Boston University
Institutional Biosafety Committee (IBC)
February 23, 2021 Meeting Minutes
Location: Zoom and/or by phone
Start time: 12:00 PM End time: 2:40 PM

Members Present: C. Abraham, R. Ingalls, I. Afasizheva (joined 12:52 PM), B. Slack, R. Davey, E. Loechler (joined 12:07 PM), R. Morales, T. Winters, R. Varada, C. Thurman, J. Keeney, R. Timmerman, V. Britton (joined 12:05 PM), J. Barton
Guest Present: A. Ahmad, J. Davis, P. Richmond, J. Wood, M. Fitzgerald
Staff Present: S. Ghosh, L. Campbell, C. McGoff

I. Review of January 26, 2021 IBC Meeting Minutes (C. Abraham)

No comments or questions were voiced.
Motion: Approve
For: 13; Abstain: 1; Absent: 0

II. New Business

A. Safety & Quality Assurance Program (SQAP) Report

Sajal Ghosh discussed the finding of SARS-CoV-2 amplicon contamination in environmental samples from some laboratories where the source of such contamination was unclear. It was noted that from the discussion with the PIs of those laboratories that they believe their work does not require additional scrutiny because they are either working with samples where viruses are already killed or they are working only with part of the viral genome and such work can safely be done under BSL1 containment. Sajal explained that any positive identification of SARS-CoV-2 on an individual by the PCR test requires notification to BPHC which results in personnel quarantine and possible closure of the lab even when the individual is asymptomatic or the positivity is because of the materials that the lab uses. It was emphasized that the isolated RNA from the lysates of cells infected with SARS-CoV-2 or work with SARS-CoV-2 individual gene expression plasmids could also serve as the template for PCR amplification in COVID-19 testing. Therefore, it is imperative that any lab working with those materials strictly follow the guidelines for working with inactivated SARS-CoV-2 and follow the EHS-mandated Lab cleaning procedures. Committee members were asked if it would be prudent to send notification to all users of SARS-CoV-2 (including the users of inactivated materials and expression plasmids) that if the PIs are to share any such materials with other PIs, they should make sure that the recipient PI has appropriate approval for handling such material and are aware of the lab cleaning guidelines. Members were also asked if it would be appropriate to include additional stipulation language in the IBC approval letter that a PI should inform the IBC prior to sharing such materials with another PI.
The Committee recommended that drafts of the email and the proposed additional stipulation language be sent to them for review and approval first. Sajal and Ron Morales will draft the letter and stipulation language and send them to the members by email.

B. Research Occupational Health Program (ROHP) & Environmental Health and Safety (EHS) Report

ROHP Report
Since the last IBC meeting on 1-26-21, ROHP has six incidents to report:

1-28-21: ROHP received notification of a needle stick injury from a syringe to finger after the researcher resuspended a pellet taken from intestinal luminal fluid extracellular vesicles (from patients having inflammatory bowel disease). She discarded the pair of nitrile gloves she was wearing, allowed the blood to drain from the wound (6 drops), washed her hands with water and soap for a minute and sanitized her hands with 70% ethanol. Please note this researcher did not report this incident to her supervisor or ROHP until the next day.

1-29-21: An asymptomatic researcher tested positive for SARS-CoV-2 which was later deemed to be related to environmental SARS-CoV-2 amplicon exposure. This researcher works in BSL2, does not work with SARS-CoV-2 but works in shared space with others that do work with inactivated virus.

2-3-21: ROHP received notification of laceration to a finger with a razor used to slice mouse lung tissue. This incident was related to an IBC protocol, but the tissue did not contain any biologics.

2-8-21: An asymptomatic researcher at the NEIDL tested positive for SARS-CoV-2. This researcher denied working with SARS CoV2 but works in shared space. Her positive test was later deemed to be related to environmental amplicon exposure.

2-8-21 and 2-17-21: One asymptomatic researcher at the NEIDL tested positive for SARS-CoV-2 twice. This researcher works in BSL3 with SARS-CoV-2 and in BSL2 with a different coronavirus strain. This was later deemed to be related to amplicon exposure and not any live virus.

ROHP continues to work with Healthway, Safety, PIs and BPHC regarding all researchers who test positive for SARS-CoV-2 to determine if it was community related infection or due to environmental amplicon exposure.

