Boston University
Institutional Biosafety Committee (IBC)
December 15, 2020 Meeting Minutes
Location: Zoom and/or by phone
Start time: 12:00 PM End time: 2:30 PM

Members Present: C. Abraham, B. Slack, I. Afasizheva (joined 12:48 PM), R. Davey, E. Muhlberger (joined 12:23 PM, left 1:05 PM), E. Loechler (joined 12:23 PM), R. Morales, T. Winters, R. Varada, S. Kurnick, J. Keeney, R. Timmerman, V. Britton, J. Barton (joined 12:12 PM)
Guest Present: T. Killen, F. Ennever, A. Ahmad, K. Tuohey, N. Yun, S. Benjamin, C. Thurman, P. Richmond
Staff Present: S. Ghosh, C. McGoff

I. Introduction: On behalf of the IBC office, S. Ghosh thanked all IBC members for their service and support of the IBC activities in 2020, particularly during the COVID-19 pandemic. The contribution of Carol Sulis, who had been an IBC member for over a decade and retired earlier in the year, was acknowledged.
The Committee was introduced to Pamela Richmond, the new Executive Director of the Office of Research Compliance.

II. Review of November 17, 2020 IBC Meeting Minutes
No comments or questions were voiced.
Motion: Approve
For: 10; Against: 0; Abstain: 0; Absent: 4

III. New Business
A. Safety & Quality Assurance Program (SQAP) Report
Nothing to report.
B. Research Occupational Health Program (ROHP) & Environmental Health and Safety (EHS) Report
No incidents were reported since the last IBC meeting.

IV. Protocol Review

1. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1823		Storage, Propagation and Distribution of *Francisella tularensis*; Storage, Propagation and Distribution of *Yersinia pestis*; Receipt and Storage of the 2019 novel Coronavirus and other coronaviruses	3	N/A	BUMC
Primary Reviewer: Rob Davey Additional Reviewer: Shannon Benjamin		Secondary Reviewer: Jim Keeney			
Applicable NIH Guidelines: N/A					
Meeting Comments: This protocol is for storing bacterial select agents and coronaviruses. They will import and store agents within the NEIDL in a secured freezer. The protocol serves as a reference repository for investigators to access the materials when needed. Human blood and serum samples will also be collected and kept as reference or investigational reagents for other investigators. Both the PI and the staff have select agent training. Most of the work will involve receipt of materials in packages, with the greatest risk being a broken vial. In the event of a break, the vial is placed into fresh 10% bleach, which is effective at inactivating the agents in question. Overall, the work appears to be appropriately performed by staff using approved handling and inactivation procedures.					

- Broos-Caldwell has served as the main person operating the repository. Please put the year this person started in the role; it is currently represented as "3 years" and it is hard to know when this information was last updated.
- The PI does not have current NEIDL BSL3 training. The PI needs to complete BSL3 training or add a Co-PI to the protocol to ensure appropriate lab supervision.
- Should F. Feitosa be added to this protocol? Will she be asked to do any work associated with this project?
- VIII. PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT
  - #7a, remove BacDown and replace with "1:10 dilution of household bleach with water with a minimum contact time of 10 minutes followed by a wipe down with 70% ethanol or isopropanol to remove bleach residue and avoid corrosion." Revise this sentence "Liquid wastes would be diluted with bleach to 10% final concentration, mixed, allowed to stand for 30 minutes and poured down the sink." Remove "30 minutes" replace with "overnight as per SAF-SOP-0109 Biological Waste Handling and Disposal in BSL3 Laboratories."
  - #7b, add "as per SAF-SOP-0102 Autoclave use in BSL3."
  - #8, remove BacDown and replace with "1:10 dilution of household bleach with water with a minimum contact time of 10 minutes followed by a wipe down with 70% ethanol or isopropanol to remove bleach residue and avoid corrosion."

BUA Site Assessment: All safety protocols are in place. All biosafety cabinets are certified.

Motion: Conditional Approval (Administrative Review)	For: 10	Recuse: 0	Against: 0	Abstain: 0	Absent: 4

2. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1484		Innate and Adaptive Immunity to Viruses	2	N/A	BUMC

Primary Reviewer: Carmela Abraham	Secondary Reviewer: Bob Timmerman

Applicable NIH Guidelines: N/A

Meeting Comments: This application renewal is for an Immunology core that will aid researchers in understanding how viruses and other microorganisms affect the immune system. Human blood cells from de-identified samples, as well as human and animal cell lines will be used, all in BSL2 labs. Some members were concerned whether the name of a PI who has left BU should still be in the protocols. It was clarified that that the PI still has an adjunct appointment at BU and he still has an approved IBC protocol.

