Rutgers University
Institutional Biosafety Committee (IBC) – North Campus
Meeting for NIH Guidelines Materials
Minutes of July 14, 2026

1. ATTENDEES

☒ Preeti Bharaj	☐ Dane Parker	☐ Sergei Kotenko – Co- Chair
☒ Theresa (LiYun) Chang	☒ Shaun Shahani	☒ Brian Eggert - REHS
☒ Nancy Connell	☒ Lai-Hua Xie	☒ Marija Borjan - REHS
☒ Roberto Colangeli	☒ Amanda Hueting – Local Non-Affiliated	☒ Blas Peixoto - REHS
☒ Carla Cugini	☐ Michael Ricker – Local Non-Affiliated	☒ Robert Adcock - REHS
☐ Dominic Del Re	☐ Sonia Solano – Local Non-Affiliated	☒ Jacquelyn Vidal - REHS
☒ Jean-Pierre Etchegaray	☐ Jeetendra Eswaraka – Ex Officio	☒ Sophia Cheng - REHS
☒ Roseann Kehoe	☐ Alejandro Ruiz – Ex Officio	☒ Juusaee Rosa - Guest
☐ Yosuke Kumamoto	☐ Bryan Bocco – Ex Officio	☐
☐ Deborah Lazzarino	☐	☐
☒ Latisha Moody	☐	☐

2. MEETING LOGISTICS

CURRENT MEETING		
Called to Order: 10:02 AM	**Adjourned:** 11:04 AM	**Location:** WebEx
PREVIOUS MEETING		
Minutes from May 12, 2026		**Approved (13:0:0)**[1, 2]
NEXT MEETING		
Date: September 8, 2026	**Time:** 10:00 AM	**Location:** WebEx

CONFLICT OF INTEREST STATEMENT
Committee members with a conflict of interest related to the review of a specific registration may not be involved in the review or approval of a project in which he or she has been or expects to be engaged or has a direct financial interest.

3. PRE-AGENDA

TOPIC	SUMMARY
New Business: **Limits for Protocol Size & Scope**	While reviewing protocols at the IBC-Central meeting in June, a few members suggested that there should be limits on protocol size and scope. There was a brief discussion about protocols that have many unrelated projects and different classes of biohazards, making the reviews and risk assessments challenging. A proposed solution is to divide large protocols into several smaller protocols. REHS noted that the IBC protocol system is modular and allows many biomaterials to be entered into a single protocol. Historically labs have been encouraged to create protocols based on biosafety level (e.g., one BSL2 protocol and a separate protocol to cover BSL3 work). These approaches reduce the overall burden of protocols for both the PIs and the committee, but ultimately can lead to some protocols being quite large. The proposed solution of a PI having many separate protocols based on agents or project goals has the potential to lead to duplicity and frustration or confusion regarding which protocol(s) to amend when new materials or research directions need to be added. With the historical approach to protocol size, REHS has found protocol overlap issues to be fairly rare. Another possible solution might be to modify sections of the protocol system to facilitate better organization (perhaps grouping) of information by project. For example, the Project Description could be adjusted to allow each distinct project to be entered as a separate text box (which in turn could be tied to a separate, project-specific risk assessment). REHS consulted with the IBC co-chairs, and a subcommittee will be created to provide recommendations on whether and how to limit protocol size and scope. Members from both IBC-North and IBC-Central will be invited to participate, and the recommendations of the subcommittee will be brought to the IBC for discussion and voting. Comments for consideration of the subcommittee may be emailed to biosafety@rutgers.edu.

PROTOCOL REVIEWS

The following protocols were reviewed according to the risk assessment guidelines published in the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules* and the CDC/NIH publication *Biosafety in Microbiological and Biomedical Laboratories*. The risk assessment is documented in the REHS Biosafety Protocol Management System and includes a review of the engineering controls, work practices, safety training, and medical surveillance of project personnel. Individual protocols are evaluated on the following matters as appropriate: the proposed biosafety level and safety practices, agent characteristics, source and nature of agents or recombinant/synthetic nucleic acid sequences and resulting effects of expressed proteins, host animals/ cells, and cloning vectors to be used, and the type of manipulations planned.

Note: Protocols were not necessarily reviewed in the order they appear below.

