INSTITUTIONAL BIOSAFETY COMMITTEE MEETING MINUTES

DATE: *April 16, 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 3:00pm.

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; Associate Professor 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	Assistant Professor in Pathology, Microbiology, and Immunology	ABSENT
Michael Shtutman	Associate Professor in Drug Discovery & Biomedical Sciences	☑
Daping Fan	Professor in Cell Biology and Anatomy	☑
Sean Norman	Associate Professor in Environmental Health Sciences	ABSENT
Anna Blenda	Associate Professor and Director of Research at USC SOM Greenville	ABSENT
William Jackson	Professor/Chair in Biological, Environmental & Earth Sciences at USC Aiken	☑
Ben Montgomery	Associate Professor in Natural Sciences and Division Chair at USC Upstate	☑
Amanda Moore	Community member; SC Department of Health & Environmental Control	☑
Vida Mingo	Community member; Senior Lecturer of Biology at Columbia College	ABSENT
Kris Kaigler	Research Specialist staff in Pharmacology, Physiology and Neuroscience	☑

I. APPROVAL OF PREVIOUS MEETING MINUTES

IBC minutes from the meeting on February 12, 2025, were approved by committee vote.

- Votes: For = 11 / 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 NIH Associate Director for Science Policy notified institutions subject to the *NIH Guidelines* that, for all IBC meetings taking place on, or after June 1, 2025, the approved minutes from those meetings must be posted publicly on an institutional website. The USC minutes will be posted on the IBC website.

B. RESEARCH SAFETY BUREAU CHIEF / SENIOR BIOSAFETY OFFICER

i. The United States Government Policy for Oversight of Dual Use Research of Concern (DURC) and Pathogens of Enhanced Pandemic Potential (PEPP) was released last year. The policy institutes new oversight requirements. Currently, the only USC research subject to this policy involves HHS/USDA regulated biological toxins under the permissible toxin amounts. The Biosafety Program has recently requested each PI possessing these toxins to complete a self-assessment form to determine if additional requirements must be fulfilled.

ii. Attached to the IBC meeting agenda was a flyer with information for anyone that would like to attend the FBI/CDC Criminal-Epidemiologic Investigations Workshop on May 21-22. The workshop will be presented by the FBI Columbia Field Office and will be held in the USC Close-Hipp Building (1705 College St.). A registration link for this event was included in the flyer.

III. OLD BUSINESS

No old business was discussed.

IV. PROTOCOL REVIEWS

Protocol #	1-0085-0425
Protocol Type	New
PI Name	Michael Shtutman

Project Title	Investigation of anti-HIV therapeutics with iPS differentiated microglia, neurons, astrocytes and cerebral organoids
Section of NIH Guidelines	Section III-D-1, Section III-D-2, Section III-F-8
Characteristics of Agent(s) or Material(s)	pNL4-3 and pNL4-3EGFP vectors encoded replication-proficient human HIV-1. The vectors propagated as double stranded DNA in E. Coli K-12 strain. Replicative-competent HIV-1 could infect lymphoid and myeloid origin cells, expressing CD4, CXCR4, CCR3 and CCR5 receptors. HIV-1 infection is a cause of AIDS and AIDS-associated comorbidities. The tropism or hazard of original HIV-1 has not been modified in the vector.
Manipulations/Procedures & Risk Assessment	Transformation of *E.coli K-12* strains, bacterial growth in liquid culture & plasmid DNA purification/analysis performed at BSL-1 containment. Viral vectors transfected to 293FT cells and concentrated using screw caps and centrifuge safety cups. HIV-infected cells or organoids will be maintained in culture & later fixed or lysed for DNA or RNA isolation. The lab has restricted access. No sharps used for any experiments. All procedures conducted in a biosafety cabinet. Virus logs will be used to manage long-term storage inventory. A lab-specific SOP was developed.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequence is Aequorea victoria The nature of nucleic acids and function of proteins produced include potentially providing photoprotection to symbiotic photosynthetic algae
Host(s) & Vector(s) Used	Host: Human iPS-differentiated neurons and glia cells and human cerebral organoids, Human Microglia cell lines (hμglia, HMC3) Vector: pNL4-3 and pNL4-3EGFP
Viral Vectors	Retrovirus / Lentivirus (replication-competent)
Biosafety Level(s)	BSL-2+ (experiments involving replication-competent lentiviral vectors)
Enhanced Precautions	Lab will follow BSL-3 work practices (in a BSL-2 facility) such as: • Double gloves • Needles and other sharps will never be used • Minors will never be permitted to enter the laboratory • Lab doors will be kept closed when experiments are in progress • Restrict access to people whose presence is required • Ensure people comply with all entry and exit procedures • Biohazard signage will be posted at the laboratory entrance door • All activities involving HIV conducted in a biosafety cabinet • No work in open vessels will be conducted on the open bench. • The work surfaces decontaminated when HIV work is finished; plastic-backed paper toweling used on non-perforated work surfaces within the biosafety cabinet will facilitate clean-up • Solid front or wrap-around gowns worn in the laboratory

