Boston University
Institutional Biosafety Committee (IBC)
November 15, 2022 Meeting Minutes
Location: Zoom and/or by phone
Start time: 12:00 PM End time: 3:03 PM

Members Present:	R. Ingalls, B. Slack, R. Davey (left 1:06 PM), I. Afasizheva, P. Liu, W. Lu, V. Gouon-Evans, T. Winters, E. Loechler (joined 12:44 PM), R. Morales, C. Thurman, S. Niemi (left 2:38 PM), J. Keeney, R. Timmerman, V. Britton, J. Barton, S. Ghosh
Guests Present:	N. Dey, A. Ahmad, G. Madico, P. Richmond, B. Whitfield, J. Wood, M. Saeed, T. Strange, M. Fitzgerald, T. Killeen
Staff Present:	L. Campbell, C. McGoff

I. Review of October 18, 2022 IBC Meeting Minutes

No concerns were voiced.
Motion: Approve
For: 16; Against: 0; Abstain: 1; Absent: 1

II. New Business:

A. SQAP Report:

- **Biosafety Manual Review**
  Members were informed that the Biosafety Manual has been revised to update processes and contact information; members were asked that if they had additional edits, they should be sent to IBC program staff. It was noted that the manual now indicates it will be sent to the IBC every three years for a review.

Members were also informed that the NEIDL annual meeting will be on November 16, 2022.

B. Review of Research Occupational Health Program (ROHP) & Environmental Health and Safety (EHS) Incident Report: *No incidents for November.*

III. Presentation: IBC protocol updates on "Investigating the role of viral proteases in disease pathogenesis"

Members were provided with a presentation from the PI who provided an overview of his work in the effort to develop therapeutic strategies against SARS-CoV-2 and to provide additional information related to an amendment submitted to the IBC discussed next on the agenda.

IV. Protocol Review

1. rDNA/Bhz – Amendment

BUA	(PI)	Title	BSL	ABSL	Campus
2442		Investigating the role of viral proteases in disease pathogenesis	BSL3	N/A	BUMC
Primary Reviewer: Rob Davey		Secondary Reviewer: Robin Ingalls Additional Reviewer: Guillermo Madico			
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: The overall goal of this protocol is to identify the range of host cell proteins that are targeted for cleavage by highly pathogenic viruses belonging to the group of flaviviruses, togaviruses and coronaviruses. In the context of their work with coronavirus SARS-CoV-2, they have started to investigate the viral genome to identify the determinants of viral pathogenicity and transmission. Earlier in the year, PI proposed construction of chimeric SARS-CoV-2 between the Washington Strain and the Omicron strain and received IBC approval following additional review by the Dual Use Research of Concern (DURC) subcommittee. Since the approval of that amendment, the PI has generated significant amount of data on the characterization of those chimeric viruses. At the request of the IBC					

Chair, PI updated the protocol which includes a) names of the genes that were exchanged in the chimeras, and b) description of the characterization experiments performed on the chimeras. PI also updated his comments to the two DURC questions about whether his current work changed any of his previous responses. He further clarified that all work is being done in the high containment NEIDL BSL3 facility. PI also indicated that the chimeric viruses are being tested in animals via collaboration with another NEIDL PI with appropriate animal work approval. It was noted however, that no procedural changes or addition of any new agents were proposed in this amendment. PI further clarified that neither wild type strains are currently in general circulation globally and bivalent vaccines are available which can effectively protect against infection by either of those two strains. All members of his group are vaccinated and will be immunized with bivalent vaccines. IBC chair informed the committee that the amendment was also reviewed by the DURC subcommittee which determined that the protocol still remain non-DURC as the current modifications do not meet the federal DURC guidelines. DURC subcommittee also noted that the chimeric viruses were less pathogenic than the parental viruses and therefore was not considered as a gain-of-function study. In response to the comments from the reviewers and other members, the Chair clarified that the purpose of this amendment request to the PI was to get a clear understanding of what rDNA modifications he is doing and how that affects his previous DURC question responses. The following will be communicated to the PI:

- Please remove your previous response to the DURC questions 2 and 4. Keep only the text that is relevant to your current work.
- Shorten the lengthy text of your current amendment in the laboratory procedure section of the research project description to briefly state what chimeras you made and what was the purpose. Do not include any results or details of follow up experiments.
- Mention the collaboration with Dr. for the animal work (with IBC protocol reference), but again do not include any results.
- Please keep the statement of safety practices (that the work being done in BSL3 containment).
- Mention vaccination information and plan for getting bivalent vaccine for all personnel of this protocol.