One member asked when researchers are continuously wearing masks in the lab, how it is possible for them to contract amplicon contamination in their nasal swabs. The Research Safety Director and ROHP Medical Director indicated that this is still unknown but they discussed some possibilities such as touching door knobs or lab work surfaces before changing into workplace clean masks or placing personal clothing on chairs in the lab before donning a lab coat or such.

III. Protocol Review

1. rDNA/Bhz – Annual Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2442		Propagation and characterization of viruses	3	N/A	BUMC
Primary Reviewer: Rob Davey			Secondary Reviewers: Shannon Benjamin		
Applicable NIH Guidelines: Sections III-D-1-b, III-D-2-a, III-D-3-b; Appendix B-III-D and G-II-C					
Meeting Comments: This protocol investigates the role of the virus protease in controlling infection and pathogenicity. They will examine how the protease may serve as a target for therapy. This BSL3 protocol involves working with coronaviruses, flaviviruses and alphaviruses and construction of recombinant viruses. The protocol has been reviewed extensively in the recent past. In this version, the PI has added the use of Microchem Plus as a disinfectant. Microchem Plus is a disinfectant used for many virus types including Ebola virus. It was shown to work against SARS-COV-2 and is expected to work similarly for the viruses being studied. No concerns were noted as the work appears to be performed appropriately. *A motion was made not to require annual review of this protocol.* *For: 14; Against: 0; Abstain: 0; Absent: 0*					
Motion: Approve	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

2. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1798		The energetic cost of immune function and consequences associated with white-nose syndrome on little brown myotis (Myotis lucifugus) in New England.	2	2	CRC
Primary Reviewer: Ed Loechler			Secondary Reviewer: Rao Varada		

Applicable NIH Guidelines: N/A
Meeting Comments: The goal of this research is to understand strategies for controlling fungal infection in North American bat species known as white-nose syndrome. In this project, little brown myotis bats are examined for the relationship of basal metabolic rate with complement protein activity (to measure innate immunity) and white blood cell count (overall immune function). Understanding these relationships are critical for understanding disease management and habitat management to bats suffering white-nose syndrome. The work described involve a small amount of fieldwork and physiological measurements on live bats held overnight in the lab. Fieldwork is overseen by an experienced postdoctoral researcher and involves at least two trained individuals to ensure oversight in case of an emergency. Bats are transported from and to the field in sterilized plastic containers. Basal metabolic rate will be measured using metal metabolic chambers. Adult bats (big brown and little brown) are bled from the tail membrane, white blood cells counted, and plasma is isolated. Innate immune response is assessed by a bactericidal assay. Personnel contacting live bats are immunized against rabies, with titers being checked once per year. Precautions to avoid bat bites are followed. Unexpected exposures are immediately reported and appropriate steps to minimize consequences followed. Bat capture and handling techniques are well established and laboratory procedures involving bat materials are well described. Procedures to ship samples to a Northern Arizona University collaborator are approved. The use of isopropanol (70%) for cleaning and sterilizing samples from live bats is well established. Collected tissue will be used for DNA extraction and genotyping. Medical director clarified that in the last couple of years rabies immunization and antibody titer for lab members has not been follow up. ROHP is working with the lab to schedule immunization. • Update the laboratory location ( ). • The protocol has not been updated to represent current state of research. It includes statements to indicate certain work will be completed in 2019 or certain procedures will be discontinued once Professor Kunz's fellows complete their dissertation. The protocol needs to be edited to represent what is being done at present. • Please list all zoonotic agents (histoplasmosis, bartonellosis, leptospirosis etc.,) known to be present in the bat population of interest to the PI; this is needed for further assessment of the PPE required and bat handling practices. • How often are staff's rabies antibody titers checked? Are bats euthanized and sampled for rabies evaluation when a staff is bitten - what is the policy? • IACUC Animal use protocol PROTO201800582 is approved through 5/22/21. Please include this information in Section E. • Recommend using face masks (to reduce inhalation risk) while working closely with bats. • VIII.1 Check animal handling and Animal aerobiology exposure boxes. • VIII.3 Use of surgical face masks is highly recommended to minimize aerosolization of fecal material particles. BUA Site Assessment: Face mask and safety glasses will be used. Lab moved to new place (from 5 Cummington Mall to 24 Cummington Mall). No other issues with the Lab.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

3. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1913		The Framingham Heart Study-Physical Examination	2	N/A	BUMC

Primary Reviewer: Tom Winters	Secondary Reviewer: Valeda Britton

Applicable NIH Guidelines: N/A
Meeting Comments: The Framingham Heart Study is an observational study to investigate genetic and environmental factors related to the development of heart and blood vessel diseases, lung and blood diseases, stroke, memory loss, cancer, and other diseases. Research is conducted in two labs. The procedure in the Framingham lab involves urine and blood collection (venipuncture) from human study participants, transport to a lab, and sample processing and testing, including centrifuging. Urine is pipetted from urine collection cups to labeled tubes. Specimen aliquots are

transferred to storage vials and stored in ultra-low temperature freezers for future use. The studies in the Boston lab include storage of transformed human cell lines in liquid nitrogen freezers, which are then maintained in 37°C incubators and manipulated in Biological Safety Cabinets, including centrifuge and water bath, and DNA is extracted. (Alternatively, DNA may be extracted from aliquots of blood/buffy coat shipped from Framingham lab and stored in Boston.) DNA is then measured and electrophoresis is performed. DNA is stored in freezer tubes or 96-well plates, then distributed to various projects using a robot. RNA is extracted from previously stored blood collection tubes and analyzed.
Standard BSL-2 PPE (lab coats, disposable gloves, safety glasses, face shield, surgical mask) are worn during phlebotomy and in laboratory where specimens are processed and tested. Blood collection tubes handled and transported with standard procedures, including transport in a puncture-proof carrier with locking lid. Centrifugation is done with aerosol containment, behind countertop face shields. After harvesting cells for DNA extraction, liquid waste is treated with 10% bleach and allowed to sit overnight before flushing down the drain with copious amounts of water. Specimens are shipped to collaborating laboratories following DOT and IATA regulations. 10% fresh bleach and Cavicide will be used as disinfectant. EBV B95-8 was mentioned as a hazardous biological agent being used, however it is unclear how this is being used in the protocol.

- At least one member should have updated shipping training.
- The hazardous biological agent table (Section A) lists EBV B95-8, however, there is no mention of this agent or its use anywhere in the Research Project Description. Please clarify.

BUA Site Assessment: Assessment is complete for both locations. The lab has a bloodborne pathogen exposure control plan. One member will complete shipping training. All other trainings are complete. Boston lab will be moving soon from L building to E building and their biosafety cabinet will be recertified there. The chemical fume hood is certified and they are following proper PPE.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

4. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
894		1. The Biochemistry and Cell Biology of the Spindly O-fucosyltransferase of Toxoplasma. 2. Structure and assembly of the cyst wall of *Acanthamoeba castellanii.*	2	2	BUMC

Primary Reviewer: Robin Ingalls	Secondary Reviewer: Colleen Thurman

Applicable NIH Guidelines: Section: III-D-1-a, III-D-2-a, III-D-4-a, III-E-1; Appendix: B-II-C

Meeting Comments: This is a 3-year renewal of a BSL2/ABSL2/rDNA protocol from a PI who is interested in the cell walls of parasites, and the role of changesthat surface sugar structures play in resistance to killing. The procedures are clearly explained. The protocol involves a number of BSL2 parasites: Entamoeba, Trichomonas, Giardia, Acanthamoeba; BSL2 bacterium Burkholderia; BSL2 human cell lines. Sugars will be studied by immunofluorescence. Studies will also examine how the cell wall impacts killing by various alcohols as these cysts and eggs are known to be resistant to killing by alcohols. The protocol will also utilize rDNA (antisense, CRISP/Cas9, commercial adenovirus vectors) to express fluorescent tags and various sugars in parasites. Animal studies involve mice and cats infected with WT and genetically modified toxoplasma. Biohazards are appropriately disposed of using 10% fresh bleach and Wescodyne for liquids and red biohazard bags for disposal of solid waste. The protocol also uses radioactive materials under the PI's permit. EHS indicated that the PI is currently working only on entamoeba but the committee noted that he may work on them in the near future. The Committee suggested that the PI should clarify if he wants to continue his gerbil and cat studies. If he does not, then he should remove them from the protocol, otherwise he should renew his IACUC protocols on those studies.

- III.2. rDNA training for is required. Please update the personnel list if any new personnel are working in the lab. PI's chemical safety training has expired.