- "The area surrounding the instrument will be sprayed with appropriate disinfectant and wiped down to remove excess disinfectant". Please provide the name of the disinfectant.
- Section VIII.7A. Liquid waste should be inactivated with 10% bleach, final concentration.
- Section A2. Table with "Cause human disease?" Please acknowledge that macaque blood could carry the Herpes B virus, which can cause human disease.

BUA Site Assessment: All SOPs are in place. ROHP clearance and safety training for all members are current. All required engineering controls are certified.

Motion: Conditional Approval (Administrative Review)	For: 11	Recuse: 0	Against: 0	Abstain: 0	Absent: 3

3. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1461		1) Neural Substrates of Cognitive Decline in Aging 2) Neurobiological Consequences of Hypertension & Aging 3) Memory/Executive Function in Prefrontal & Temporal Lobe Cortex 4) Non-human Primate Model for Assessing Motor Recovery after Stroke	2	2	BUMC

		5) iPSC infusion as a treatment for ischemic stroke in the non-human primate			
Primary Reviewer: Barbara Slack			Secondary Reviewer: Rao Varada		
Applicable NIH Guidelines: III-D-1-a, III-D-4-a, III-E-1, Appendix B-V, Appendix G-II-B, Appendix M-1					
Meeting Comments: PI works with rhesus monkeys and is looking at the effect of aging damage and high blood pressure on brain function by testing monkeys on various tasks and looking at the impairments caused by these conditions including recovery after ischemia. They also want to look at the effect of injecting IPS cells derived from human skin into the brain in pilot experiments. Lenti- or adenoviral vectors will be used to label newly dividing neurons. IPS cells and viral vectors will be obtained from BU collaborators who have appropriate individual IBC approval. The AAV vectors will be obtained from the UNC viral vector core. They will also test fresh frozen or paraformaldehyde-fixed human brain samples obtained from BU ADC or CTE program which all have undergone neuropathological testing. They are also collaborating with investigators at the Henri Ford Hospital to administer exosomes in Stroke model. Monkey bone marrows are shipped to the collaborators for preparing exosomes who then sends the preparations back to the PI at BU. The protocol is well written and biohazard issues and mitigation plans are clearly described. • Please make sure that the LST, rDNA, BSL1 and BSL2 training for all personnel are current. • Section VIII.1. Please check animal handling. • Section A. Table mentions rats as well as monkeys, but there is no mention of rats in lab procedures section. Remove from table if not relevant or add brief description to lab procedures if experiments with rats are planned. • Please update IACUC approval numbers to the new numbers in both Section A and in the rDNA animal work section. • Section H: Recombinant DNA- animal experiments- IACUC PROTO201800045 is active; approved on 4/18/2019. BUA Site Assessment: Storage of biohazardous materials and application of PPE are all appropriate. ROHP clearance and training are current. Biosafety cabinet is duly certified.					
Motion: Conditional Approval (Administrative Review)	For: 12	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

4. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2183		Healthier White Adipose Tissue by Recruitment of Beige and Brite Adipocytes	2	1	BUMC
Primary Reviewer: Carmela Abraham			Secondary Reviewer: Colleen Thurman		
Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a, III-E-1; Appendices B-II, G-II-B.					
Meeting Comments: The PI studies obesity with focus on white adipose tissue (WAT) and brown adipose tissue (BAT). Consumption of dietary fat in obese individuals leads to storage in WAT as opposed to its metabolism in BAT; consequently, enhancement of BAT mass has the potential to diminish WAT mass and reduce the incidence of type 2 diabetes and cardiovascular disease. PPAR-gamma participates in the browning of WAT and this pathway will be studied in this protocol in transgenic and KO mice. • In the personnel list Rabhi is mentioned twice; please remove duplication. • Complete the questions “whether experienced” and “State how many years experience, when and where” for the PI, Batista and Rabhi. • Why is Meshulam’s ROHP status inactive if she is working with biohazardous materials including human tissues? • LST, BSL1/2, BBP and rDNA/IBC Policy training are due for Dr. Farmer and Smith. The rDNA/IBC policy training is also due for Rabhi. • For inactivation of liquid wastes, ‘final’ concentration of bleach should be 10%. Please revise.					