Motion: Conditional Approval (Primary, Secondary and EHS member re-review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

2. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2566		Biorepository in systemic sclerosis; Systemic sclerosis research studies	2	N/A	BUMC

Primary Reviewer: Inna Afasizheva	Secondary Reviewer: Valeda Britton

Applicable NIH Guidelines: N/A

Meeting Comments: The proposed study will investigate abnormalities of the skin structure, immune cell movement, role of different cell types and internal cell pathway during the progression of Sclerosis (Scleroderma). PI will use existing samples and clinical data from biosample and data repository as well as lung and heart tissue samples obtained from the University of Pittsburg under material transfer agreement (MTA). Commercially purchased human monocyte cell line will be used to investigate communication between tissue resident macrophages and fibroblasts. Endothelial cells and fibroblasts will be isolated from human skin biopsies and commercially available THP-1 cells. Blood from patients will be obtained by BMC phlebotomy personal from Scleroderma patients and skin biopsies will be obtained from Rheumatology clinic under sterile conditions. Transportation of blood samples and their processing, storage and utilization in PI's lab are described in great detail. However, the actual laboratory work with the clinical samples or with the monocyte cell line are not described: The following will be communicated to the PI:

- Although the protocol describes processing of blood and skin biopsies in detail it is not clear what experiments will be done with them. Provide a brief description of laboratory experiments that will be done with the blood cells and biopsy tissues that are consistent with the proposed research objectives.

- Similarly, describe briefly what experiments will be done with THP-s cells.
- Update biosafety cabinet certification date.
- All human cell lines are handled at BSL2 containment in Boston University. Please change the BSL of THP-1 cells to BSL2 in Table A.4.

BUA Site Assessment: Blood is not drawn in the lab, it is rather done in clinical space. Biosafety cabinet is certified. Room E535 needs to be added as biological materials are being stored there. SOP for cryotome and microtome needs to be posted and lab personnel will be advised to wear cut-resistant gloves.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

3. Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2590		NIH 1R21EB030197 Label-free measurement of blood lipids with hyperspectral short-wave infrared spatial frequency domain imaging to improve cardiovascular disease risk prediction and treatment monitoring	1	N/A	CRC

Primary Reviewer: Sajal Ghosh	Secondary Reviewer: Bob Timmerman

Applicable NIH Guidelines: N/A

Meeting Comments: This new protocol is seeking approval for the use of blood samples from individuals for quantitation of various lipid levels in the blood. They will use a new imaging technique that uses Short-Wave Infrared (SWIR) exposure to the test material followed by spatial frequency domain imaging (SFDI) to measure tissue optical properties. They hypothesize that their technology will also be able to provide quality and quantity of different lipid particles in biological samples, such as blood at a much quicker speed than conventional blood draw and lab tests. They will use fingerstick lancet to collect few drops of blood from the participants. Blood is collected using a capillary tube and then transferred onto a disposable testing cassette. The cassette is then placed on a portable analyzer. The cleaning gauze, capillary tube and the cassette will be disposed in biohazard container. Lab personnel will follow safety protocols associated with the drawing and handling of blood samples. The protocol is simple and straightforward. The following will be communicated to the PI:

- Please update all safety trainings for the PI (rDNA/IBC policy training, BSL1/2, and BBP) Handling of any human blood samples must be done is a BSL2 lab. Please make sure that the room where blood collection will be done has BSL2 door signage. Please consult with EHS to have this set up in your laboratory facility.
- Change BSL designation of Engineering Research Building to BSL2.
- In section VIII.3, check safety glasses (for working with blood samples).
- In the Materials Used in Research Section, mark the highest BSL required for this project to BSL2.