<table>
<tr><td></td><td colspan="4">• Vacuum lines protected with HEPA filters & disinfectant traps
• Frozen stocks transported in a screw top vial inside a locked box
• Spills and accidents immediately reported to Biosafety Officer
• Appropriate medical evaluation, surveillance, and treatment
• PPE removed after work & disposed in a biohazard bag; PPE not worn outside work area; lab personnel wash their hands after removing gloves and other PPE before exiting the lab
• Replication-competent HIV vectors will be stored separately from replication-incompetent lentiviral vectors
• Lab-specific SOP for HIV experiments adopted as policy</td></tr>
<tr><td>Work Practices</td><td colspan="4">Verified proper work practices for experiments conducted at BSL-2+</td></tr>
<tr><td>Laboratory Facilities</td><td colspan="4">Verified proper lab facilities for experiments conducted at BSL-2+</td></tr>
<tr><td>Training and Expertise of Research Personnel</td><td colspan="4">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>Major Discussion Points</td><td colspan="4">IBC required PI to include detailed description of BSL-3 work practices
PI installed an eyewash station in lab (although eye protection is required).
BSO met with PI and lab personnel to discuss work practices and facility.</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>
10</td><td><u>Votes Against:</u>
0</td><td><u>Abstained:</u>
1</td><td><u>Conflict of Interest:</u>
Dr. Shtutman abstained from voting on this project</td></tr>
</table>

Protocol #	1-0110-0425
Protocol Type	New
PI Name	Raoni dos Santos
Project Title	The role of norepinephrine neurons in the nucleus of the solitary tract: a circuit-based approach to understanding sickness behavior
Section of NIH Guidelines	Section III-D-4, Section III-E-1 & III-E-3, Section III-F-8
Characteristics of Agent(s) or Material(s)	Lab will purchase transgenic mice. Replication-deficient AAV vectors will be used for infections (inject into rat brains). Mice are a non-transmissive host. Genes promoted by viral vectors are receptors that do not possess any endogenous ligands and have no expected physiological effects.

Manipulations/Procedures & Risk Assessment	Transgenic mice used for stereotaxic intracranial injection of viral vectors. AAV transported in a durable, leak-proof container. Surgical instruments are sterilized by autoclaving. Surgeons wear appropriate PPE. Specialized syringes are flushed with ethanol. Solid waste is autoclaved, and all surfaces are decontaminated with disinfectants.			
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences includes Human, Discosoma, Chlamydomonas and Bacteriophage P1. The nature of nucleic acids and function of proteins produced include a reporter gene, receptors, and generation of conditional knock-in or knock-out of genes			
Host(s) & Vector(s) Used	Host: Transgenic mice (DBH-CRE mice) Vectors: Replication-deficient AAV vectors			
Viral Vectors	Adeno-associated virus (AAV) purchased from Addgene			
Biosafety Level(s)	BSL-1/ABSL-1 (experiments involving AAV vectors, which are made in the absence of a helper virus, used in the absence of any Risk Group 2 materials or human cells, and are free of any hazardous transgenes)			
Work Practices	Verified proper work practices for experiments conducted at A/BSL-1			
Laboratory Facilities	Verified proper lab facilities for experiments conducted at A/BSL-1			
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.			
IACUC Approval	The animal use proposal has been submitted for IACUC review. No animal experiments will be conducted prior to IACUC approval.			
Major Discussion Points	IBC discussed minor details on AAV vectors and the SOP for animals.			
Motion to Approve	A motion was made to approve this protocol as is			
	Votes For: 11	Votes Against: 0	Abstained: 0	Conflict of Interest: None

Protocol #	1-0111-0425
Protocol Type	New
PI Name	Jie Li
Project Title	Use of Recombinant Nucleic Acids to Discover Biologically and Chemically Unique Small Molecules from Microbes