- VII.3. Although your mouse IACUC protocols are active, the cat protocol 15294 (now PROTO201800226) has lapsed. Please clarify if you want to continue the gerbil and cat studies at some point. If not, please remove them from the protocol, otherwise renewal of IACUC protocols would be required for continuation of those studies.
- VIII.4. The N95 is not necessary for the animal experiments in biosafety cabinets. Cat experiments are not currently approved, please clarify or update as per your future plan.
- VIII.8. Is ethanol or isopropanol + desiccation sufficient for Cryptosporidium oocyst decontamination? Would hydrogen peroxide-based disinfectant be better, especially for any spill outside of the disposable trays?
- IX. Section A. 4.
    - Cryptosporidium lists “Mus muris” not Mus musculus as species to be infected
    - Entamoeba animal experiments are not IACUC approved.
    - Gerbil Giardia experiments are not currently approved by IACUC.
    - Toxoplasma cat protocol PROTO201800226 has lapsed.
- IX. Section H. Animal Experiments
    - Host strain: cat protocol not currently approved
    - IACUC approval for PROTO201800226 lapsed 5/28/2020: Toxoplasma in cats

BUA Site Assessment: A new lab member is to be added to the protocol and ROHP clearance needs to be updated. PI’s own chemical safety training needs updating. They have two biosafety cabinets that are duly certified. The lab is working only on entamoeba at this time.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

5. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1495		Oncorequisite Genes in MYC-Mediated Transformation	2	2	BUMC

Primary Reviewer: Barbara Slack	Secondary Reviewer: Rao Varada

Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a, III-D-4-a, III-E-1

Meeting Comments: The goal is to study genes and pathways that contribute to myc-related cancers. Models used are human cell lines, zebrafish and human clinical samples using standard DNA, RNA and protein analysis, immunofluorescence and flow cytometry studies. Human cells are transformed by shRNA knockdowns or are treated with small molecule inhibitors. They are transducing human cell lines with 3rd generation lentivirus system. In zebrafish they are either mis-expressing or deleting genes or are making xenografts with human cells using tamoxifen-inducible system. They are also treating cells with hazardous chemicals, such as chemotherapeutic agents or antibodies or in some cases with gamma irradiation to study tumor cell killing. Human tumor samples and blood samples are obtained through approved IRB studies of a collaborating clinician investigator in this study. The hazards include acrylamide, ethidium bromide, chloro-uracil, taxols and small molecule inhibitors. It was noted by the committee that high hazard chemical wastes will be collected as hazardous waste and collected by the EHS. ASC director clarified that IACUC animal use protocol PROTO201800543 is approved through 1/21/2022.

- Section III-Personnel- Training should be described for several of the undergrads on the list.
- Section VII.3- Lab Procedures: Will the chemotherapeutic reagents be injected into the fish or added to the water? If it is the latter, will the water be treated as hazardous waste?
- Section VIII.7A- liquid waste: please specify that bleach at a final concentration of 10% will be used to disinfect.
- Section A- table should note that human cancer cell lines can cause human disease (e.g. if injected inadvertently).
- Section F. High Hazard Chemicals- it should be specified in the table that solutions of compounds initially in powder or crystalline form should be prepared in a chemical fume hood.

- Section H. rDNA table: please specify the commercial source of the packaging system to be used, and its generation number. If HEK cells will be used, they should be added to the table in Section A.

BUA Site Assessment: All work with the hazardous materials will be done in the chemical fume hood and wastes will be picked up by the EHS. Lab has exposure control plan. EHS appreciated the lab for having updated training and ROHP clearance for each one of the long list of personnel. Their biosafety cabinet and fume hood are certified.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

6. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2016		Establishing the functional and organizational principles of the mammalian retino-geniculo-cortical pathway	2	2	CRC

Primary Reviewer: Rob Davey	Secondary Reviewer: Colleen Thurman

Applicable NIH Guidelines: Section: III-D-1-a, III-D-2-a, III-D-4-a, III-E-1; Appendix: B-II-D

