Boston University
Institutional Biosafety Committee (IBC)
September 15, 2020 Meeting Minutes
Location: Zoom and/or by phone
Start time: 12:00 PM End time: 1:55 PM

Members Present: C. Abraham, R. Ingalls, I. Afasizheva, B. Slack, E. Muhlberger, R. Davey, R. Georgiadis (left 1:35 PM), E. Loechler (joined 12:25 PM; left 12:49 PM), R. Morales, T. Winters, R. Varada, S. Kurnick, J. Keeney, R. Timmerman, V. Britton, J. Barton
Guests Present: T. Killen, F. Ennever, A. Ahmad, K. Mellouk, K. Tuohey, R. Corley, C. Bennet, V. Carlo-Carson, D. Siwik, S. Muchohi, N. Yun, L. Campbell, P. Richmond, M. St. Paul, N. Stembridge
Staff Present: S Ghosh, C. McGoff

I. Welcoming Remarks (C. Abraham)
Members and guests of the public meeting introduced themselves; roll call was completed.

II. Review of August 18, 2020 IBC Meeting Minutes
No comments or questions were voiced.
Motion: Approve
For: 15; Against: 0; Abstain: 0; Absent: 1

III. New Business

A. Presentation: BSL-3 and BSL-4 Research at the NEIDL (R. Corley)
The Director of the National Emerging Infectious Diseases Laboratories (NEIDL) presented an overview of the type and nature of the biological research (BSL-2, BSL-3 and BSL-4) being conducting at the NEIDL covering: the mission of the NEIDL; NEIDL research programs; examples of viral pathogens at the NEIDL; NEIDL stats (including number of faculty and staff and laboratory and laboratory support space). He noted that the NEIDL currently has different isolates of SARS-CoV-2 and MERS-CoV available for research. The Director of the NEIDL also thanked the IBC and BPHC for their expeditious review of 34 IBC protocols this year and specifically 19 unique protocols related to SARS-CoV-2 and COVID-19 reviewed between March and August; planned work for the upcoming year was shared including new work with viral pathogens and diagnostic/therapeutics.

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

i. Incidents (T. Killeen & J. Davis)
No incidents to report.

ii. BPHC BSL-3 Inspection Report (K. Tuohey)
Members were informed that in July, BPHC performed an inspection of the of BSL-3 areas of the NEIDL. The inspection was successful; this was the first remote inspection; BPHC is working with NEIDL staff on how to improve the process of remote inspections if the need arises in the future. Two upcoming inspections are scheduled for the NEIDL: BPHC on October 28, 2020 and the CDC in December for BSL-3 and BSL-4.

iii. NEIDL Drill and After Action Report (K. Tuohey)
Members were informed that the NEIDL drill for 2020 was to conduct an emergency Zoom meeting to evaluate any potential risks of holding a remote meeting. It was noted that a virtual background is recommended so that confidential information is not shared to others in the meeting, that a roll call be done, and options to remove and add individuals to Zoom meetings should be utilized in order to ensure that attendance is secure.

iv. Glove Tear After Action Report (K. Tuohey)
Members were informed that recent incidents in the NEIDL related to outer glove tears has been addressed in an action report by NEIDL staff. The brand, age, and manufacturing changes for the gloves were evaluated. It was noted that based on this evaluation, it was decided that there will only be two

types of gloves purchased for use in the future; evaluation and comparison of these glove types will continue to be monitored.

One member asked for clarification regarding the recent glove tear incidents and whether the gloves used in the BSL-2 and 3 labs should also be evaluated. It was noted that the gloves that experienced outer tears are used primarily in the NEIDL and an evaluation of gloves in BSL-2 and 3 labs is not necessary.

IV. Protocol Review

1. rDNA/Bhz – Annual Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1888		Host Response to Filovirus and Henipavirus Infections	4	N/A	BUMC
Primary Reviewer: Rob Davey		Secondary Reviewer: Nadya Yun			
Applicable NIH Guidelines: Sections III-D-1-c, III-D-1-a					
Meeting comments: The protocol investigates the role of virus and host cell factors that contribute to filovirus and henipavirus pathogenesis. Work is performed at BSL2 on inactivated material and at BSL4 for wild type viruses. In this annual renewal only the BSL4 research experience of one member has been updated. It was clarified that this application will be due for a mandatory three-year renewal during its annual renewal next year. The PI was not present for the vote.					
Motion: Approve	For: 15	Recuse: 1	Against: 0	Abstain: 0	Absent: 0

2. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2260		Optical imaging and phototherapy in drug-resistant microorganisms	2	2	CRC
Primary Reviewer: Ed Loechler		Secondary Reviewer: Susanna Kurnick			
Applicable NIH Guidelines: N/A					

Meeting comments: The protocol uses transient absorption (TA) microscopy to study critical metabolic pathways in microorganisms as well as to study killing of microorganisms using specific type of light to activate detoxifying enzymes in microbes (photobleaching) and self-killing. The PI will focus his studies mainly on *Staphylococcus aureus*, *Pseudomonas aeruginosa* and malarial parasite *Plasmodium falciparum.* The protocol provides adequate explanation of material handling, decontamination procedures and waste disposal. Since several pathogenic organisms are going to be used in a room where people from other laboratories also work, there needs to be some mechanism in place to alert other users in the room of these activities. It was noted that the protocol lists a large number of microbes on the hazardous agent list but their use has not been specifically explained in the procedure section. It was clarified by the ROHP that they already have developed SOPs for handling pathogens listed in this protocol.

- Make sure that all members complete BBP and chemical safety training.
- Please indicate the location of animal work.
- A large number of microbes other than S. aureus, P. aeruginosa and P. falciparum have been listed in the hazardous biological agent table. Specify the purpose of their use in the laboratory procedure section.
- Please clarify the descriptions of animal work. It must be stated that needles will not be recapped, a needle block can be used if necessary. In addition, please state how the operator will "make sure the mice can't move." Will physical or chemical restraint be used? Chemical restraint is likely required for intradermal injection. Please state method of restraint used during light treatments.
- Decontamination should be completed with bleach diluted to a final concentration of 10%, not "household bleach".
- Provide reference that 70% ethanol is an acceptable decontaminating agent for live malaria.

- Please clarify the statement "Moreover, the operator can't manually cap the tip to the syringe needle, otherwise, the operator should use one hand to cap the needle."
- Please consult with ROHP to make sure lab members are vaccinated against Pneumococcus and indicate in the revision that the issue has been addressed.

In the PPE and Safety Equipment section:

- Check off animal handling.
- Indicate what type of face mask or respiratory protection will be utilized.
- The animal PPE section indicates that operators will wear N95, but this section indicates only a surgical mask. Please clarify.
- BSC certification is out of date.
- Please check off live animal use.

BUA Site Assessment: The lab has ECP in place. All members have ROHP clearance. Some members need to complete BBP and chemical safety training. BSC is duly certified.

Motion: Conditional Approval (Administrative Review)	For: 16	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

3. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
958		MMP-2 and MMP-9: Cancer Diagnosis and Followup	2	N/A	BUMC

Primary Reviewer: Carmela Abraham	Secondary Reviewer: Valeda Britton

Applicable NIH Guidelines: N/A

Meeting comments: This renewal does not involve any changes since its last approval in 9/2019. The PI is working on data analysis without doing any new bench work. The PI maintains her collection of stored samples in the -80°C freezer for any possible small follow-up experiments required to finish publication of the data from her previous work. No lab work will be done, unless a few experiments will be needed to complete unfinished publications.

- Liquid waste should be treated with bleach to make a final concentration of 10%.
- Clarify why is ABSL2 marked if the work is only with human samples.

BUA Site Assessment: This is just a storage protocol. Dr. Murnane will be completing safety trainings and seek ROHP clearance very soon.

Motion: Conditional Approval (Administrative Review)	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

4. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
840		Molecular Genetics Core Facility	2	N/A	BUMC

Primary Reviewer: Inna Afasizheva	Secondary Reviewer: Bob Timmerman

Applicable NIH Guidelines: N/A

Meeting comments: The protocol provides services to the BU Community for DNA sequencing, genotyping, DNA isolation from different sources including human blood, mouthwash and other tissues from human subjects. The protocol includes all necessary measures to protect personnel from exposure to blood and mouthwash. Human brain tissue will be received either frozen or fixed; dedicated or disposable cutting boards are available in the facility. Researchers using the Core Facility for BSL2 projects are covered by their own approved IBC protocols.

- PI's safety training has expired.
- Make sure ROHP clearances are current for all members.
- Provide current biosafety cabinet certification date.

- For liquid waste disposal bleach should be added to make a final concentration of 10% instead of adding 10% bleach to the waste In Section VII.7A.
- Replace “Shaker proof” with “shatter-proof” in Section VIII.11

BUA Site Assessment: ECP is in place. ROHP clearance is due for PI and two other members. Safety training is due for the PI. BSC certification expired but the lab has already requested for servicing.

