td></tr>
<tr><td>Characteristics of Agent(s) or Material(s)</td><td>Adeno-associated virus (AAV) vectors (serotypes 1, 5, 8, 9, retrograde) are non-pathogenic and the genetic modifications made will not make them pathogenic. AAVs are naturally replication defective because they require a helper virus for replication. AAV vectors are further rendered deficient by removal of genes responsible for replication to make room for the gene of interest (contain ~6% of the wild-type AAV genome). AAV vectors are administered via stereotactic injections into animals that are a non-permissive host for the replication-deficient AAVs used.</td></tr>
<tr><td>Manipulations/Procedures & Risk Assessment</td><td>AAV stocks stored in small aliquots (<20ul). Virus aliquots transported using a durable leak-proof secondary container. The AAV vectors are injected into mice using a motorized stereotaxic injector pump and a Hamilton syringe. All personnel working with the AAV are required to review SOPs in the lab for administration of AAV in rodents, cage labeling, and procedures for handling AAV and animal waste disposal. All personnel working with virus will wear eye protection, gloves, scrubs, surgical masks, and disposable lab coats. All disposable PPE and other contaminated solid waste are placed in biohazard bags and autoclaved. All work surfaces are decontaminated with disinfectants.</td></tr>
<tr><td>Source(s) and Nature of Nucleic Acid Sequences
Transgene Expression & Function of Protein</td><td>The source of nucleic acid sequences includes synthetic, green algae, jellyfish, bacteriophage, and sea anemone
The nature of nucleic acids and function of proteins produced include sensors, fluorescent markers, opsin, recombinase enzyme, designer receptor</td></tr>
<tr><td>Host(s) & Vector(s) Used</td><td>AAV vectors (serotype 1, 5, 9, or retrograde)</td></tr>
<tr><td>Viral Vectors</td><td>Adeno-associated virus (AAV) from USC Viral Vector Core or supplier</td></tr>
<tr><td>Biosafety Level(s)</td><td>BL1 (all experiments involving AAV vectors and rodents)</td></tr>
<tr><td>Work Practices</td><td>Verified proper work practices for experiments conducted at BL1.</td></tr>
<tr><td>Laboratory Facilities</td><td>Verified proper lab facilities for experiments conducted at BL1.</td></tr>
<tr><td>Training and Expertise of Research Personnel</td><td>PI provided CV/biosketch for IBC to verify PI’s training and expertise.
PI completed training on NIH Guidelines for Principal Investigators.
PI indicated plans to make biosafety protocols available to lab staff and train lab staff in safe work practices and procedures for incidents.</td></tr>
<tr><td>IACUC Approval</td><td><table><tr><th>IACUC Approval Number</th><th>IACUC Approval Date</th></tr><tr><td>2617-101756-090222</td><td>4/23/2025</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td>PI clarified the use of AAV retrograde serotype.
PI justified the use of BL1 containment by verifying AAV constructs have transgenes that do not encode a potentially tumorigenic gene</td></tr>
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<tr><td></td><td colspan="4">product or toxin molecule and produced in the absence of helper virus.
PI also indicated that rodents used are non-permissive hosts for AAVs.
PI clarified the safe use of sharps for stereotactic injections in mice.</td></tr>
<tr><td rowspan="2">Motion to Approve</td><td colspan="4">A motion was made to approve this protocol as is</td></tr>
<tr><td><u>Votes For:</u>
13</td><td><u>Votes Against:</u>
0</td><td><u>Abstained:</u>
0</td><td><u>Conflict of Interest:</u>
None</td></tr>
</table>