Meeting Comments: This study investigates processing of visual image by the brain. The work will help find treatments for schizophrenia and autism. This BSL2 protocol involving animal tissue use of adeno-associated virus and lentiviral vectors for ectopic protein expression. A recombinant replication defective Rabies virus, lacking its G protein, is also used. Mice will be treated with AAV vectors to express channel proteins, fluorescent proteins or Rabies G protein. Lentiviruses will also be used to express fluorescent proteins. To trace neurons, Rabies virus that expresses fluorescent proteins will be used. This virus lacks a functional G protein that is important for infection of cells, so is replication defective. An AAV vector is used to transcomplement the G protein so that the virus can move from one neuron to another. However, it poses limited biosafety concerns since it would not be able to infect personnel beyond one round of replication, unless the person had previously injected themselves with the AAV vector. Also, viruses like Rabies virus, do not recombine and so there is very limited risk of ever recreating a replication competent virus. The PI adequately describes the biosafety concerns related to each system demonstrating knowledge of each system. No biosafety cabinets are being used as it is stated that the cabinet creates excessive vibration. If lentivirus vectors are being made in the lab or AAVs propagated, this will require a BSC. The room where work is being done should still be ventilated as a BSL2 room.

- Please change the submission type from 'Annual renewal' to '3 year resubmittal'.
- The undergraduates to be trained are marked as experienced. Please correct or clarify. PI's own experience, when and where response is missing.
- It is indicated that the PI will not package the lentivirus system in their lab. However, there is a lengthy discussion of the use of plasmids to construct/package the virus. Please clarify if there will be any recombinant DNA work involving these plasmids in the lab or the purpose of the plasmids.
- The use of sharps in section VIII, question 6, describes two waste streams, one for contaminated sharps and another for non-contaminated sharps. This is unnecessary and can potentially create confusion. EHS recommends use of just one container for all sharps and dispose them as biohazards. Modify your statement in this section accordingly.
- Please correct "3rd HIV-1" to "3rd generation HIV-1" in the laboratory procedure section (Section VII.3) and in the Hazardous Biological Agents section (Section A).
- Section A2 of Hazardous Biological Agents section says 3rd gen HIV-1 vector causes human disease and the recombinant Rabies virus does not. Since they both are attenuated and replication defective, they cannot cause human disease. Please justify or clarify your response.
- VIII. 1. Check animal handling and cage changing.
- Note that HIV-1 derived lentivirus constructs are not in the IACUC protocol yet.
- Section H Recombinant DNA: Correct IACUC protocol is PROTO201800539- approved on 2/14/2020.
- IACUC protocol doesn't reference HIV-1 based lentivirus.

BUA Site Assessment: Biosafety cabinet is duly certified. Safety training and ROHP clearances are all current. All safety protocols are in place. PPE used are appropriate.					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

7. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1470		Mechanisms of metastatic melanoma phenotype development	2	2	BUMC

Primary Reviewer: Inna Afasizheva | Secondary Reviewers: Tom Winters

Applicable NIH Guidelines: Section III-D-I-a, Section III-D-2-a, Section III-E-1; Appendix B-II-D.

Meeting Comments: This research group studies cancer metastasis using metastatic melanoma as a model. Role of melanoma-specific genetic markers will be evaluated in mouse xenograft model where expression of genes of interest in the injected cells will be manipulated by lentiviral vector-mediated overexpression or by conditional gene silencing (via doxycycline treatment) using TRIPZ lentiviral shRNA system. HEK 293 cells and commercially purchased packing cell extract will be used to generate viral vectors. Caspase assays, Real time RT-PCR analysis for gene expression will be used to monitor the effect of these experiments. Additionally they will verify the functional significance of the metastasis associated molecules in metastatic cancer development using human samples obtained from melanoma patients. Human patient samples will include serum samples from melanoma patients as well as formalin-fixed melanoma tissue samples. Immunohistochemical analysis of tissue samples will also be performed. PPE for bench and animal research are appropriate at BSL-2 and at ABSL-2 levels. Liquid and solid wastes are handled appropriately. It was noted that contrary to what is stated in the protocol, third generation packaging extract is not appropriate for the TRIPZ vectors. The protocol does not clarify the source of serum samples and melanoma tissue samples.