<table>
<tr><td>Section of NIH Guidelines</td><td colspan="4">Section III-E, Section III-F-8</td></tr>
<tr><td>Characteristics of Agent(s) or Material(s)</td><td colspan="4">Nucleic acids derived from genomic DNA will be cultured and isolated. Genomic DNA will be used to construct expression plasmids to propagated in E. coli DH10B and expressed in expression hosts. The nucleic acid molecules and agents involved in plasmid construction will be used at BSL-1. Manipulations of the genetic material does not alter the agents' pathogenicity. Additionally, the gene products are non-toxic.</td></tr>
<tr><td>Manipulations/Procedures & Risk Assessment</td><td colspan="4">Genomic DNA will be extracted. The gene of interest will be PCR-amplified from the genomic DNA and this gene will then be ligated into a vector and the assembled plasmid will be transformed into E. coli DH10B. Purified plasmid will be transformed into an expression host based on the species of gene origin. Molecules of interest will be extracted from the cultures with organic solvents and purified. Experiments involve pipetting, centrifuging, shaking, and mixing to construct/purify the plasmid, and sonication during extraction of the molecules with an organic solvent. All steps involving the handling of live bacteria will be performed in a biosafety cabinet.</td></tr>
<tr><td>Source(s) and Nature of Nucleic Acid Sequences

Transgene Expression & Function of Protein</td><td colspan="4">The source of nucleic acid sequences includes Paenibacillus taiwanensis DSM18679, Streptomyces davaonensis, Paenibacillus thiaminolyticus

Nucleic acids encode antimicrobial peptides and encode small sulfated lipid-like molecules. Proteins are involved in biosynthesis of small, bioactive microbial molecules (peptidases, non-ribosomal peptide synthetases, cyclases, precursor peptides) and enzymes.</td></tr>
<tr><td>Host(s) & Vector(s) Used</td><td colspan="4">Hosts: E. coli DH10B (plasmid maintenance), E. coli BL21 (gene expression), Bacillus subtilis 168 (gene expression), Streptomyces coelicolor M1152 (gene expression).

Vectors: pET28a (E. coli), pDR111 (B. subtilis), pBS0E (B. subtilis), pCAP01 (S. coelicolor), pCAP04 (S. coelicolor), pKY01 (S. coelicolor).</td></tr>
<tr><td>Biosafety Level(s)</td><td colspan="4">BSL-1</td></tr>
<tr><td>Work Practices</td><td colspan="4">Verified proper work practices for experiments conducted at BSL-1</td></tr>
<tr><td>Laboratory Facilities</td><td colspan="4">Verified proper lab facilities for experiments conducted at BSL-1</td></tr>
<tr><td>Training and Expertise of Research Personnel</td><td colspan="4">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>Major Discussion Points</td><td colspan="4">Reviewed protocol highlights. There were no major discussion points.</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>
11</td><td><u>Votes Against:</u>
0</td><td><u>Abstained:</u>
0</td><td><u>Conflict of Interest:</u>
None</td></tr>
</table>

<table>
<tr><td>Protocol #</td><td>1-0113-0425</td></tr>
<tr><td>Protocol Type</td><td>New</td></tr>
<tr><td>PI Name</td><td>Qun Lu</td></tr>
<tr><td>Project Title</td><td>Small GTPase Functions in Neurodegenerative Diseases</td></tr>
<tr><td>Section of NIH Guidelines</td><td>Section III-E, Section III-F-8</td></tr>
<tr><td>Characteristics of Agent(s) or Material(s)</td><td>Transgenic rodents purchased from Jackson Laboratory.
DH5alpha and BL21 bacterial cells used to generate and purify plasmid DNA used in cell culture transfections. Protein isolated and purified.
Cell lines transfected include NIH 3T3, HEK293, Swiss 3T3, and other cells. Experiments involving human cell lines conducted at BSL-2.</td></tr>
<tr><td>Manipulations/Procedures & Risk Assessment</td><td>Transgenic mice will be treated with ZCL compounds (non-hazardous) and ZCL analogs by IP injections. Compounds developed to interact with small Rho GTPases as activators or inhibitors. Transgenic mice will be treated with compounds and mice breeding to maintain strain.
Bacterial cells transformed with plasmid vector containing short strands of DNA to purify/amplify DNA for cell culture transformation & PCR.</td></tr>
<tr><td>Host(s) & Vector(s) Used</td><td>E.coli DH5alpha and BL21 cells used as hosts for DNA using nonpathogenic plasmid vector (pNIC-CH, pEGFP-C2 and pEGFP-C1).</td></tr>
<tr><td>Biosafety Level(s)</td><td>BSL-1 (bacteria, plasmids), BSL-2 (transfection of human cell lines)</td></tr>
<tr><td>Work Practices</td><td>Verified work practices for experiments conducted at BSL-1 & BSL-2</td></tr>
<tr><td>Laboratory Facilities</td><td>Verified proper lab facilities for experiments at BSL-1 & BSL-2</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>2709-101891-040124</td><td>08/16/2024</td></tr><tr><td>2721-101892-070924</td><td>08/28/2024</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td>PI needed to complete NIH Guidelines Training prior to IBC approval.
PI clarified abbreviations and plans for breeding transgenic rodents.</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>Votes For:</td><td>Votes Against:</td><td>Abstained:</td><td>Conflict of Interest:</td></tr>
</table>