Motion: Conditional Approval (Administrative Review)	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

5. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1402		Nanoparticle Based Optical Probes for in vivo Imaging	2	N/A	CRC

Primary Reviewer: Barbara Slack	Secondary Reviewer: Ron Morales

Applicable NIH Guidelines: N/A

Meeting comments: This project involves development of optical probes for *in vivo* imaging, using nanomaterials derived from gold, polymers and silica powder, and targeted to cells using antibodies. Human cultured cell lines, primary human dendritic cells and macrophages obtained from a collaborator, and noninfectious virus-like nanoparticles lacking genetic information (obtained from the same collaborator), will be used in the proposed experiments. *H. pylori* specimens will be brought to the lab by a second collaborator and imaged by trained personnel from that PI's laboratory. Nanomaterials used on cells will be disinfected and collected for disposal by EHS. Cells will be treated with 10% bleach and disposed of in the sink.

- ROHP status for one individual is out of date.
- The PI and a few lab members need to complete/refresh their annual bloodborne pathogen training.
- Section VIII.7A- Liquid waste- Bacterial culture fluid should be treated with bleach at a final concentration of 10%.
- Section VIII.8- States that Wescodyne will be used to kill cultured cells, but lab procedures states that 10% bleach will be used. Please be consistent with respect to the method to be used.
- Section VIII.11-Transport- The text indicates that a research assistant from a collaborator's lab will bring live *H. pylori* solutions to the Photonics Center microscopy (i.e. bacteria will be transported from 590 Commonwealth Ave to the Photonics Center in a shatterproof secondary container). The collaborator’s IBC protocol does not refer to this activity. Please clarify.
- Section VIII.11- How will primary cells be transported from the collaborating lab at BUSM to the Photonics Center?
- Section A. All human cells are classified as BSL2 agents at BU. Please mark THP cells as BSL2.

BUA Site Assessment: ECP is in place and biosafety cabinet is duly certified. ROHP clearance for two members need to be updated. Safety training for few members also need updating.

Motion: Conditional Approval (Administrative Review)	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

6. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
990		Jerry McDonald Huntington's disease research award "biomarkers for Huntington's disease"	2	N/A	BUMC

Primary Reviewer: Rosina Georgiadis	Secondary Reviewer: Jim Kenney

Applicable NIH Guidelines: N/A

Meeting comments: This protocol is a renewal so that the PI, who is retiring and closing their lab, can transfer about 350 stored frozen brain tissue specimens in his lab to other BU/BMC investigators working on neurological disorders. PI has no plan to do any further investigation of them and thus there is no laboratory work involved.

BUA Site Assessment: PI clarified to EHS that this renewal is only for storing the frozen brain samples. No concerns were noted.

Motion: Approve	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

7. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2271		Liver development and regeneration	2	2	BUMC

Primary Reviewer: Robin Ingalls	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: PI is developing strategies to replace liver transplantation using various mouse model. The protocol uses various biohazardous materials such as human cells, lenti- and adenoviral vectors. Number of Lox-Cre transgenic mouse are also used in the protocol where liver damage is induced by chemicals and the effect of expression of specific genes on liver damage are then evaluated by turning them on or off by the use of tamoxifen. PI also uses iPS cells to study optimal differentiation strategy for liver cell regeneration. PI is not generating any lenti- or adenoviral vectors in her lab, rather receiving them from collaborators. PI will use multiple core facilities for her work but will not deviate from any core facility SOPs. The PI and staff members will use appropriate PPE and all have appropriate training for the work. It was noted that CCL2 and CCL3 agents will be used in the protocol and the procedures for their safe use is well described.

- Please confirm that the PI is not making the lentiviral vectors in the PI's lab. If PI is making the plasmids for the lentiviral vector system then the prokaryotic section of the rDNA table should be filled out.
- Change the highest biosafety level from BSL2+ to BSL2.
- In the rDNA section, please simplify the table for the lentiviral "vector packaging system" by identifying the system (for example, only list the 5 plasmids that are used), and removing the lengthy wording that describes how the system was developed.
- Please check the appropriate box for replication competence.

BUA Site Assessment: ECP is place; BSC is duly certified. All members are current with their safety training and all have ROHP clearance.