- Please add training information (experience when and where) for and
- Make sure to contact ROHP for medical clearance for all (only and are current).
- It is stated that TRIPZ lentiviral shRNAmir system will be used for the generation of stable human melanoma cell lines. This is a hybrid of 2nd and 3rd generation vector because although it is a SIN vector, the expression in this vector is Tat dependent. As such, typical 3rd generation packing extract (which lacks Tat expression) does not work with this vector. However the Trans-LentiviralTM Packaging Kit that is being used in this protocol works for both 2nd and 3rd generation vectors because it does provide Tat expression. Current description in the protocol states “This kit uses the third generation viral packaging vector system which has enhanced safety features.” Committee recommended brief clarification on this in the procedure section.
- Please include a sentence in the protocol that all manipulations with lentiviral vector and final constructs are performed in the BSC.
- Use of human melanoma patient serum samples- please update the protocol with information about the source of the samples, transportation or shipping, storage and waste disposal and infection potential of the samples.
- Information about biopsies samples- please provide source of the samples, transportation or shipping, storage and disposal of human materials and infection potential of the samples.
- Correct typo in the second paragraph of ‘Use of Human Melanoma Patient Samples’ from 200 L of the human serum to 200 ul (microliter).
- Section VIII.6 - Autoclaving of sharp containers is not necessary.
- Section H. Animal experiments
  - List mice strain in the host box.
  - Provide current IACUC approval number (it shows last update was on 04/14/2016).

BUA Site Assessment: Not done yet.

Motion: Conditional Approval (Primary Reviewer Review only)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

8. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2478		Electron Microscopy of non-department samples	2	N/A	BUMC

Primary Reviewer: Carmela Abraham	Secondary Reviewer: Ron Morales

Applicable NIH Guidelines: N/A

Meeting Comments: This new application serves as a core service protocol for imaging samples by electron microscopy to understand the relationship between structure and function of biological processes, including learning about how viruses infect and damage cells. All samples will be inactivated before being brought to the PI's lab. Committee voiced number of concerns about this protocol. Members felt that lot more information needs to be included in the protocol to understand the actual steps involved in receiving samples from the users of the facility, how they been processed and how the safety and cleanliness of the facility is monitored.

The Committee discussed that EM imaging very likely requires special processing of samples. Since inactivation of biological samples must be done in a specific way to comply with all EHS requirements, especially when the origin of the sample is from the BSL3/BSL4 labs, it may not be appropriate for EM work. Given the current concerns of environmental contamination from handling SARS-CoV-2 infected materials, a detailed clarification of different inactivation methods and their suitability for EM work needs to be discussed in the application. The nucleic acid molecules from inactivated samples where infectious agents are dead, can still lead to positive PCR test results for the detection of the agents (especially for current COVID-19 tests). To indicate that these possibilities have been considered, the committee recommended that in the laboratory procedure section of the application the PI must provide a list of steps that are to be followed in the core. This clarification should also include samples infected with pathogens other than SARS-CoV-2.

- What type of samples are received – cells or tissues or both?
- Do you instruct PI's to process samples in any specific ways so that they are appropriate for EM work?
- Are any of these samples processed differently by the other PI lab to kill the infectious agent in them just for the purpose of EM but is different from the EHS approved inactivation method for bringing samples outside of the other PI lab? How will you monitor this possibility? This is important for the safety of you and your staff as well as to avoid any unwanted contamination in the core and consequences particularly in light of the current surveillance on SARS-CoV-2 environmental contamination.
- Do you verify the inactivation methods applied on the samples provided to you and do you verify with EHS that they are acceptable?
- State what inactivation procedures are acceptable for this protocol.
- State in procedure description that a log will be maintained to record when and from whom you received inactivated samples and what method of inactivation was applied.
- Include PI in the personnel list.
- The protocol is marked BSL2. Please clarify your biohazardous materials.
- Please check Section VIII, #2, "Others" box and indicate that staining shall be performed in a chemical fume hood.

BUA Site Assessment: PI states that inactivation will be the responsibility of the PIs providing the samples and will be provided to this PI for record keeping. Fume hood is operational and certified. All safety protocols in place. Training and ROHP clearances are current.

Motion: Conditional Approval (Primary and Secondary Reviewer Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

9. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2506		Rod outer segment structure: determinants and its effect on the photon response	1	1	BUMC

Primary Reviewer: Inna Afasizheva	Secondary Reviewer: Colleen Thurman
Applicable NIH Guidelines: Sections III-D-2-a, III-D-4-a, III-E-1.	