- Provide the current new format IACUC approval number.
- VIII. 1 Animal inoculations is marked, but there is no animal inoculation in the protocol.
- VIII. 4. Clarify if only disposable scrubs are used or just a lab coat?
- VIII. 5. No BSC will be used? Isn't the human fat tissue separated in a BSC? Since BSC is available in the lab, the response should be "Yes" and then provide the requested information on the BSC.
- VIII. 6 "syringe needles have their safety shield on until moment of use. It is immediately restored after use". Does this refer to recapping a needle or one of those hinged shields? Provide clarification.
- VIII. 7A. The bleach for liquid waste should be 10% final concentration.
- VIII. 7B. Give more detail on the disposal of solid wastes.
- VIII. 10. Is the lab door locked or the entrance to the floor locked?
- It does not appear that any nucleic acid will be created in this protocol and as such the "Synthetically derived nucleic acid molecules" box does not need to be checked.
- Section B. Provide IRB approval number and expiration date for the human tissue samples to be used in the protocol.
- Section H. 15. The viral vectors are defective. Answer YES, not N/A.
- H. 16. Are they replication competent? Should be NO, not N/A.

BUA Site Assessment: The lab has bloodborne pathogen exposure control plan. One member needs updated ROHP and a few members need updated safety training. The biosafety cabinet is duly certified.

Motion: Conditional Approval (Administrative Review)	For: 12	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

5. rDNA/Bhz – Annual Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2342		Identification of inhibitors of high containment virus infection	4	N/A	BUMC

Primary Reviewer: Elke Muhlberger Additional Reviewer: Nadya Yun	Secondary Reviewers: Robin Ingalls

Applicable NIH Guidelines: Sections III-D-1-c

Meeting Comments: This protocol investigates efficacy of small molecule drugs for their ability to inhibit replication of viral pathogens that cause serious human diseases and require higher containment level (such as BSL3 or BSL4) for their study. The protocol uses number of methods to inactivate virus infected cells or culture supernatants for downstream biochemical analysis. In this current amendment, they propose to use gamma radiation as a method of inactivation of viruses in cell culture material. It was noted that approved SOPs are available for transferring materials for irradiation, but validation data for gamma irradiation-mediated inactivation will be generated following approval of this amendment. It was discussed that per CDC regulations inactivation procedures for select agents must be validated on-site, reviewed and approved by the EHS and IBC chair and then by the BPHC before the inactivated materials may be brought to a lower containment laboratory. It was noted that such validation will be generated following IBC's approval of the amendment which will then have to be reviewed as stated above. It was further noted that such procedural details although established for BSL4 labs, is not currently available for the BSL3 labs. At the suggestion of Dr. Muhlberger, it was decided that IBC office will coordinate a discussion with BSL4/BSL3 investigators and BSL4/BSL3 BSOs on developing uniform procedures for data validation on inactivation method, their review and the approval.

- The inactivation report and corresponding SOP needs to be approved by EHS, IBC Chair and BPHC before samples can be brought to the lower containment level. Please edit the statement in the laboratory procedure section that currently states "Once an inactivation method is approved by EHS staff, the inactivated material can be worked with at BSL2." to the above statement.

PI recused himself from voting.

Motion: Conditional Approval (Administrative Review)	For: 12	Recuse: 1	Against: 0	Abstain: 0	Absent: 1

6. rDNA/Bhz – Annual Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2345		Identification of host factors controlling virus infection	4	N/A	BUMC

Primary Reviewer: Elke Muhlberger Additional Reviewer: Nadya Yun	Secondary Reviewers: Robin Ingalls
Applicable NIH Guidelines: Sections III-D-1-a, III-D-1-b, III-D-2-a, III-D-3-b, III-E-1, III-F-1, III-F-8; Appendix C-1	
Meeting Comments: This protocol investigates the role of cellular proteins that are involved in combating viral infection. Expression of cellular proteins are manipulated by either overexpression or by knockdown and also by using CRISPR/Cas9 technology. In the current renewal only the certification dates for the biosafety cabinets have been updated. *PI recused himself from voting.*	

Motion: Approve	For: 13	Recuse: 1	Against: 0	Abstain: 0	Absent: 0

7. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2497		Gamma delta T cells promote inflammation in aviremic HIV infection and normal aging	2+	N/A	BUMC

Primary Reviewer: Elke Muhlberger	Secondary Reviewer: Ron Morales
Applicable NIH Guidelines: N/A	

Meeting Comments: This new study proposes to investigate the molecular basis of chronic inflammation of the gut in aviremic HIV-positive individuals. They want to test if innate-like T-cells (gamma delta T cells) in these patients exhibit hyper-inflammatory activities. They collect PBMC, plasma and tissues from patients, and perform FACS analysis of various cells, do some cell culture work and ELISA experiments to understand the role of these gamma delta cells in these test subjects. They also propose to study samples from SARS-CoV-2 infected patients. Laboratory procedures are carefully described detailing all appropriate biosafety precautions they follow. The committee discussed what maybe the relationship of this protocol to the FACS core service protocol for which this investigator also serves as the PI. It needs to be clarified if the materials used in this study will be handled at BSL2+ containment and whether regular users of the FACS core will be exposed to the pathogens of this protocol. It was noted that the PI's FACS Core IBC protocol is actually a BSL2+ protocol and infectious materials from other investigators requiring FACS analysis with additional protection are already being done in BSL2+ containment. It was discussed that the protocol should provide clarifications on these biosafety concerns.