BUA Site Assessment: Personnel will work in small designated area, in a large laboratory; door signage must be changed to BSL2. Currently, they are using volunteer blood samples only; they do not anticipate any liquid waste in their work.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

4. rDNA/Bhz –New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2589		Thyroid Hormone Actions	2	2	BUMC

Primary Reviewer: Weining Lu	Secondary Reviewer: Colleen Thurman/Jim Keeney

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

Meeting Comments: The studies aim to understand the mechanism of action of thyroid hormone (TH), its impact on metabolism, and the neuroendocrine regulation of thyroid hormone levels in mouse models, which may lead to treatments for thyroid diseases, obesity, type 2 diabetes, and other metabolic disorders. To investigate the role of hypothalamic neurons in regulating TH levels, recombinant AAVs will be injected in genetically modified mice allowing regulation of specific neurons. The mice will also be subjected to various challenges in these experiments. The project will also generate cell-specific knockout mice for genes related to TH signaling. Finally, the project will generate thyroid follicles and hepatocytes derived from human iPSCs, which will be used to investigate whether the critical genes uncovered in mouse models also play essential roles in humans. Laboratory procedures in this project include using a variety of adeno-associated viruses such as AAV-GFP, AAV-DREADDS, and AAV-Cre in mouse models. All AAVs are purchased from Addgene. iPS cell derived functional thyroid follicles will be transplanted under a kidney capsule of immunodeficient thyroid-ablated Nude or Skid mice. Thyroid radio-ablation will be performed by intraperitoneal injection of I-131 (Permit pending), and all Radiation Safety Protocols will be followed. Manipulation of AAV vials and loading of microsyringe will be performed on a BSC. Gloves will be changed after loading the microsyringe and disposed of in a double-bagged biohazard waste container. At the end of the procedure, the microsyringes will be flushed and immersed in freshly made 10% bleach for 30 min. All procedures will be conducted in a BSL2 cabinet. Cell culture liquid wastes will be disinfected by adding bleach to a final concentration of 10% and allowed to stand for 30 minutes before disposal down the sink. This is a well-written protocol. The following will be communicated to the PI:

- MRI will be performed as described in Section IX, MATERIALS USED IN RESEARCH, Section G. Radiation and X-Ray, #3. However, no MRI was described in the laboratory procedure section in VII. RESEARCH PROJECT DESCRIPTION. Please clarify
- Correct the typo 'Skid' (should be SCID).
- In the Recombinant DNA section, prokaryotic host-vector-donor information is provided. Since all AAV vectors are purchased from Addgene, it is not clear what will be done with the plasmids generated as described in the prokaryotic experiments section. Provide a brief description of the experiments involving those plasmids.
- VIII. 4. PPE may be excessive if working in BSC at ABSL2 (normally need lab coat, disposable gloves x2. Listed PPE may be appropriate if work is being done on the bench.

BUA Site Assessment: This is a new lab and is in the process of setting up. The personnel list is correct. They do not have their own MRI machine, but will use the one available in the animal house.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

5. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2591		Regulation of Translation Initiation	2	N/A	BUMC

Primary Reviewer: Barbara Slack	Secondary Reviewer: Inna Afasizheva

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

Meeting Comments: The goal of this protocol is to understand the role of the protein eIF4G in translation initiation. The work is done entirely in cultured cell lines. They grow cells, prepare extracts, perform *in vitro* translation experiments and also fix cells for immunofluorescence assays. They use human cell lines-HeLa, U2OS (sarcoma), HAP1 (near haploid cell line derived from hCML). They also use third generation lentivirus for transduction or knockdown; shRNA for knockdown; and CRISPR-Cas to knock out genes or add tags. Further, they expose cells to various chemicals to induce stress and to inhibit protein synthesis initiation (sodium arsenite, hydrogen peroxide, thapsigargin, MG132, puromycin, cycloheximide, lomustine. EHS confirmed that cell culture media wastes containing hazardous chemicals needs to be collected separately and disposed of via EHS. They also propose to work with live Vesicular Stomatitis Virus, which all will be done in biosafety cabinet and all centrifugations will be done in rotors

with O-ring. They also plan to use radioisotopes 3H, S35, P32 for their work. This is a straightforward protocol. The following will be communicated to the PI:

- Update needed for the ROHP status for .
- Section VII.1- please correct typos in Layman's Terms overview (initiation is misspelled twice).
- Section VII.3- Cycloheximide, sodium arsenite, are classified as toxic (category II, moderately toxic). Please provide some additional information regarding handling and disposal. If obtained in powder form, stock solutions should be prepared in a fume hood.
- Section VII.3- Provide brief statement of your CRISPR-Cas work to clarify the issues of a) whether both guide RNA and Cas9 are being expressed from the same plasmid or separately; b) what vector is being used to introduce these plasmids into the cells (transfection or viral vectors); c) what are the target genes and do you expect any off-target effect in your approach; and d) are all members of the protocol aware of the safety issues on the use of these reagents?
- Section VIII.11- Transport- please confirm that the secondary container used for transport of biohazardous material will be leakproof, shatterproof, and with a tight-fitting lid. (Plastic is preferable to styrofoam for this purpose).
- Section A. The table need not include BHK-21 cells (hamster), *E. coli* K12, *E. coli* B-derivative (all BSL1). U2OS cells are human cells described in the lab procedures section; if they are used, they should be added to the table.