Protocol #	1-0127-0825
Protocol Type	New
PI Name	Anita Nag
Project Title	Studying the structure and function of SARS coronavirus nonstructural protein 1
Section of NIH Guidelines	Section III-D-2, Section III-E-1, Section III-F-1 & III-F-8
Characteristics of Agent(s) or Material(s)	DNA plasmids encoding nsp1 used for selection in *E. coli* K-12 cells to generate DNA for its transfection in human cells (ATCC). DNA will be expressed in cells with a reporter plasmid. nsp1 transiently expressed in mammalian cells and will not be integrated into the chromosome. nsp1 will be expressed in *E. coli* cells in the presence of ampicillin and resulting protein isolated and purified for other experiments. Lab will express His-tagged nuclear RNA cleavage and polyadenylation proteins.
Manipulations/Procedures & Risk Assessment	Human cells transfected with mammalian expression plasmid to express nsp1 without using any selectable marker or helper virus in cell culture. Cells expressing protein will be lysed or fixed for immunoprecipitation, western blot, RT-qPCR, or immunofluorescence. For expression and purification of nsp1 from *E. coli*, 1 L of culture containing an antibiotic-resistant plasmid expressing nsp1 or mammalian pre-mRNA processing proteins used for affinity purification using the affinity tag. Purified proteins will be used for protein-protein interaction mapping using the affinity tag, followed by western blot analysis. All experiments conducted using a lab coat, eye protection, and gloves. All cell culture experiments are conducted in biosafety cabinets. Aerosol production will be limited by reducing the volume of the culture and minimizing centrifugation (covered) and vortexing steps. 1. Sharps used only when necessary (e.g., nuclear and cytoplasmic fractionation of human cells). A biohazard sharps container will be used to dispose of needles that may be necessary to lyse cells. Sharps use will be minimized to non-sharps whenever possible.

	2. Filter tips used for transformation of DNA plasmids in cells. 3. A small volume used to minimize any spill and contamination. Plasmid DNA extraction from bacterial culture is limited to 50 mL, and protein extraction is limited to 1 L of bacterial culture. 4. A biosafety cabinet will be used for all cell culture. Students will wear gloves, eye protection, and lab coats. Solid cell culture waste will be bagged and autoclaved for disposal. The liquid waste will be treated with bleach to a final concentration of 10% bleach for 30 minutes before disposal. After each procedure, gloves will be removed, and lab personnel will wash their hands.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences includes human, firefly, SARS Coronavirus 1 and SARS Coronavirus 2. The nature of nucleic acids and function of proteins produced include nonstructural proteins, RNA processing proteins, and a reporter gene.
Host(s) & Vector(s) Used	Mammalian (HEK293, A549) cells used for protein expression. Protein purification and DNA isolation in *E. coli* (DH5α, BL21) cells.
Viral Vectors	None
Biosafety Level(s)	BL1 (*E. coli* K-12 expression) BL2 (plasmid expression in human cells)
Work Practices	Verified proper work practices for experiments conducted at BL1 & BL2
Laboratory Facilities	Verified proper lab facilities for experiments conducted at BL1 & BL2.
Training and Expertise of Research Personnel	PI provided CV/biosketch for IBC to verify PI's training and expertise. PI completed training on *NIH Guidelines* for Principal Investigators. PI indicated plans to make biosafety protocols available to lab staff and train lab staff in safe work practices and procedures for incidents.
Major Discussion Points	There were no major points of discussion.
Motion to Approve	A motion was made to approve this protocol as is

Votes For:	Votes Against:	Abstained:	Conflict of Interest:
13	0	0	None

Protocol #	1-0128-0825
Protocol Type	New
PI Name	Alessandra Porcu

Project Title	Effect of light exposure and circadian disruptions on neuroplasticity and behaviors
Section of NIH Guidelines	Section III-D-4, Section III-E-3, Section III-F-1 & III-F-8
Characteristics of Agent(s) or Material(s)	Plasmids used for expression of receptor proteins in mammalian cells. *E. coli* K-12 strains are used for plasmid amplification. No hazardous transgenes. Plasmid transection into mammalian cells and the receptor subunits are proteins involved in neuronal inhibitory signaling. AAV vectors serotype 1 or 5 (packaged using helper-free systems) are used in mice (non-permissive host) with a promoter to ensure neuron-specific expression. Vector titers range from 10^{12}–10^{13} vg/mL. AAV1 and AAV5 show enhanced neuronal tropism but do not infect non-neuronal tissues or alter species specificity.
Manipulations/Procedures & Risk Assessment	Plasmid DNA is amplified in *E. coli* K-12 strains. Pipetting and centrifugation are performed to avoid generation of aerosols. Cells are cultured and transfected with purified plasmids. Transfections and harvesting are conducted in a biosafety cabinet. All solid and liquid contaminated waste decontaminated before disposal. Work surfaces are decontaminated with 70% ethanol after the completion of work. AAV aliquots are transported to the animal facility in a durable, leak-proof secondary container. The only sharps used by lab personnel are Hamilton syringes or pulled glass needles used for stereotaxic injections in transgenic mice at BL1 containment. Sharps are disposed of in a puncture-resistant biohazard sharps container. The PI verified cages properly labeled and lab personnel will strictly adhere to procedures for handling viral vectors and animal waste disposal.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences include mice & Aequorea victoria The nature of nucleic acids and function of proteins produced include structural genes, calcium indicator proteins, fusion protein, glutamate sensor, and shRNA constructs to knock down specific gene expression
Host(s) & Vector(s) Used	E. coli K-12 (DH5α) to amplify plasmids for mammalian transfection. Mammalian cells (hamster) for transfection with recombinant plasmids Lab transgenic mice for stereotactic injection of AAVs for in vivo gene expression, silencing, or calcium imaging (non-permissive hosts)
Viral Vectors	Adeno-associated virus (AAV) from suppliers (e.g., Addgene)
Biosafety Level(s)	BL1 (all experiments involving AAV vectors and rodents)
Work Practices	Verified proper work practices for experiments conducted at BL1.
Laboratory Facilities	Verified proper lab facilities for experiments conducted at BL1.
Training and Expertise of Research Personnel	PI provided CV/biosketch for IBC to verify PI's training and expertise. PI completed training on *NIH Guidelines* for Principal Investigators. PI indicated plans to make biosafety protocols available to lab staff and