- PI needs to be added to the personnel list. Please complete all associated questions on experience, training and ROHP clearance as well.
- Clarify if Rachel will also be providing support for the FACS core facility.
- Indicate who has expertise in handling HIV- and SARS-CoV-2-infected samples.
- It is proposed that unfixed HIV-infected samples and samples potentially infected with SARS-CoV-2 will be used in the flow core. What is meant by "potentially" infected? Will material from confirmed COVID-19 patients will also be used in the core? Does the core accept live BSL2+ material?
- More information should be provided regarding the human materials to be used. Indicate the source of the human materials. Is material from aviremic HIV+ patients classified as BSL2+?
- Are the samples tested for the presence of pathogens before use? Are the samples exclusively obtained from aviremic HIV+ patients?
- Which tissue samples will be used in the protocol?
- Are all described procedures performed with both HIV and SARS-CoV-2 samples? If not, please specify which procedures are used for which sample type.
- Homogenizing, vigorous mixing, and sonication are checked as procedures in the PPE section, but none of these procedures have been described in the research project description. This information should be added.
- Please specify what chemical is used to flush and disinfect the internal systems of the MoFlo and FACSAria post analyses of specimens.

- If disinfectants other than bleach are also used, those should be listed. Please specify what disinfectant and its concentration is placed in the waste tank of the MoFlo.
- The statement on what disinfectant will be used is unclear. Preparation of fresh beach solution as disinfectant for surfaces and work areas is recommend particularly when working with SARS-CoV-2 and infectious samples. What is meant by "fresh does not apply"?
- It should be indicated in the Hazardous Biological Agents section that samples from HIV+ individuals are used.
- Add IRB expiration date.

BUA Site Assessment: The lab has biosafety cabinet that is duly certified. Safety trainings are current for all members. PI's ROHP clearance needs update.

Motion: Conditional Approval (Primary and Secondary reviewer Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

8. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2280		Biomarkers of the salt sensitivity of blood pressure	2	N/A	BUMC

Primary Reviewer: Inna Afasizheva	Secondary Reviewer: Bob Timmerman

Applicable NIH Guidelines: N/A

Meeting Comments: The protocol seeks to understand the link between salt sensitivity to blood pressure as it is believed to be an important factor in hypertension, which is the leading cause of death and disability around the world. The goal is to validate potential biomarkers of the salt sensitivity of blood pressure and to make a rapid reliable diagnostics test. Human blood and urine samples for the project will be obtained from the DASH-Sodium trial study that was deposited to the NHLBI BioLINCC repository. The committee expressed concerns that the protocol does not provide procedural detail about handling human clinical samples making the biosafety risk evaluation difficult.

- Use of biosafety cabinet is recommended while working with primary human samples and universal precautions must be used. In the absence of a biosafety cabinet in the lab, please state procedural detail about how human clinical samples are being handled safely during experiments.
- If additional PPE are being used (such as face shield, aerosol resistant pipet tips, dedicated bench space), those must be detailed in the laboratory procedure section.
- Explain briefly how human specimens are transferred from stored frozen tubes to the ELISA plates.
- State how the work surface area is cleaned and disinfected after the work.

BUA Site Assessment: PI has ROHP clearance and his safety trainings are current. They do not have a BioSafety Cabinet but they use additional PPE including face shields while working with clinical samples.

Motion: Conditional Approval (Primary reviewer Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

9. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2249		Structural stability and functional remodeling of lipoproteins	2	N/A	BUMC

Primary Reviewer: Tom Winters	Secondary Reviewer: Valeda Britton

Applicable NIH Guidelines: N/A

Meeting Comments: The goal of this protocol is to understand the relationship between apolipoproteins and lipoproteins and how these relationships influence atherosclerosis. They use anonymously donated plasma samples obtained from Research Blood Components, a commercial vendor and study the folded structures of these lipoproteins, how they function, and what happens when their normal function is lost. Samples are sequentially centrifuged to fractionate and isolate HDL and LDL, which are then analyzed using circular dichroism, differential

scanning calorimetry, and electron microscopy. For the safety of researchers, samples are contained in tubes fitted into sealed rotors during centrifugation. Samples are stored in double containers and labeled in a biohazard refrigerator. The PPE used are appropriate which consists of lab coats, safety goggles, double gloves, and surgical masks. Liquid waste is disinfected with bleach to a final concentration of 10%, allowed to stand for 30 minutes, and disposed of in a labeled hazardous waste bottle that is stored in a secondary container in the fume hood. Spills are cleaned with 10% bleach. Solid wastes are disposed of in a hazardous waste removal box packed with double layer red biohazard bags. Committee discussed that bleach-treated liquid waste does not need to be stored in a secondary container, but rather can be dumped in the sink. It was also mentioned that Hep B vaccination should be required for all researchers.