	11	0	0	None

Protocol #	1-0114-0425
Protocol Type	New
PI Name	Jeff Twiss & Deanna Smith
Project Title	Modifying intrinsic growth capacity through axonal mRNA translation
Section of NIH Guidelines	Section III-D-1 & III-D-4, Section III-E-1 & III-E-3, Section III-F-3 & III-F-8
Characteristics of Agent(s) or Material(s)	Experiments involve recombinant DNA, synthetic RNAs and viral-mediated gene expression to express genes linked to injury responses and growth of nerve processes. These will be used in cultured neurons and cell lines to modify rates of gene expression. AAV vectors will be used in animal models for modulation of gene expression. The lab will focus on mRNAs linked to growth of peripheral axons. Plasmids used for cloning, expression in mammalian cells, and generation of replication deficient lentivirus (3rd generation). Transgene derivatives are not a known safety hazard (no oncogenes). For cDNAs cloned into LV shuttle vectors, site-directed-mutagenesis is used (no evidence of increased pathogenicity). Constructs that generate unanticipated effects in Schwann cells will not be pursued. Lab will use constructs and experimental controls to generate AAV that will ultimately be used for expression in retinal ganglion cells in vivo. AAV serotypes 2, 5, 9 and Php.S will be used. Both wild-type HSV-1 and HSV1-VC2 mutant viruses will be tested in for the ability to be retrogradely transported using microfluidic cultures.
Manipulations/Procedures & Risk Assessment	cDNA inserts will be generated by RT-PCR or direct cloning. Plasmids amplified in *E. coli K-12* strains. Electroporation used to transiently transfect neuronal-like cell lines and primary cultures of dorsal root ganglion neurons from adult mice. Replication deficient lentivirus preparations will be used to transduce primary mouse neurons cultures. No sharps are used for experiments involving lentiviral vectors. cDNA expression constructs for RNA binding proteins and axonally targeted mRNAs for regeneration associated genes. Develop shRNAs to target different RBPs and mRNAs for axonally synthesized proteins. Tested by transfection prior to generating AAV for in vivo expression. AAV will be characterized in cell lines. This needs to be validated in primary murine neurons by serial dilutions of AAV preparations to transduce dissociated DRG cultures. For expression of proteins, lab will transduce with AAV encoding GFP.

	The optic nerve of mice will be crushed unilaterally and the vitreous injected with AAV for expression of exogenous mRNAs or shRNA. Experimental procedures used will be for transducing exogenous transgenes into cultured cells and anesthetized mice and rats. Electroporation will be used to transiently transfect neuronal-like cell lines and primary DRG and cortical neurons from adult mice/rats. To transduce animals, the viral solution is aspirated into a syringe with a needle in a biosafety cabinet. Injection of AAV2 in the eye (vitreous humor) is performed under a dissecting microscope in a Class I BSC. HSV is generated at LSU. Microfluidic devices are contained in a tissue culture dish with lid. Cultures are imaged on a fluorescent microscope. BSL-2 containment is used for handling all virus preparations. Aerosol-resistant centrifuge rotors are used. All staff use personal protective equipment (gloves, lab coat, face shield/glasses) while handling viruses. Viral preparations are only pipetted with aerosol-resistant pipets in a biosafety cabinet. Microliter quantities are used and all surfaces contacting virus are decontaminated with 10% bleach. Biohazard waste will be transported in a durable, leak-proof container for autoclaving.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences primarily includes human & mice; Other sources include Aequorea victoria & Discosoma mushroom coral The nature of nucleic acids and function of proteins produced include RNA binding proteins, fluorescent proteins, survival protein, Calcium indicator, lectin-like signaling protein, transcriptional regulator and acetyl transferase, and deacetylase.
Host(s) & Vector(s) Used	*E. coli* (to amplify plasmids), replication-deficient lentivirus and AAV (vectors generated at another core facility; lab only generates shuttle vectors); HSV-1 wild-type and VC2 mutant are generated at LSU.
Viral Vectors	Retrovirus / Lentivirus (3rd generation from UNC Viral Vector Core) Herpes Simplex Virus Type 1 (HSV-1) Adeno-associated virus (UNC Viral Vector Core & Vector Builder)
Biosafety Level(s)	BSL-1 (standard work with DNA and RNA) BSL-2 (all experiments involving Lentiviral, HSV-1 and AAV vectors)
Work Practices	Verified work practices for experiments conducted at BSL-1 & BSL-2
Laboratory Facilities	Verified proper lab facilities for experiments at BSL-1 & BSL-2
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.
IACUC Approval	**IACUC Approval Number** | **IACUC Approval Date**