1. ADMINISTRATIVE APPROVALS

PROTOCOL	PI	MATERIAL(S) OF INTEREST	BSL
13-444	Pang, Zhiping	Renewal with changes – housekeeping edits	2
17-040	Semenova, Ekaterina	Amendment – PI change	1
15-089	Guo, Yanxiang	Amendment – adding 4 more human lung cancer cell lines and flow cytometry / cell sorting at core facility	2
14-027	Xia, Bing	Renewal with changes – housekeeping edits	2
12-225	Grant, Barth	Renewal without changes	2
17-011	Toledo, Alvaro	Renewal with changes – housekeeping edits	2
19-040	Shreiber, David	Renewal with changes – updated personnel and funding sources	2
12-255	White, Lori	Renewal without changes	2
16-011	Segovia, Juan Mena	Renewal without changes	2

2. ADMINISTRATIVE TERMINATIONS

PROTOCOL	PI	TITLE OF PROTOCOL	EXPIRY DATE
None			

3. BIOSAFETY OFFICER REPORT (BSO)

PROTOCOL	PI	TITLE & MATERIAL(S) OF INTEREST	BSL / GUIDELINES
None			

4. AD HOC MEETING APPROVALS			
PROTOCOL	**PI**	**TITLE & MATERIAL(S) OF INTEREST**	**BSL**
None			

5. NEW PROTOCOLS			
PROTOCOL	**PI**	**TITLE & MATERIAL(S) OF INTEREST**	**BSL / GUIDELINES**
26-015	Altindis, Emrah	**Title:** Interdisciplinary Mechanisms of Host-Microbe Interactions: Investigating Viral Hormones (VILPs), Gut Microbial Metabolites (IsoLCA, TDCA), and Molecular Mimicry in Metabolic and Autoimmune Disease Pathogenesis. **Materials:** rDNA, AAV vector, Lentiviral vector, Grouper Iridovirus (GIV), Human commensal bacteria (17 organisms), Human cells, Mice **Submission Summary:** This protocol investigates host–microbe interactions in metabolic, autoimmune, and oncologic diseases. Research focuses on viral insulin/IGF-like peptides (VILPs) as selective IGF1R antagonists for cancer (including Ewing sarcoma and triple-negative breast cancer) and gut microbiome metabolites and molecular mimics involved in Type 1 diabetes and celiac disease. Agents include replication-incompetent third-generation lentiviral vectors (VSV-G pseudotyped, self-inactivating), AAV8 vectors expressing VILPs or IGF-1, Grouper Iridovirus (RG2) and commensal bacterial strains (RG1–RG2), human PBMCs and T-cell clones, and established human cell lines. Recombinant DNA work uses standard plasmids propagated in E. coli K-12 (BSL-1). No toxin genes or Select Agents are used. Procedures include mammalian cell culture, lentiviral transduction, CRISPR-Cas9 assays, anaerobic bacterial culture, flow cytometry, and mouse studies involving bacterial gavage, AAV-8 administration, peptide injections, and orthotopic tumor implantation. Viable BSL-2 work is conducted in Class II biosafety cabinets with sealed-rotor centrifugation. Animal studies are performed at ABSL-2 with appropriate decontamination and	2 / III-D-1, III-D-2, III-D-3, III-D-4

		waste disposal procedures. Additional risk-mitigation measures include the use of third-generation self-inactivating lentiviral vectors, safety-engineered sharps, and leak-proof secondary containment for transport of inactivated materials. No BSL-3 agents or Select Agents are used. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Required before commencing work (Provision of approval) **IBC Vote: Approved (13:0:0)[1]**	
26-016	Contessa, Joesph	**Title:** Use of Human Cancer Cell Lines **Materials:** rDNA, Plasmids containing Lentivirus sequence, Human cells, Mice **Submission Summary:** The main goal of this research is to investigate molecular and functional characteristics of a specific gene signature that has established or proposed roles in cancer initiation, progression, or therapeutic response. Our laboratory will generate isogenic human cancer cell lines with one or more defined genetic modifications in vitro. These engineered cell lines will be utilized in the lab (in vitro cell culture models) and/or introduced into mice to establish tumor models, which will be used to evaluate the anti-tumor efficacy of novel small-molecule inhibitors on tumor growth and progression. Certain cell lines may harbor multiple genetic alterations, including gene knockouts, knock-ins, or site-specific gene mutations. Tumor cell lines will be obtained from reputable sources, including the American Type Culture Collection (ATCC) and the National Institutes of Health (NIH), as well as in-house-developed lines. Some tumor cell lines will carry genetic modifications, including reporter genes such as luciferase and/or fluorescent proteins, to enable noninvasive cell tracking through biophotonic imaging in mouse tumor models. Reporter-labeled cell lines will be purchased from commercial vendors, including ATCC. In our lab, for CRISPR-Cas9 gene editing, only a commercially obtained Lentiviral backbone transfer vector (pLentiGuide-Puro; purchased from Addgene) to express a	2 / III-D-1, III-D-4