BUA Site Assessment: All members have ROHP clearance and their safety trainings are all up to date. They have a duly certified biosafety cabinet.

Motion: Approve	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

10. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1445		Effects of sensory learning on neural circuit structure and function in mammalian cortex	2	2	CRC

Primary Reviewer: Barbara Slack | Secondary Reviewer: Colleen Thurman

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

Meeting Comments: The goal of this study is to understand the mechanisms underlying information storage in neuronal circuits. They train mice to associate odors with behavioral outcomes and then look for changes in synaptic connection using imaging and electrophysiology both *in vitro* and *in vivo*. Study involves conditioning of mice, electrophysiology, labeling of brain *in vivo* with fluorescent indicator using lentiviral and AAV vectors that are made in external core facilities. Some transgenic mice will be used where gene expression will be induced with tamoxifen. Handling of tamoxifen and tetrodotoxin (which will be used in electrophysiology experiments) will be done under CCL3 conditions and are well described. No biosafety cabinet will be used.

- The rDNA/IBC policy training for Bolding, Davison and Tai, needs to be updated.
- PI is the only one with select agent (SA) training. Does anyone else need SA training for tetrodotoxin?
- Section VIII.1- please check animal handling.
- Clarify that biosafety cabinet is not used in the protocol.
- It is stated that “Sharps containers will be autoclaved and placed in red bag-lined biohazard box”. Is autoclaving necessary?
- Section VIII.7- The section on disposal of liquid waste states that artificial CSF containing waste pharmacological agents will be alkalinized with sodium hydroxide for >30mins prior to disposal. Please specify the means of disposal (this material will have a high pH and should be collected as biohazardous waste for removal by EHS).
- In the rDNA table there is no need to fill out Eukaryotic Experiment section or Vector Packaging since cells are not being transfected and vectors are not being packaged in PI’s lab. Host, vector, donor info should all be listed only under Animal Experiments.
- In the rDNA Animal Experiment section please include IACUC Approval number PROTO201800540 with an approval date of 12/1/2020.

BUA Site Assessment: All members have ROHP clearance. Training is also complete for all members and they are following all safety protocols.

Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

11. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus

1996		AMPA receptor tracking and synaptic plasticity	2	2	CRC

Primary Reviewer: Carmela Abraham	Secondary Reviewer: Susanna Kurnick

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

Meeting Comments: This protocol investigates how neuronal circuit in the brain changes its structure and function in response to external factors. The PI studies the AMPA glutamate receptor in primary rat neuronal cultures and in mice transduced with lentiviruses or AAV carrying various genes that could affect neural plasticity. Mice will undergo behavioral studies. Tissues and cultured neurons will be analyzed by western blotting and immunohistochemistry (IHC). Human post-mortem brain tissues will be used for western blots.

- The animal biosafety level of this protocol is marked differently at different places. ABSL1 in Section IV but ABSL2 in Section IX. Work involving injection of lentivirus into animal is conducted in ABSL2 containment. Please make appropriate modifications.
- Describe the use of the homogenizer as this is checked in the PPE section.
- Please check animal handling in the PPE section.
- It is stated that "Liquid waste is treated with 10% bleach for 30 mins before it is disposed of in a sealed bottle". Change the statement to 10% final concentration. The treated liquids can be disposed of down the drain.
- Section A. Please name the BU researcher that provides the lentivirus.
- IACUC approval information is out of date, please update this information.

BUA Site Assessment: The ROHP clearance is current for all members. Their trainings are also up to date. Biosafety cabinet is duly certified. The PPE used by the members are all appropriate.

Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

12. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1488		Orangutan Juvenile Development, Digestive Physiology and Selection for a Slow Life History; Doctoral Dissertation Research: Sexual Selection and Sexual Conflict in Bornean Orangutan Reproductive Strategies; Doctoral Dissertation Research: Orangutan Seed Dispersal Effectiveness and Spatial Distribution Patterns; Doctoral Dissertation Research: Growth and Development in Captive Orangutans	2	1	CRC

Primary Reviewer: Inna Afasizheva	Secondary Reviewer: Rao Varada

Applicable NIH Guidelines: N/A

Meeting Comments: Research proposed in this study focuses on orangutan behavior and biology. The project has been carried out for several years; they specifically are working to understand what factors are involved in the unusually slow juvenile development of orangutans. They hypothesize that the slow juvenile development is the result of extreme fluctuations in food supply and the inability of the juveniles to extract full amount of energy from their food. Description of the collection of urine and feces from orangutans in the field and lab procedures are provided in great detail. It has been clarified that orangutan specimens (urine and feces) are not known to be infectious and there is no contact with the animals in any way. General PPE use is proper. It was discussed that during an earlier renewal of this protocol the PI gave a pictorial presentation in the IBC meeting of the sample collection and processing procedures in their make-shift laboratory in the Indonesian jungle. The PI also explained in detail on how they study animal behavior remotely using binoculars and avoid direct interactions with animals and on safe work practices. The Medical director further clarified that ROHP provides counsel on travel medicines to all BU staff and faculty members who go for the field studies.

BUA Site Assessment: All members have ROHP clearance. Safety trainings are also current for all members. The lab has duly certified biosafety cabinet.					
Motion: Approve	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

13. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2489		Relations of Mitochondrial Genetic Variation and Function with Atrial Fibrillation	2	N/A	BUMC

Primary Reviewer: Xin Brown | Secondary Reviewer: Jim Keeney

Applicable NIH Guidelines: N/A

Meeting Comments: The aim of this new project is to find the correlations among mitochondrial biology, mitochondrial genetic variation and cardiovascular disease. Material used for this project include human heart and blood vessel tissue collected at Brigham and Women's Hospital during surgical procedures or at the time of autopsy, skeletal muscle tissue collected at autopsy and de-identified lymphoblastoid cell line protein pellets from the Framingham Heart Study Lab. To study the function and structure of mitochondria in obtained tissue samples various imaging methods will be developed by the lab. Genomic sequencing, RNA sequencing, proteomics of mitochondria and analysis of circulating protein in serum from patients are also proposed. The lab does not have a BSC to handle BSL2 samples and there is no description of any proposed procedures. No information was provided on how these material will be transported and stored. No one in the lab has completed training on shipment of biohazardous material. The BSO clarified that if the lab is only receiving biological samples but do not ship them to outside parties, shipping training requirement is not mandatory. However, the committee determined that more information is needed to assess potential health and environmental hazards associated with the study.

- Please provide additional information on how the de-identified cardiac and vascular tissues will be transported to the PI's lab, including how it will be shipped, where and how the package will be opened and how samples will be inventoried.
- All human clinical samples must be handled using universal biosafety precautions and in BSL2 containment. Please provide detail about the PPE to be used while working with those materials and the disinfection steps for the waste.
- Provide more detail about handling of tissue samples for downstream biochemical experiments explaining biohazard risks and the risk mitigation steps that the lab will follow.
- Primary human tissues samples must be handled in a biosafety cabinet. This needs to be clearly stated in the laboratory procedure section.
- In the liquid waste disposal description in Section VIII.7A, it is stated "10% bleach will be added to the contents". It should be changed to "bleach will be added to the contents to achieve a final concentration of 10%".

BUA Site Assessment: PI is in the process of acquiring a biosafety cabinet which will be certified after it is received. All have ROHP clearance and their safety trainings are all complete. They are not shipping any samples to any other location.

Motion: Conditional Approval (Primary and Secondary Reviewer review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

14. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2496		Defining the function of scavenger receptors and vascular endocytosis in the hematopoietic niche	1	1	BUMC

Primary Reviewer: Inna Afasizheva | Secondary Reviewer: Colleen Thurman

Applicable NIH Guidelines: Section III-F-8, Appendix C-II

Meeting Comments: This new project seeks to understand the developmental stages of hematopoietic stem cells. These are the cells that give the rise to different types of blood cells. The objective is to provide insights into blood diseases and guide new strategies for improving stem cells transplantation. The study will utilize zebrafish and imaging technologies to investigate trans-endothelium migration *in vivo*, specifically blood-precursor stem cells and trafficking of immune cells across the blood brain barrier. Zebrafish is a particularly useful animal model for real time non-invasive studies due to transparency of the embryos. Laboratory procedures are standard for molecular biology research in BSL1 environment. No major biosafety concerns were noted in the protocol.