<table>
<tr><td></td><td colspan="4"><table><tr><td>2741-101976-120624</td><td>12/6/2024</td></tr><tr><td>2633-101765-012023</td><td>1/20/2023</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td colspan="4">PI needed to include an explanation on HSV risks and procedures
Co-PI added CV and verified PI’s renewal training on NIH Guidelines</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>
11</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 #	1-0115-0425
Protocol Type	New
PI Name	Daping Fan
Project Title	A novel VSV-based anti-cancer therapy
Section of NIH Guidelines	Section III-D-1 & III-D-4
Characteristics of Agent(s) or Material(s)	The VSV has been modified by reverse genetical techniques. Coding sequence has been inserted between the M and G genes of VSV as additional virally expressed genes. VSV can be transmitted by skin and mucous membrane exposure, and inhalation of aerosols. The VSV may replicate in human cells and preferentially replicates in cancer cells. In cancer cells, VSV induces apoptosis. VSV-Smac and VSV-miR155 are derived from VSV (Indiana serotype). Most human infections with Indiana VSV serotype are subclinical with some patients experiencing a high fever that is often biphasic. Modified VSV, VSV-Smac and VSV-miR155, will preferentially infect cancer cells and not healthy cells that mount adequate IFN-r response to infection; therefore, the risk of accidental human exposure is low. VSV will be injected into mouse tumors. Like in human, VSV will replicate in mice cancer cells.
Manipulations/Procedures & Risk Assessment	Engineered VSV (Risk Group 2), termed VSV-Smac and VSV-mi155, will be shipped to USC SOM. Viruses will be transported between the rooms in sealed Ependorf tubes on ice in an ice bucket with a secured lid. All VSV contaminated materials including pipette tips and tubes will be collected into biohazard bags and autoclaved before disposal. The virus will be injected into tumors of breast cancer bearing mice in vivo to test its therapeutic efficacy. Injection of VSV into mice (intra-tumor) will be performed in a Class II biosafety cabinet in a dedicated surgical area. Investigators will wear double gloves for injections. Needles will never be recapped, and needles will be placed in a durable leak-proof biohazard sharps container after use. When working with VSV, the investigators will also wear protective eye protection and a lab coat. Room access will be restricted to lab personnel. Cages with injected mice will have Biohazard labels indicating the date of

<table>
<tr><td></td><td>injection. Injection sites will be disinfected with 70% ethanol. Shedding of VSV in the cage bedding is not anticipated. Cages will be changed inside a biosafety cabinet. Due to the potential for aerosol transmission and VSV being replication-competent, personnel will utilize ABSL-2 containment for virus injections and animal husbandry for the full duration of the animal's life. Dirty cages, water bottles, and beddings will be autoclaved in a biohazard bag. Racks, carts and other equipment will be wiped with 70% ethanol prior to leaving the room.</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 mice.
The nature of nucleic acids and function of proteins produced include induction of apoptosis and enhancing antitumor immune response.</td></tr>
<tr><td>Host(s) & Vector(s) Used</td><td>No vector plasmids will be used at USC SOM for preparation of VSV.</td></tr>
<tr><td>Viral Vectors</td><td>Vesicular stomatitis virus (Indiana serotype)</td></tr>
<tr><td>Biosafety Level(s)</td><td>BSL-2/ABSL-2 (all experiments involving VSV)</td></tr>
<tr><td>Work Practices</td><td>Verified proper work practices for experiments conducted at ABSL-2</td></tr>
<tr><td>Laboratory Facilities</td><td>Verified proper lab facilities for experiments conducted at ABSL-2</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>2714-101905-041924</td><td>3/7/2025</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td>The PI updated lab locations and provided clarification on housing of infected animals in negative pressure individually ventilated cages.</td></tr>
<tr><td>Motion to Approve</td><td>A motion was made to approve this protocol as is<table><tr><th>Votes For:</th><th>Votes Against:</th><th>Abstained:</th><th>Conflict of Interest:</th></tr><tr><td>10</td><td>0</td><td>1</td><td>Dr. Fan abstained from voting on this project</td></tr></table></td></tr>
</table>

Protocol #	1-0116-0425
Protocol Type	New
PI Name	Walden Ai & Amanda Rosewell Shaw