Meeting Comments: This new protocol investigates the role of distinct entopeduncular nucleus (EP) neuronal classes in behavioral tasks that requires flexible relationship between sensory stimuli and motor action. Animals select actions based on incoming sensory information and past experiences to achieve goals. The basal ganglia (BG) are crucial in the reinforcement learning and action selection but usually are defective in a wide range of human disorders such as Parkinson's disease and drug addiction. It has been shown that EP lesions in BG disrupt normal function of dopamine receptors. The protocol will test causal relationship between activity of EP neurons and behavioral performances and then how changes in neurotransmitter release affects EP function. Experimental procedures use AAV vectors and are well described. Histological analysis includes intracardial perfusions on mice using paraformaldehyde where action potential blocker tetrodotoxin (TTX) will be used in some experiments. Although BSL1 is sufficient for the proposed work, the PI will take extra precautions using additional PPE. The Committee recommended that chemical hood be used for the preparation of stock solution of TTX.

- Please provide more detail in the laboratory procedure section about how tetrodotoxin is being handled in the lab. This should include where and how the stock solutions are being made and where they are being stored. The Committee recommends that even when the amount is below the CDC permissible amount, chemical hood must be used for the preparation of stock solutions.
- BUA site inspection must be completed before the protocol can be approved. Please coordinate with EHS to complete this lab inspection immediately.

BUA Site Assessment: Not Done yet.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

10. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2509		Viral Vectors for In Vitro and In Vivo Gene Manipulation	2	2	BUMC

Primary Reviewer: Barbara Slack	Secondary Reviewer: Rao Varada
Applicable NIH Guidelines: Sections III-D-1a, III-D-2-a, III-D-4-a, III-E-1, III-E-3	

Meeting Comments: Since the original submission, the PI has trimmed the title of the project from three separate titles to a single one. The goal of this project is to understand the mechanism of mood and addiction related behaviors where the working models include transgenic mice, mouse cell lines, HEK293 cells and human brain tissues from NIH neurobank. They are transducing cell lines and live mice using AAV vectors. They are propagating plasmids vectors but sending them out to third party vendors to make viral vector particles for their studies. None of the genes they are working on have oncogenic potential. For their in vivo work, they are stereotactically injecting AAV vectors into different parts of the mouse brain. However, the protocol does not provide any description of the nature of the samples received from the Neurobank and what will be done with them.

- Section VII.3- Lab Procedures- please briefly describe how human brain tissue from the NIH Neurobank will be handled and disposed of, and state the nature of the tissue (whether fixed or frozen, and whether it has been neuropathologically assessed, to ensure that samples are prion-free).
- In the PPE and Safety Equipment Section
    - Please check animal handling, inoculations.
    - PPE for animal containment should include shoe covers and head covers
    - Specify that bleach will be used at a final concentration of 10% (not with 1:10 dilution of bleach)
    - For surface cleaning indicate that "freshly prepared 10% bleach will be used" and indicate contact time.

- Section IX. The first box (Hazardous Biological agent) should be checked (for human cells such as HEK cells and other; AAV viruses). The table in Section A should then be filled out (the table appears when the box is checked).
- Hazardous Biological Agent (Section A): Complete this section for human and NHP cell lines (if there is any) and for viral vectors.
- In the rDNA table please indicate under vector packaging that AAV vectors will be prepared off-site by commercial vendors.
- Add pending IACUC approval number PROTO202100008 in the animal experiment section.

BUA Site Assessment: EHS advised the PI to update the application to indicate the biosafety cabinet will be used in their work with human unfixed postmortem tissues. Animal work will be performed in the animal facility but not in the PI's lab. PI is working to get ROHP clearance. All required training has been completed in the BioRAFT.

Motion: Conditional Approval (Primary and Secondary Reviewer Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

11. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
2145		• rDNA Protocols for Molecular Cloning in Pediatric Infectious Diseases; • COVID-19 studies	2+	N/A	BUMC

Primary Reviewer: Carmela Abraham | Secondary Reviewers: Tom Winters

Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a, Appendix B-II-A.