- Since the research involves rDNA work, all protocol members must complete rDNA/IBC Policy training in BioRAFT.
- PI's ROHP clearance is still due.
- Use of synthetically derived nucleic acid molecules box is checked in Section IX. Please provide detailed explanation in the laboratory procedure section what nucleic acid sequences (longer that 200 bases) are being synthesized.
- Please include source (company, collaborator?) of gRNAs and Cas9 enzyme for CRISPR experiments.
- PPE and Safety Equipment:
    - Q6- Please change the phrase "medical waste" to "biohazard waste".
    - Q10 and Q11- Are E. coli cultures or transgenic materials (plasmids, rDNA) considered biohazardous? If so, storage and transport should be described in these sections.
- If no synthetically derived nucleic acids of greater than 200 nucleotide long are being generated in this protocol, please uncheck this box.
- Animal Experiments with adult zebrafish require an IACUC protocol. Indicate if you have applied for this approval and provide temporary approval number.
- If synthetically derived nucleic acid molecules are being made, answer questions 8 to 14 as appropriate in your protocol.

BUA Site Assessment: Members are working to receive their ROHP clearance. Some members need to complete the rDNA/IBC policy training. This new PI has not moved into the research space yet. EHS will make another visit to the lab when the PI moves in.

Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

15. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2268		Morphology of blood stain can provide critical information missed in standard bloodstain analysis	2	N/A	CRC

Primary Reviewer: Ed Loechler	Secondary Reviewer: Ron Morales

Applicable NIH Guidelines: N/A

Meeting Comments: This proposal describes two disparate goals. In one they propose to evaluate Bloodstain Pattern Analysis (BPA), which is a vital tool in reconstructing crime scenes in which bloodletting occurs. BPA can be influenced by surface coating, such as the residue oils and lipids, which can affect size and shape of a bloodstain analysis. The second goal relates to kidney stone fragmentation brought on by laser ablation. The fragmentation process may be controlled by viscous silicon oil encapsulation to prevent harmful bacteria trapped in the stone from back-flowing into the bloodstream, thus minimizing the risk of infection. The bloodstain experiments will involve dropping blood onto different coatings on glass slides in a box and evaluating changes. The box will be disinfected by spraying with 10% bleach and then washing with soap in warm water. Human blood to be tested will be purchased commercially and is pre-tested for infectious and hazardous agents. Safety measures include wearing lab coats and using double gloves. All blood preparations will be done inside a Biological Safety Cabinet. Silicone oil coated kidney stone fragments will be decontaminated with 10% bleach and disposed in a biohazard waste box. The glass container will be decontaminated with 10% bleach, which will be disposed in a laboratory sink, then then washed with soap and warm water.

- Ga Ram's ROHP clearance needs to be updated.
- Since experiments with lasers are proposed, oversight by appropriate departments/committees (Division of Medical Physics and Radiation Safety?) is required. This needs to be mentioned in the application.
- Please indicate that the 10% bleach to be used will be freshly prepared.
- A pair of goggles is checked off as part of the PPE to be worn but was not mentioned in the description of the experiments. Please include the mention of goggles in the description.
- It was mentioned that solid wastes such as gloves and syringes shall be disposed in biohazard boxes. Syringes with needles must be disposed of in sharps containers. Please verify or provide clarifications.

BUA Site Assessment: The lab has an exposure control plan. ROHP clearance is due for few members but training is complete for all. The lab also has a certified biosafety cabinet.

Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

16. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2492		Nucleic Acid Engineering for Biological Control and Diagnostics	2	N/A	CRC

Primary Reviewer: Ed Loechler	Secondary Reviewer: Tom Winters

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

Meeting Comments: In this proposal, engineering principles will be used to guide the manipulation of DNA/RNA to sense and respond to different chemicals of interest inside cells. DNA/RNA flux will cause cells to produce different proteins that generate optical or electronic signals for readout. DNA (or RNA) will be transfected or transformed into eukaryotic and bacterial cells, cultured, and measured using techniques such as flow cytometry, optical microscopy, and optical spectroscopy. In diagnostic assays, engineered nucleic acids will be developed to detect different pathogens and toxins. Techniques to be used in this project include bacterial cell culture, mammalian cell culture, centrifugation, transformation, transfection, flow cytometry, optical microscopy, plate reader measurements, and protein purification. In addition, CRISPR nucleases, isothermal amplification reactions [RPA], loop mediated isothermal amplification [LAMP] will be used. Human cell lines, plasma and blood will be obtained from a vendor. Mammalian cell culturing will be performed in a biosafety cabinet and in CO2 incubator. Biosafety cabinet surfaces will be sterilized using 70% ethanol and cultures will be decontaminated with 10% bleach. Solid wastes will be decontaminated in an autoclave. BSL-2 practices are applied in that setting. BSL-1 bacterial agents are also used. The blood-borne pathogen standard will be invoked. Solid waste, liquid waste and disinfectants used appear appropriate. Secondary containment is used for transport. Lab personnel will wear lab coats, protective eyewear, and gloves. Non-flammable face coverings will be worn for work done during the COVID-19 pandemic. It was mentioned that some detail about the diagnostic DNA/RNA constructs to be developed in this protocol were not described. However, it was discussed that some of these details could be proprietary information which are not required to be described in BUA application. It was also noted that plasmid cloning vectors usually always encode antibiotic resistance gene that are used for selection marker for the recombinant clones. Infection with such prokaryotes are easily cured by many other available antibiotics.