Project Title	Targeting cell fusion as a novel strategy to tackle JQ1 resistance in triple negative breast cancer
Section of NIH Guidelines	Section III-D-3, Section III-E-3, Section III-F-8
Characteristics of Agent(s) or Material(s)	cDNA of human proteins or synthetic guide RNA sequences will be subcloned into lentiviral respective vector plasmids. Vector plasmid, envelope plasmid and packaging plasmid are co-transfected into HEK293T cells for lentivirus production (3rd generation). Viruses are pseudotyped using VSV-G (glycoprotein) as an envelope and contribution of HIV to the vector has been reduced to a fraction of cis-acting sequences and to only three genes, gag, pol and rev in the separate packaging constructs (i.e. vectors are replication-deficient). Transgenes include genes that are expressed in normal human cells (highly expressed in human skin). If human cells are accidentally transduced by the lentivirus, the expression of these genes is unlikely to cause adverse consequences (may increase the risk of skin problems). Lab only knockout one specific isoform at a time which minimizes risk. The entire sequences including that of CRISPR/Cas9 and guide RNA are cloned into one lentiviral vector for gene editing purposes. *E. coli K-12* is non-pathogenic & used to propagate lentiviral plasmids. All retroviruses, regardless of their ability to replicate, are potentially capable of causing cancer via insertional mutagenesis upon exposure. The lab will purchase transgenic mice for breeding desired transgenics.
Manipulations/Procedures & Risk Assessment	*E.coli K-12* will be transformed to produce plasmids for lentiviral production. Lentiviral preparation will be performed in a designated biosafety cabinet used for culturing the transfected HEK293T cells. Lentiviruses will be used to transduce HeLa cells to determine the viral titer. The ultracentrifuge for lentiviral concentration and the centrifuges for transduced cell processing have sealed rotor heads and centrifuge safety cups. Tubes will be opened inside a biosafety cabinet after centrifugation. Lab will use 10% bleach to decontaminate work surface followed by 70% ethanol spay. Solid waste such as tissue culture plates and centrifuge tubes will go in a red biohazard bag and autoclaved before disposal. Liquid waste will be decontaminated with bleach at a final concentration of 10% with at least 30 minutes contact time before disposal. No sharps will be used. Virus will not be used in animals.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The source of nucleic acid sequences include human. The nature of nucleic acids and function of proteins produced includes an oncogene or tumor suppressor.
Host(s) & Vector(s) Used	Plasmids containing inserts transfected in HEK293T cells for lentiviral production.
Viral Vectors	Retrovirus / Lentivirus (3rd generation)

<table>
<tr><td>Biosafety Level(s)</td><td>BSL-1 (E. coli K-12 to produce plasmids for lentiviral production)
BSL-2 (all experiments involving lentiviral vectors and human cells)</td></tr>
<tr><td>Work Practices</td><td>Verified work practices for experiments conducted at BSL-1 & BSL-2</td></tr>
<tr><td>Laboratory Facilities</td><td>Verified proper lab facilities for experiments at BSL-1 & BSL-2</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>2701-101894-013124</td><td>01/31/2024</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td>The PI verified completion of NIH Guidelines training prior to approval</td></tr>
<tr><td>Motion to Approve</td><td>A motion was made to approve this protocol as is<table><tr><th>Votes For:</th><th>Votes Against:</th><th>Abstained:</th><th>Conflict of Interest:</th></tr><tr><td>11</td><td>0</td><td>0</td><td>None</td></tr></table></td></tr>
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Protocol #	1-0117-0425
Protocol Type	Amendment
PI Name	Nicholas Truex
Project Title	Engineering molecular immunotherapies
Section of NIH Guidelines	Section III-D-1 & III-D-2, Section III-E, Section III-F1, F2, F3 & F8
Characteristics of Agent(s) or Material(s)	Possible modes of transmission for wild type B. anthracis include respiratory, cutaneous (via broken skin), gastrointestinal (via ingestion), and inhalation. B. anthracis can produce spores that allow the organism to persist for long periods and are resistant to many disinfectants. The primary lentivirus exposure risks are mucous membrane exposure and parenteral inoculation (no sharps used, wear PPE, and work in a biosafety cabinet). Artificial Transcription Factors (ATFs): DNA-targeting proteins for regulating gene expression. The ATFs comprise zinc finger (ZF) protein subunits. The ATFs are DNA-encoded into mammalian and bacterial expression plasmids. Yeast Surface Display: screening platform for discovering new binding proteins.