Meeting Comments: This protocol investigates the role of specific genes needed for *S. pneumoniae* to cause middle ear infection (otitis media, OM) that could be targeted for prevention or treatment of OM and also serves as an umbrella protocol for several clinical studies for evaluating vaccine efficacy. In this amendment they are adding a Phase 1/2/3 study that will evaluate up to 3 dose levels of BNT162b2 (Pfizer mRNA vaccine) for safety, tolerability, immunogenicity, and efficacy in children and adolescents. Children age 5-17 will have the following collected: blood samples for immunogenicity assessment, anterior nares swabs, urine pregnancy test (if applicable). The samples will be collected by GCRU Lab staff at BMC and transported to GCRU lab for processing (including centrifuge) and shipping to a central study lab. Nasal self-swabs (as needed) from participants' homes will be delivered in a spill proof and shatter proof container by courier to Maxwell Finland Lab. Investigational Pharmacy Service staff at BMC will receive, store, and dispense study vaccine/placebo. The hazard includes exposure to SARS-CoV-2 from specimen handling/processing (aerosol-producing).

- Both and staff have appropriate BioRAFT training and certification in shipping biological samples.
- Standard BSL-2 PPE (lab coats, disposable gloves, safety glasses, face shield, surgical mask, double gloves, back fastening gowns) are worn during phlebotomy and in the laboratory where specimens are processed and tested.
- All work with samples that may contain SARS-CoV-2 is done in the Biological Safety Cabinet, including loading/unloading centrifuge rotors/cups.
- All liquid and chemical wastes are collected in appropriately labeled bottles in the fume hood and removed by EHS when either full or no longer in use. Liquid waste is treated with 10% bleach and allowed to sit for 30 minutes before flushing down the drain.
- Contaminated solid waste is treated with freshly prepared household bleach solution to a final concentration of 10% for 30 min (or other EPA approved disinfectant) before discarding into biohazard bag with lid.

Motion: Approve	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

12. Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
2162		Transcriptomic Studies of Smoking-related lung disease (2016)	2	N/A	BUMC

Primary Reviewer: Robin Ingalls	Secondary Reviewers: Bob Timmerman

Applicable NIH Guidelines: N/A

Meeting Comments: The PI has an active protocol to conduct gene expression profiling in human subjects with lung cancer or exposure to tobacco products. This amendment is to add fixed samples from the COVID-19 autopsy repositories that is run by the BMC pathology department where formalin fixed paraffin embedded tissue microarray samples will be re-embedded on single slides. The PI's lab will store these slides and ship them out to external collaborators where those slides will be used for further analysis. They also will receive RNA from these tissues (extracted in the pathology lab), which they will use for other works approved in the protocol. Since full length or fragmented RNA from SARS-CoV-2 can cause environmental contamination, the committee inquired what exactly would be plan of the work with these RNA samples. PI clarified that these RNA samples will be used for sequencing work when funds are available.

- Please state clearly what will be done with the RNA samples from these tissue blocks from COVID-19 patients.
- If the plan is to use these RNA samples in the lab, state clearly in the amendment that you will consult with the EHS about this plan and strictly observe the 'Guidelines for the use of inactivated SARS-CoV-2 materials' to keep your lab clean from any environmental contamination with SARS-CoV-2 nucleic acids.
- If the RNA samples will only be stored at present, this must be mentioned clearly in the amendment.
- Please make sure that one or more lab members are current with their shipping training.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

13. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
1670		Synthetic biology and automated culture platforms for cellular systems	2	N/A	CRC

Primary Reviewer: Ron Morales	Secondary Reviewers: Jim Keeney

Applicable NIH Guidelines: Sections III-D-2-a, III-E-1; Appendix-B-II-D, Appendix G-II-B

Meeting Comments: The PI has been studying how the cell's circuity enables core cellular functions including signal processing, computation, and epigenetic memory to occur. The lab applies synthetic biology approaches to design and build regulatory circuits in living cells and study which circuitry affect programmed cellular functions. The lab conducts numerous maneuvers including culture of bacteria, standard molecular techniques and rDNA work, mammalian cell cultures, and standard cell transfections with viral vectors. The lab was previously approved to conduct the work at BSL2 containment following BSL2 practices and procedures. For this amendment, they propose to add additional strains of *E. coli* bacteria. The strains will be obtained from CDC's Antibiotic Resistance Isolate Bank. The PI provided a list of strains to be obtained. In addition, the lab is adding new research staff members to their protocol.

- Please identify the role/title of the new lab member
- ROHP medical clearance is required for , , and
- Please include surgical mask as required PPE for working with these organisms.
- Provide updated biosafety cabinet certification date.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0