- The nature of the RNA/DNAs were never described explicitly, other than that they regulate translation, RNA folding or transcription as stated in the recombinant DNA section question 13. Please provide additional details. However, if these are proprietary information, it must be stated so in the laboratory procedure section.
- It is stated in the "Inactivated biological Sample" section that commercially purchased inactivated culture supernatants of cells infected with SARS-CoV-2 or Zika virus will be used in the protocol. However, no detail has been described on what will be done with them. Please describe.
- Non-pathogenic E. coli K12 or B. subtilis strains (RG1/BSL1) to be used as competent cells should be removed from the Hazardous Biological Agent list. They should only be in the Recombinant DNA section.

BUA Site Assessment: PI is a new faculty at BU but is yet to move in. BUA will be done after he arrives.					
Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

17. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
2397		Host and viral determinants regulating Flaviviridae pathogenesis and immunogenicity.	2	2	BUMC

Primary Reviewer: Rob Davey	Secondary Reviewers: Susanna Kurnick

Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a, III-D-3-a, III-E-1; Appendix-B-II-D, Appendix G-II-B

Meeting Comments: This protocol investigates disease models and immunity for flaviviruses, such as Yellow fever, Dengue, Zika and Hepatitis C. The amendment adds vaccine model evaluation using animal models. The work would involve challenging an animal with a virus, then taking blood and tissues at various time points. For vaccine work, a replication defective adenoviral vector will be used to introduce virus proteins to trigger an immune response. The work is performed in a biosafety cabinet. Tissues to be disposed of will be surface decontaminated using microchem-plus and then discarded in biohazard waste. Equipment is treated similarly and then cleaned with a brush and autoclaved. Sharps are treated and then disposed of in a sharps container. Overall, the work appears to be appropriately performed by staff using approved handling and inactivation procedures. Committee noted that the protocol description generally provides appropriate safety procedures but it includes overly high detail of each of the methods. Committee expressed concerns that while providing extensive detail may be good from an IBC viewpoint, it could be problematic for the investigator as any subtle deviation from what is written would potentially make the protocol non-compliant. The Committee suggested that the procedural description be substantially shortened to indicate only major laboratory procedures, the relevant biosafety risks in those procedures and the appropriate risk mitigating plans.

- Committee expressed concerns on the unusually long description of laboratory procedures depicting minute details of each laboratory procedure. Although it provides clear knowledge on every step of each procedure, the committee indicated that such detail is neither necessary for biosafety risk evaluation, nor is it appropriate. For example, specifying needle gauge number or collection cup size are not necessary. In fact, indicating such specific detail will not allow the use of a different size needle, which if needed and done, will result in non-compliance. Committee suggested that the procedural description be substantially shortened to indicate only major laboratory procedures, the relevant biosafety risks in them and the appropriate risk mitigating plans.
- Please address the bone marrow extraction needle stick prevention method. The technique of extracting bone marrow using an 18G needle should state how the bone will be placed on a solid support and the needle applied so that there is little chance of the technician having a needle stick. Also, indicate if this will be done with infected animals.
- For the mouse work - The only time that mouse cages need to be wiped down with microchem is just prior to removal from the BSC. Please update this description to indicate this.
- Surgical tools should not be placed in 70% ethanol when not in use- this is caustic to tissues in survival procedures. Placing instruments in ethanol is only appropriate for terminal or post-mortem work.
- Please indicate that clear door signage will be used to denote the presence of any of the agents listed in this section, as and are shared spaces.
- Please update BSC certification dates- BSCs in all spaces should be included.
- Please check appropriate ABSL level in the Materials Used in Research table (Section IX).
- In the recombinant DNA Section (Section H) please fill out the animal experiment section since yellow fever 17D vaccine and various viral vectors used in animals include recombinant DNA. Provide the approved or pending IACUC protocol number.

Motion: Conditional Approval (Administrative Review)	For: 13	Recuse: 0	Against: 0	Abstain: 0	Absent: 1