		specific single guide RNA (sgRNA) and for CRISPR-based editing, a mammalian DNA expression plasmid [pCMV-T7-ABE8e-nSpRY-P2A-EGFP encoding a base editor (ABE8e-nSpRY)] will be used; no in-house viral vector production will be performed. All work with viral vectors will be conducted under Biosafety Level 2 (BSL-2) containment in accordance with institutional biosafety policies and the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules. The vectors are generally classified as Risk Group 1. Risk mitigation measures include biosafety training for personnel, appropriate personal protective equipment, safe handling of sharps during surgical procedures, and the use of appropriate disinfectants for decontaminating work surfaces and materials. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Required before commencing work (Provision of approval) **IBC Vote: Approved (13:0:0)[1]**	
26-017	Zhang, Wen	**Title:** Neuronal regulation of tissue immunity **Materials:** rDNA, AAV vector, Mice **Submission Summary:** This protocol involves the use of recombinant adeno-associated virus (AAV) vectors in mice to investigate how sensory neurons regulate intestinal immune responses, epithelial function, and tissue homeostasis. The research aims to identify mechanisms of neuro-immune communication that contribute to intestinal health, inflammation, and tissue repair. The biological agents used are replication-deficient recombinant AAV vectors. AAV vectors may contain reporter genes (e.g., fluorescent proteins), recombinases, neuronal activity sensors, or other research constructs designed to modulate or monitor gene expression in specific cell populations. The vectors are incapable of replication in the absence of helper functions and are not known to cause disease in healthy humans.	2 / III-D-1, III-D-4

		Experiments will involve administration of recombinant AAV vectors to mice through approved injection routes, followed by animal monitoring and collection of tissues for downstream analyses. Tissues may be evaluated using microscopy, flow cytometry, molecular biology techniques, histology, sequencing-based approaches, and spatial transcriptomic analyses. Experimental endpoints include assessment of transgene expression, changes in cellular composition, tissue architecture, neuronal activity, and immune responses. Potential risks are primarily associated with accidental exposure to recombinant viral vectors through needlestick injuries, mucous membrane exposure, aerosol-generating procedures, or contact with treated animals and tissues. Risk mitigation measures include use of appropriate personal protective equipment, biosafety training, sharps safety procedures, biosafety cabinet use for vector preparation whenever feasible, approved waste disposal procedures, and compliance with institutional BSL-2/ABSL-2 containment practices for recombinant viral vector research. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Required before commencing work (Provision of approval) **IBC Vote: Approved (13:0:0)[1]**	
26-013	Dai, Wei	**Title:** Molecular mechanisms of postsynaptic kainite receptor organization **Materials:** rDNA, Lentivirus vector, human cells **Submission Summary:** The goal of this project is to investigate the role of NRXN3 in regulating the organization of kainate receptors at neuronal synapses. Previous studies have demonstrated interactions between the synaptic protein C1ql and both kainate receptors and NRXN3-beta. This project will determine how reducing NRXN3-beta expression affects kainate receptor localization and synaptic organization in cultured primary rat hippocampal neurons. To accomplish this, replication-incompetent second-generation lentiviral vectors will be produced in-	2 / III-D-1

		house using packaging and envelope plasmids obtained from Addgene and a transfer plasmid encoding either an NRXN3-targeting short hairpin RNA (shRNA) or a non-targeting control shRNA obtained from GenScript. Lentiviral particles will be used exclusively to transduce primary rat hippocampal neurons maintained in culture. Following transduction, NRXN3 knockdown efficiency and changes in synaptic GluK2 receptor expression will be evaluated by Western blot analysis and advanced fluorescence imaging, including single-molecule localization microscopy, to assess receptor abundance, localization, and nanoscale organization at synapses. All lentiviral work will be conducted under Biosafety Level 2 (BSL-2) containment in accordance with institutional biosafety procedures. Lentiviral manipulations will be performed within a certified biological safety cabinet using appropriate personal protective equipment, including disposable gloves, a laboratory coat, and eye protection. No sharps will be used during lentiviral procedures. Centrifugation will be performed using sealed rotors or safety cups to minimize aerosol generation. Lentiviral samples will be transported in a sealed primary tube decontaminated with 10% bleach, enclosed within a sealed secondary container, and placed on ice in a closed, insulated transport container. Upon completion of experiments, work surfaces and equipment will be decontaminated with 10% bleach for a minimum of 15 minutes, followed by 70% ethanol. Residual lentiviral stocks and contaminated liquid waste will be chemically inactivated with 10% bleach for a minimum of 15 minutes prior to disposal, and all solid biohazardous waste will be discarded according to institutional BSL-2 biohazard waste procedures. All work is limited to cultured cells, and no in vivo lentiviral administration is proposed. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Approved (13:0:0)[1]**	