Motion: Conditional Approval (Administrative Review)	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

8. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2472		Eye to Brain: Eye Biomarkers and Cognition Study Eye to Brain: Tears and Cognition.	2	N/A	BUMC

Primary Reviewer: Tom Winters	Secondary Reviewer: Jim Keeney

Applicable NIH Guidelines: N/A

Meeting comments: This new study has two distinct objectives. In the Eye Biomarker study, they will attempt to identify protein biomarkers of Alzheimer's Disease (AD) (such as Abeta, pTau, tTau) in aqueous humor, vitreous humor, tears, blood samples, and in eye tissue (if available), from patients in general clinic. In the Tears and Cognition study, which is an extension of first study, similar materials will be collected from patients with known cognitive dysfunction or are first-degree relatives of AD patients, and controls who have normal cognitive function. The findings from these studies will then be compared with the data from AD patients recruited through the Alzheimer's Disease Center whose medical histories, neuropsychologic and other test results are already available. They will also use optical coherence tomography at the BMC for comparison between the two groups. Tears, vitreous humor, aqueous humor, and blood will be collected in clinics and transferred in secondary containers to the study site. All work will be done in biosafety cabinets. Gloves and surgical mask are used as PPE. Wastes and sharps are handled appropriately and they have an approved IRB protocol for the collection of human samples. EHS confirmed that investigators use safety goggles while working with human materials. Biosafety Officer clarified that the BMC infection control issues for the collection of primary human materials are addressed properly in the protocol.

BUA Site Assessment: ECP is in place for the lab. Safety training and ROHP clearances are current for all members. The Biosafety cabinet was re-certified in June of 2020.					
Motion: Approve	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

9. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2473		Promoting neural repair of central nervous system injuries	2	1	CRC

Primary Reviewer: Carmela Abraham	Secondary Reviewer: Rao Varada
Applicable NIH Guidelines: Section III-D-1-a, III-D-2-a, III-D-4-a, III-E-1	

Meeting comments: This project focuses on developing strategies to repair the brain and spinal cord after injury. The PI develops and tests protective biomaterials that can be used as carriers for transplanting cells into brain and spinal cord injuries. The proposed work involves testing synthetic immunomodulatory hydrogels that contain glycan functionalities with mouse neural progenitor cells (NPCs) in *in vitro* and *in vivo* models of central nervous system (CNS) injury. Adeno associated virus (AAV) vectors to be used as fluorescent reporters or to express protein growth factors will be introduced into mouse brain or spinal cord using stereotactic injections. The Animal use protocol from the PI is also being reviewed by the IACUC. The Committee noted that although AAV vectors will be used for animal inoculation, lentivirus vectors will be used only for the *in vitro* work.

- Viral vectors AAV 2/5 or AAV2/8 (listed BSL-2) are risk group 1 agents and are used in BSL1 containment. Please change their status from BSL2 to BSL1.
- To better assess the risk, describe steps how the chemical stroke injury and forceps-crush spinal cord injury are induced in mice including the method of anesthesia used.
- Confirm that lentivirus vectors will not be used in animals.

BUA Site Assessment: PI has not moved to BU completely and as such site visit has not been done yet but will be required before the start of any protocol activity.

Motion: Conditional Approval (Administrative Review)	For: 15	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

10. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2475		Modeling and multi-omics profiling of the breast cancer microenvironment	2	N/A	BUMC

Primary Reviewer: Rob Davey	Secondary Reviewer: Inna Afasizheva
Applicable NIH Guidelines: N/A	

Meeting comments: In this new protocol PI investigates role of microenvironment on human breast cancer development. The work involves use of number of human breast cancer cell lines such as MCF-10A, MCF-7, MDA-MB-231, BT-549 and MDA-MB-436 as well as primary lung fibroblasts and PBMCs. Cell extracts will be made and RNA and DNA state measured by sequencing as well as proteins attached to DNA will be measured using proteomics methods. The PI has significant experience with recombinant DNA, molecular biology and cell culture work. He did his postdoctoral training at Harvard Medical School and previously worked on projects with various cancer cell lines. Many of the Boston University core facilities will be used in this protocol without any deviation from the core SOPs in this non-DURC project. Use of 10% fresh bleach as disinfectant and sharp disposal processes are adequately defined. However, it is not clear why the rDNA section is checked when no rDNA work is proposed in the protocol.

- Provide brief description of DNA and RNA extraction methods from cultured cells.
- Address safety issues while using phenol/chloroform or Trizol reagent extraction steps (such as use of eye protection and other PPE). Understanding the use of appropriate PPE during such steps are extremely important for personal safety.