	Antibody Engineering: Lab uses several plasmids for antibody expression in mammalian and bacterial cells. Anthrax-mediated Protein Delivery: The Bacillus anthracis strains are identical or equivalent to, or derived from, the widely used Sterne strain. The Sterne strain contains the large pXO1 plasmid that encodes the anthrax toxin proteins but lacks the pXO2 plasmid that encodes the poly-gamma-D-glutamic acid capsule. Loss of either plasmid decreases virulence by manyfold. The Sterne strain (pXO1+, pXO2-), and versions known generically as "Sternetype", are used world-wide as veterinary vaccines and in Russia and China as a human vaccine. No pXO2-containing Select Agent B. anthracis strains will be acquired or used in the lab. The B. anthracis strain BH500 lacks pXO2 and PXO1, further decreasing any potential risk. Lentiviral Vector-Mediated Gene Delivery. Lab will use a lentiviral vector (HIV-1) third generation system. Transgene plasmids encode gene products and these proteins are nonpathogenic, however over-expression can potentially be harmful in several ways: (a) oncogenic effects are possible from ATF-mediated stimulation of immune genes, which can affect cell cycle regulation, proliferation, or apoptosis; (b) toxic effects are possible from excessive protein expression or ATF-mediated immune activation; and (c) physiological effects are possible from the ATF-mediated unanticipated modulation of signaling proteins affecting growth factors, immune responses, and cellular behavior. (d) allergenic effects are possible from ATF-mediated immune activation. Hazards that are inherent to the vector include: (a) mutagenesis from integration into the host genome, which could disrupt regulatory regions of endogenous genes, potentially leading to oncogenesis; (b) high doses to cells can cause cytotoxic effects or an immune response; (c) cells with stable expression of a transgene that has oncogenic properties can cause uncontrolled cell proliferation; (d) Unanticipated disruption of cell homeostasis can occur due to gene over-expression, immune activation, or dysregulation of normal cell function. Lentiviral vectors have been pseudotyped with the VSV-G envelope protein, which enables applications in most mammalian cells. The vector titer and amount for these experiments is relatively small scale.
Manipulations/Procedures & Risk Assessment	Some r/s NA sequences comprise transgenes from pathogens (Risk Group 2), including B. anthracis and C. diphtheriae. In addition, genetically modified pathogens (B. anthracis) are also used for protein expression. In all cases, work with these molecules and pathogens does not increase their toxicity or pathogenicity. r/s NAs usage includes: (1) direct transfection for protein expression, (2) manipulation through mutagenesis and gene editing, (3) direct treatment to mammalian cells as an immunogenic adjuvant. r/s NA manipulation procedures include PCR amplification, PCR mutagenesis, gene cloning, spin column extraction, and gel analysis. r/s NA transfection into immortalized cell lines, Transfections are performed in a biosafety cabinet with regular disinfection using 70%

	ethanol. Required PPE includes gloves, and lab coat. The lab has restricted access to lab personnel. r/s NA transformation into bacterial cells, including *E. coli* (BL21, K12) and *B. anthracis* (BH500). Required PPE includes wearing gloves, laboratory coat, and eye and face protection. A freshly prepared 20% bleach solution used to decontaminate all work surfaces and spills. When working with larger volumes (>500 mL), a surgical mask will be worn to minimize risk of face contact (e.g., if a flask was dropped). High concentrations of *B. anthracis* cultures will not be used. If a spill occurs, personnel will evacuate the lab to allow aerosols to settle. Transfection into yeast cells will also be conducted. Lentiviral vectors will be used for r/s NA transformation in mammalian cells, including human and murine cells. The lab has two biosafety cabinets. Required PPE includes gloves, lab coats, and eye protection. Sharps will never be used for experiments involving lentiviral vectors. Other precautions: Besides using plastic pipette tips for work with mammalian cells, no other sharps are used. Work with mammalian cells in the biosafety cabinet include pipetting and opening containers. Bacteria requiring BSL-2 containment will be centrifuged using safety cups to contain aerosols. Materials will be placed in a durable leak-proof container and secured for transport between rooms. Work surfaces will be routinely decontaminated as well as after any spills using freshly prepared 10% bleach or 70% ethanol solutions.
Source(s) and Nature of Nucleic Acid Sequences **Transgene Expression & Function of Protein**	The sources of nucleic acid sequences include *B. anthracis*, human, mouse, Discosoma, Aequoera Victoria, Tobacco Etch Virus, *Staph. aureus*, Thosea asigna virus, *S. cerevisiae* & *Sulfolobus acidocaldarius* The nature of nucleic acids and functions of proteins produced include pore-forming protein, inhibition of protein synthesis, transpeptidase, cell receptor with unknown function, fluorescent proteins, protease, antibody that binds receptors, elevate intracellular cyclic AMP, heavy chain only (binds receptors), single-chain variable fragment that binds to antigen, self-cleaving peptide, mouse antibody, fluorescein binding antibody, sumo protease, chemokine that binds to receptor, discovering novel binding proteins
Host(s) & Vector(s) Used	Bacterial Expression (*E. coli* and *B. anthracis*) of proteins and antibody fragments Mammalian expression (HEK293F) of proteins, antibodies, and antibody fragments Yeast display of protein libraries (antibody fragments and small binding proteins) Lentiviral vector-mediated gene delivery
Viral Vectors	Retrovirus / Lentivirus (3rd generation) from USC Viral Vector Core
Biosafety Level(s)	BSL-1 (*E. coli,* yeast transformations);