6. AMENDMENTS			
PROTOCOL	**PI**	**TITLE & MATERIAL(S) OF INTEREST**	**BSL / GUIDELINES**
13-466	Zhang, Huaye	**Title:** Molecular mechanisms of dendritic spine morphogenesis **Materials:** rDNA, Plasmid containing Lentiviral sequence **Submission Summary:** The approved protocol involves the use of standard molecular biology and mammalian cell culture techniques to study gene function and cellular signaling pathways in primary neuronal cultures and established cell lines. Experiments with lentivirus include infections in primary neuron cultures and experiments with AAV includes in vivo intracranial injections in mice. This amendment adds several plasmid vectors for transient transduction experiments in tissue culture systems. The vectors are standard research plasmids used for expression and/or reporter assays and do not encode toxins, oncogenes, or replication-competent viral elements. No changes are being made to the overall scope of the approved work, host systems, or biosafety level. Experimental procedures include routine plasmid propagation in laboratory strains of E. coli, purification of plasmid DNA, and transduction into established mammalian cell cultures. No human gene therapy applications, animal procedures, or infectious agent production are involved. All work will continue to be conducted at BSL-2 using standard microbiological and biosafety practices, including appropriate PPE, biological safety cabinets for manipulations with cell cultures, and institutional procedures for waste decontamination and disposal. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Approved (12:0:0)[1, 3]**	2 / III-D-1, III-D-2

19-033	Dai, Wei	**Title:** Studying mutant Hungtingtin protein in cells and conditioned medium **Materials:** rDNA, Lentivirus vector, human cells **Submission Summary:** The main goal of this project is to investigate the role huntingtin plays in cellular dysregulation and transmission in the context of Huntington's disease. The protocol was previously approved for the use of mutant huntingtin protein in mammalian cell lines to study transmission. The amendment adds using a lentivirus system to generate new stable cell lines that have huntingtin tagged with HA or FLAG tags to enable easier labeling in the cell without having large fluorophores that have been shown to disrupt huntingtin aggregation ultrastructure and do not fluoresce in acidic compartments in the cell such as the lysosome. Specifically, we are requesting approval to transduce a lentiviral vector containing huntingtin protein with varying polyQ lengths, both wildtype and mutant into an N2a cell line. Lentiviruses are BSL2 organisms but will be handled with caution, with all accessory proteins on separate plasmids, splitting everything into four separate plasmids. These will be amplified in HEK293T cells, and then transfected into N2a cells. The Lentivirus vector has a puromycin marker, which we will select for after transfection. With these newly generated cell lines, we plan to use a novel "frankenbody" system that allows antibody labeling of HA and FLAG tagged constructs in live cells. With this workflow, we will be able to do live cell imaging, various cellular dysfunction assays, as well as correlation studies for cryo-electron tomography that were previously not possible in our lab. Biosafety level 2 (BSL2) containment practices will be followed. All experiments will be conducted with a laminar flow hood also equipped with HEPA filters on our vacuum lines. All biological waste materials, including anything with lentivirus plasmids, will be autoclaved before disposal. Spills will be decontaminated using 50% bleach and liquids will sit in 50% bleach before disposal. All personnel working on this project will be required to take the appropriate safety training and sign related documents.	2 / III-D-1, III-D-2