<table>
<tr><td></td><td colspan="4">train lab staff in safe work practices and procedures for incidents.</td></tr>
<tr><td>IACUC Approval</td><td colspan="4"><table><tr><th>IACUC Approval Number</th><th>IACUC Approval Date</th></tr><tr><td>2615-101736-090222</td><td>09/02/2022</td></tr><tr><td>2753-102003-033125</td><td>03/31/2025</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td colspan="4">PI needed to add a location where experiments are conducted.
PI verified procedures to decontaminate liquid waste before disposal.
PI indicated that AAV vectors do not contain sequences known to encode oncogenic or toxic proteins, and that mice are non-permissive hosts for AAV replication and not engrafted with permissive cells.</td></tr>
<tr><td rowspan="2">Motion to Approve</td><td colspan="4">A motion was made to approve this protocol as is</td></tr>
<tr><td><u>Votes For:</u>
13</td><td><u>Votes Against:</u>
0</td><td><u>Abstained:</u>
0</td><td><u>Conflict of Interest:</u>
None</td></tr>
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V. New Business / Additional Topics

The IBC discussed adding a question to the IBC protocol form. This new question will be required for research involving testing modified microorganisms on animals. The purpose is to verify lab personnel that will administer viable recombinant or synthetic nucleic acid molecule-modified microorganisms on whole animals received training to strictly follow all procedures in the *SOP 4-1 DLAR Use of Biohazards in Animals*.

The question includes a reminder that the PI is responsible for ensuring administration of agents to rodents will occur under BL2 conditions, cages are properly labeled, animals are housed at BL2 in the animal facility for the indicated time, and lab personnel will strictly adhere to procedures for handling viral vectors (e.g., stereotactic injections) and animal waste disposal. The approved SOP for animals is also attached in the protocol.

The question also clarifies that BL1 containment criteria may be approved by the IBC for using RG1 agents that are not associated with disease in healthy adult humans when the agents are used in the laboratory and administered in rodents. For example, AAV (all serotypes); and recombinant or synthetic AAV constructs, in which the transgene does not encode either a potentially tumorigenic gene product or a toxin molecule and are produced in the absence of a helper virus may be approved for use at BL1 containment.

In addition, the protocol form now requires the development of a customized SOP for all experiments requiring BL2-N containment which applies when research animals are of a size or have growth requirements that preclude the use of containment for laboratory animals (e.g., cattle, swine, sheep, goats, horses, poultry). No USC Principal Investigators currently have active projects involving larger animals that require BL2-N containment.

VI. Review of Incidents

No new incidents were reported.

VII. Inspections/Ongoing Oversight

Each PI's protocol includes a link to their last lab safety inspection report for IBC review.

Required protocol revisions were completed prior to IBC meeting and protocol approval.

VIII. IBC Training

The IBC generally reviewed and discussed sections of *SOP 4-1 DLAR Use of Biohazards in Animals* during the discussion regarding the new question added to the protocol form.

IX. Public Comments

No public comments were received.

X. Meeting Adjournment

The IBC meeting was adjourned at 3:49pm.