- Clarify why the rDNA box is checked in Materials Used in Research section but no rDNA work is proposed in the laboratory procedure section (Section VII.3) or in the rDNA section (Section H).
- For liquid waste management bleach should be added to a final concentration of 10% (instead of adding 10% diluted bleach to the waste) for 30 minutes before discarding in the sink.

BUA Site Assessment: ECP is in place. PI's (only member in the protocol) safety training and ROHP clearances are current. Biosafety cabinet is duly certified.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

11. Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
2439		Storage, Propagation and Distribution of BSL-3 Emerging Pathogens	3	N/A	BUMC

Primary Reviewer: Elke Muhlberger Additional Reviewer: Shannon Benjamin	Secondary Reviewer: Robin Ingalls

Applicable NIH Guidelines: N/A

Meeting comments: The goal of this project is to obtain, develop stocks and store viruses that can cause human disease. The amendment is to add a new lab space and to add laboratory procedures for working with mosquitos. Although the mosquito work will be done in ACL3 lab, no RG3 viruses will be used to infect mosquitos. Blood and serum to be used for supporting mosquito growth will be obtained from commercial sources. It was noted that the proposed mosquito work is being transferred from a departing faculty member and will be carried out by one of her highly experienced staff who has been added to this protocol. All safety practices are described adequately. Committee Members discussed that the use of Qiagen AVL buffer alone for inactivation of virus particles is insufficient and the PI needs to provide evidence that the described inactivation procedure works and a specific SOP has been developed accordingly. It was also noted that the dengue virus added in the amendment it is not listed in the hazardous biological agent list. Human and non-human primate cell lines to be used also need to be listed.

- Information regarding sharing room in Section IV needs modification as Dr. Colpitts has left BU.
- Second part of DURC questions must be completed.
- AVL buffer has been shown to not completely inactivate viral particles. Complete inactivation was only achieved after addition of ethanol or after prolonged incubation time (for example Haddock et al., 2016). Which additional inactivation methods will be used to assure complete inactivation? Is there an SOP in place describing inactivation by AVL and has this been approved by the EHS? Please attach a copy of the SOP in the application.
- Dengue virus must be added to the Hazardous Biological Agent list.
- Vero cells (and any other NHP or human cells that might be used for virus propagation) must be added to the Hazardous Biological Agent list.

Motion: Conditional Approval (Review by Primary and Secondary reviewer)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

12. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
1424		Molecular determinants of RAS dependency in human cancers	2	2	BUMC

Primary Reviewer: Barbara Slack	Secondary Reviewer: Susanna Kurnick

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

Meeting comments: The project is designed to study the role of *K-Ras* mutations in human cancers. The amendment involves injecting cancer cell lines into nude mice subcutaneously. Additional PPE are described for this work, and multiple human cancer cell lines will be used. An IACUC number is provided but it was noted the protocol needs to be renewed which is contingent upon IBC approval of the amendment. The Committee also discussed that use of N95

masks are not mandatory for ABSL2 animal work but if members must use them, they should be used judiciously to save N95 resources.

- Make sure that ROHP clearances are updated.
- Section VIII.7A-liquid waste. Please specify that fresh bleach at a final concentration of 10% will be used to disinfect the waste.
- Cells derived from human cancer cell lines will be injected into nude mice; therefore "Live Animal Use" should be checked in Section IX.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

13. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
734		Neurogenetic Processes in the Fetal Neocortex	2	N/A	BUMC

Primary Reviewer: Elke Muhlberger	Secondary Reviewer: Valeda Britton

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

Meeting comments: In this amendment PI is adding multiple human cell lines, human tissue samples, recombinant DNA constructs and updating the personnel list. Addition of hazardous materials or the rDNA constructs are for storage. The Committee discussed that the PI should clarify if any work will be done on these materials in PI's lab and if so, a brief description of the proposed work should be provided. It was also discussed that protocol does not use any human embryonic stem cells, rather only induced pluripotent stem cells (iPSCs) will be used.

- Please complete the "State years of experience, when and where" question for Dr. Zeldich.
- Complete the information for Lab Safety Coordinator and Department Administrator.
- Make sure that all biosafety training and ROHP clearances are current.
- The cell lines are listed twice. Remove cell lines from the "Other Potentially Infectious Materials" section.
- Please confirm that the human brain tissues are only stored. If they will be used for research, the experiments should be described in the research project description section, including waste management with a focus on potential prion infection.
- Recombinant DNA section: Clarify what is meant by "mammalian expression" in the prokaryotic and eukaryotic vector boxes.
- Remove Bluescript vector from Vector Packaging System box.

Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 2