		Occupational Health: In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Conditionally Approved (13:0:0)[1, 2]** Conditions: 1. Details on microscope disinfection need to be added.	
21-048	Xu, Ying	**Title:** Neurobiology of Neuropsychiatric Disease **Materials:** rDNA, AAV vector, human brain tissue **Submission Summary:** This updated project added information to investigate the molecular and cellular mechanisms underlying Fragile X Syndrome using human brain to detect PDE2A/2A2 expression and skin-derived tissues for iPSC culture (commercialized cultures). These studies are intended to advance knowledge of Fragile X Syndrome biology and support the development of future therapeutic approaches. The research employs replication-deficient adeno-associated virus (AAV) and adenoviral vectors as laboratory tools for gene delivery in cultured cells and tissue-derived experimental models. All viral vector and human tissue work will be conducted in accordance with institutional biosafety requirements, NIH Guidelines, and standard precautions for handling potentially infectious human materials. The work is limited to basic research purposes and does not involve the administration of viral vectors to human subjects or the generation of replication-competent viruses. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Conditionally Approved (13:0:0)[1]** Conditions: 1. The PI needs to address remaining minor comments from reviewers	2 / III-D-1

19-043	Cao, Jian	**Title:** Epigenetic regulation of tumor immunity **Materials:** rDNA, Vaccinia virus, AAV vectors, Lentiviral vectors, Mice **Submission Summary:** This amendment adds commonly conducted laboratory and animal procedures to test whether oncolytic viruses can kill cancer cells and slow tumor growth. Oncolytic viruses are viruses that can infect and damage tumor cells and are being studied as potential cancer treatments. The goal of this work is to determine whether these viruses, alone or together with other treatments, may improve tumor control in preclinical cancer models. This work is added to an existing approved protocol that already includes standard cancer cell culture, recombinant DNA methods, viral vectors, gene-editing tools, and mouse tumor studies. The new work includes treating cultured tumor cells with Vaccinia (an oncolytic virus), measuring cancer cell killing, and testing the virus in tumor-bearing mice by commonly used routes such as injection directly into the tumor or into the abdominal cavity. Tumors and tissues may then be collected for routine analysis, such as microscopy, flow cytometry, molecular assays, and tumor growth measurements. All work will be performed under approved BSL-2/ABSL-2 containment procedures appropriate for the agent. Safety measures will include trained personnel, appropriate PPE, biosafety cabinet use when handling virus or infected cells, sealed containers for transport, approved disinfection, regulated waste disposal, and established animal facility procedures. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Conditionally Approved (13:0:0)[1]** Conditions: 1. The PI needs to provide minor clarification about the oncolytic virus(es) in the Project Description section.	2 / III-D-1, III-D-4

12-061	Kwan, Kelvin	**Title:** Inner Ear Damage and Repair **Materials:** rDNA, AAV, human materials, human embryonic stem cells (H9/WA09 and H1/WA01) **Submission Summary:** This amended protocol covers the in vitro differentiation of human pluripotent stem cells into brain and inner ear organoids to study developmental trajectories, sensory hair cell induction, and to understand cellular mechanisms. The work utilizes established human embryonic stem cell (hESC) lines (e.g., WA25) and human induced pluripotent stem cell (iPSC) lines (e.g., ND2.0). Experimental methods include standard tissue culture, the 3D aggregation of single cells into embryoid bodies using ultra-low attachment plates, and directed differentiation using stage-specific growth factors. Downstream analysis and quality control involve Flow Cytometry (FACS) to quantify and sort specific progenitor cell populations. All cell culture and manipulations are categorized as Risk Group 2 and are conducted at Biosafety Level 2 (BSL-2). There are no in vivo animal procedures associated with these cells. Under the currently approved scope of work, the protocol also includes gene editing to understand gene function and generation of fluorescent reporter lines (e.g., eGFP, tdTomato) to track differentiation. This involves the use of standard, replication-incompetent viral vectors delivering non-hazardous reporter transgenes; no oncogenes or toxins are used. Risk mitigation aligns with standard BSL-2 practices, with all open handling and manipulations occurring within a Class II Biosafety Cabinet. Work surfaces and equipment are routinely decontaminated with 10% bleach for 15 minutes before and after use. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Approved (13:0:0)**[1]	2 / III-D-1
25-036	Sekiguchi, Rei	**Title:** Analyses of Regeneration-Associated Genes in Wound Healing **Materials:** rDNA, Lentivirus vector, CRISPR	2 / III-D-1