	BSL-2 (mammalian cell transfection into immortalized cell lines, Bacterial transformation in *B. anthracis* BH500*,* lentiviral transduction)			
Work Practices	Verified work practices for experiments conducted at BSL-1 & BSL-2			
Laboratory Facilities	Verified proper lab facilities for experiments at BSL-1 & BSL-2			
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 needed to clarify effective decontamination procedures for approval			
Motion to Approve	A motion was made to approve this protocol as is			
	Votes For: 11	Votes Against: 0	Abstained: 0	Conflict of Interest: None

Protocol #	1-0118-0425
Protocol Type	New
PI Name	Camilla Wenceslau & Cameron McCarthy
Project Title	Endothelial cell reprogramming and cardiovascular function in hypertension in rodents
Section of NIH Guidelines	Section III-D-1 & III-D-4, Section III-E-3, Section III-F-8
Characteristics of Agent(s) or Material(s)	The lab will use a 3rd generation lentivirus (LV) vector to produce viral preps. 3rd generation lentiviral systems separate transfer, envelope, and packaging components of the virus onto different vectors. In this system, the packaging plasmid is further split into two plasmids; one encodes for r*ev*, and the other encodes for g*ag* and *pol* proteins. The transfer vector encodes the gene of interest and contains the sequences that will incorporate into the host cell genome but cannot produce functional viral particles without the genes encoded in the envelope and packaging vectors. Unless recombination occurs between the packaging, envelope, and transfer vectors, and the resulting construct is packaged into a viral particle, it is not possible for virus to replicate and produce more virus after the initial infection. All retroviruses, regardless of their ability to replicate, can cause cancer via insertional mutagenesis. However, sequences of the transcription factors included in the lab's plasmid have not been linked with tumor formation.
Manipulations/Procedures & Risk Assessment	Lentivirus will be administered in vivo in rodents (mice or rats), via one intravenous injection (100 uL). After the treatments, rodents will be euthanized and the blood and vessels, and the heart, lungs, kidneys,

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<tr><td></td><td>liver, and tibia will be collected for experimental procedures. Some experiments will be performed in cultured cells treated with lentiviruses with OSK factors. Rodents will be administered treatments using a syringe and needle (only one intravenous administration per animal); collection and processing of the samples (blood and tissues) from treated animals; in vitro incubation of tissues or cells (cultured) with the lentiviruses. Lab personnel receive appropriate training. If necessary, lab will treat the animals using restraint devices to minimize the risk of a needlestick (e.g., if the animal cannot be anesthetized or is stressed). Needles will never be recapped. Samples will be collected using surgical tools (i.e., scissors, scalpels, razors, and forceps). Tissues will be processed, and some will be centrifuged to separate specific proteins.</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 is mice.
The nature of nucleic acids and function of proteins produced include transcription factors and markers.</td></tr>
<tr><td>Host(s) & Vector(s) Used</td><td>Lentivirus vector will be used in vivo, ex vivo, and in vitro.
In vitro experiments include the use of multiple rodent cell lines.</td></tr>
<tr><td>Viral Vectors</td><td>Retrovirus / Lentivirus (3rd generation) from USC Viral Vector Core</td></tr>
<tr><td>Biosafety Level(s)</td><td>BSL-2 (all experiments involving lentiviral vectors)</td></tr>
<tr><td>Work Practices</td><td>Verified proper work practices for experiments conducted at BSL-2</td></tr>
<tr><td>Laboratory Facilities</td><td>Verified proper lab facilities for experiments conducted at BSL-2</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>2596-101690-041122</td><td>12/6/22</td></tr></table></td></tr>
<tr><td>Major Discussion Points</td><td>The PI added minor clarifications to agent characteristics & procedures.
The PI verified completion of NIH Guidelines training prior to approval</td></tr>
<tr><td>Motion to Approve</td><td>A motion was made to approve this protocol as is<table><tr><td><u>Votes For:</u>
11</td><td><u>Votes Against:</u>
0</td><td><u>Abstained:</u>
0</td><td><u>Conflict of Interest:</u>
None</td></tr></table></td></tr>
</table>

V. New Business / Additional Topics

No new business was introduced.

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.

Dr. Shtutman's protocol was approved after the Biosafety Officer met with the PI and lab technician to discuss the enhanced work practices required for their new HIV lab, and the BSO verified an eyewash station was installed in the tissue culture room. A lab-specific HIV post-exposure protocol was established and reviewed by the IBC before approval.

VIII. IBC Training

No IBC training was conducted.

IX. Public Comments

No public comments were received.

X. Meeting Adjournment

The IBC meeting was adjourned at 4:18pm.