		Submission Summary: This protocol involves the study of genes that influence fibroblast function, wound healing, and tissue regeneration. Selected human and mouse genes, including those involved in extracellular matrix remodeling, antioxidant defense, anti-senescence pathways, and key signaling regulators, will be delivered using replication-defective adeno-associated virus (AAV) vectors for induction, overexpression, or perturbation of target gene activity. The nucleic acid sequences are non-pathogenic and are not derived from oncogenes or toxins. Genetic modifications include insertion of the target genes into AAV vectors for expression in host cells. Recombinant AAV vectors will be produced in cultured human HEK293 cells and purified using standard methods. Plasmid assembly for AAV production will be carried out in Escherichia coli. Experiments will be performed in vitro using primary human or mouse fibroblasts, and in vivo in mice through administration of AAV to fibroblasts at wound sites to assess effects on tissue repair and regeneration. Tissue samples will be collected at defined time points post-injection for gene expression analysis and histological evaluation of wound healing. This amendment adds embryonic salivary gland developmental studies involving ex vivo organ culture, lentiviral CRISPRa/CRISPR knockout approaches, and irradiation-related experiments. Timed pregnant ICR (Hsd:ICR/CD-1) mice will be used for embryonic tissue collection (E13–E16). Lentiviral vectors will be used for CRISPR activation and repression studies in embryonic salivary gland epithelial tissues under BSL-2 containment. All work is conducted under BSL-2/ABSL-2 containment following institutional biosafety guidelines. Personnel use standard personal protective equipment, Class II biosafety cabinets for vector manipulations, and leakproof secondary containers for transport of biological materials. All waste is autoclaved or disposed of as regulated medical waste, and work surfaces are disinfected with bleach and ethanol.	

		Occupational Health: In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Conditionally Approved (13:0:0)[1]** Conditions: 1. The PI needs to update lab room locations in two sections of the protocol.	
23-002	Hsu, Chun-chieh	**Title:** BSL2 viruses **Materials:** rDNA, *E. coli*, Human cells, Dengue virus, Yellow Fever virus, Usutu virus, Chikungunya virus, Ross River virus, Sindbis virus, O'Nyong Nyong virus, Influenza virus **Submission Summary:** The amended protocol adds BSL-2 RNA viruses and noninfectious viral gene-expression systems to study how viral infection and viral RNA-modifying enzymes regulate host RNA modification, RNA metabolism, and immune responses. Agents include BSL-2 alphaviruses (Chikungunya virus 181/25, Ross River virus Raratonga, Sindbis virus 80-2449, O'Nyong Nyong virus UgMP 30), flaviviruses (Zika Virus FSS13025 and PRVABC59, Dengue virus New Guinea C, Yellow Fever Virus 17D, Usutu virus SAAR 1776,), influenza A virus (California/4/09 H1N1, Wyoming/3/2003 H3N2, Swine/Texas/4199-2/98, A/Panama/2007/99 H3N2, Texas/36/1991., A/Puerto Rico/8/1934 H1N1 (PR8)) and related RNA virus systems, as well as plasmid or lentiviral vectors expressing individual viral proteins such as viral methyltransferases (coronavirus NSP14, alphavirus nsP1, flavivirus NS5). These are enveloped RNA viruses handled under BSL-2 containment; antibiotic susceptibility is not applicable. Infectious virus work will be limited to approved tissue-culture infection, viral stock preparation/titration, and endpoint sample collection. Viral materials will be handled in certified biosafety cabinets with PPE, sealed/locking-gasket centrifugation, secondary containment for frozen stocks, approved disinfectants including bleach, and biohazard waste disposal. Recombinant nucleic acid work will include cloning, transfection, and/or approved lentiviral delivery of host genes, individual viral genes, or gRNAs. Viral	2 / III-D-1, III-D-2, III-D-3

		nucleic acid sequences will be derived from approved academic or commercial plasmid sources or viral reverse-genetics systems and will encode individual viral proteins or loss-of-function/reduced-function mutant viruses; no oncogenes, toxins, gene-drive systems, or gain-of-function experiments will be used. Mutations may include deletions, point mutations, alanine substitutions, or other site-directed changes selected from sequence/structure-function data or preliminary data to reduce or disrupt viral protein activity, including viral methyltransferase activity. Experimental manipulations will include mammalian cell culture infection, plasmid transfection, CRISPR-based cell-line modification, lentiviral transduction, and approved BSL-2 virus assays. Endpoints will include fixed cells, lysates, RNA, protein, supernatants, and viral titers analyzed by flow cytometry, immunofluorescence, RT-qPCR, immunoblotting, ELISA, LC-MS/MS, RNA-seq/m7G-mapping assays, and plaque assays. **Occupational Health:** In Place **Training:** In Place **BioAudit:** Facilities are Acceptable **IBC Vote: Approved (13:0:0)[1]**	

[1] Voting Decision (Yay: Nay: Abstain)
[2] Member(s) joined the meeting
[3] Member(s) left the meeting