BUA Site Assessment: Biosafety cabinet is duly certified. Proposed virus work will be done in biosafety cabinet. Exposure control plan needs to be in place. All other safety issues are properly addressed.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

6. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2412		Regulation of Ribosome Biogenesis	2	N/A	BUMC

Primary Reviewer: Barbara Slack | Secondary Reviewer: Pinghua Liu

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

Meeting Comments: The goal of this protocol is to understand the maturation of ribosomal RNAs (rRNAs) and how the processing of rRNAs is altered in response to cellular stress. Since cellular stress inhibits ribosomal protein synthesis, their processing is closely linked with variety of physiological conditions including neurodegenerative diseases. The laboratory procedures include culture of several human cell lines which are exposed to several stress inducing agents Sodium arsenite, Hydrogen peroxide, Thapsigargin, MG132, Puromycin, Cycloheximide, and Lomustine. Cell lysates are prepared and used in in vitro processing assays. 3rd generation lentiviral vectors are used for transduction with shRNA. Cells are labelled with radioactive compounds, fixed with 4% paraformaldehyde for immunofluorescence studies. The protocol is straightforward and well written. However, the committee discussed that the objective and hazard issues of this PI's new protocol IBC reviewed earlier appears to be very similar. It was suggested that these protocols may be merged together into a single protocol. The following will be communicated to the PI:

- The committee recommended that your IBC protocol and the new Protocol maybe merged together, as broad objectives of both protocols are similar (effect of cellular stress on protein synthesis on ribosome). This will also reduce the necessary paperwork for maintaining two separate protocols.

- Section I.3- Update needed for the ROHP status for Aldrich
- Section VI- Since this project continues to be a non-DURC project your answer to the first question at the very bottom of the DURC page should be "Yes".

- Section VII.3- please provide a brief description of how toxic compounds sodium arsenite and cycloheximide will be handled (for example, preparation of stock solutions) and disposed of. Specify that all high hazard chemical wastes (after disinfection) will be collected separately and disposed of through EHS.
- Section VII.3- Since use of radioactivity has been proposed in Section G, state briefly their use and safe handling procedure and their disposal.

BUA Site Assessment: Personnel listing needs update as one of the listed personnel is no longer in the lab. Update needed on the safety training for few listed members. Biosafety cabinet is duly certified.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

7. rDNA/Bhz – Annual Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2446		SARS-CoV-2 research. Diagnostic development and evaluation, antiviral testing, and host response evaluation	3	N/A	BUMC

Primary Reviewer: Robin Ingalls | Secondary Reviewer: Sajal Ghosh

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

Meeting Comments: The goal of this protocol is to develop and test different diagnostic protocols for SARS-CoV-2, to test small molecules that could be used as antivirals against SARS-CoV-2 and to identify suitable cell lines for in vitro studies. Recently, isolation of monkeypox virus from recent cases and their characterization has been added to the protocol. The protocol provides extensive detail of all laboratory procedures in the BSL3 and BSL2 labs, personnel safety measures, disinfection and waste disposal methods. The protocol has been thoroughly reviewed by the IBC multiple times for several amendments since the approval of the original submission. In the current amendment the group wants to create a recombinant clade II monkeypox virus (West African clade) that will express different fluorescent proteins during different stages of virus replication. The methodology for the construction of this recombinant virus will be based on PI's previous published paper on the construction of recombinant vaccinia virus (VV). The VV belong to the same orthopoxvirus genus as the monkeypoxvirus in the poxviridae family. Gene cassettes for three different colored fluorescent protein reports under the control of three different viral promoters will be custom synthesized and inserted in the monkeypox virus genome. PI is highly experienced in the cloning work and poxvirus culture work. No concerns were noted. The Medical Director informed the committee that several members of this protocol have been already vaccinated against vaccinia virus. The following will be communicated to the PI:

- Section VII.3- Since new cloning work has been proposed, please add a brief statement of prokaryotic rDNA work.
- Section H: Prokaryotic Experiments. Please complete the host-vector-donor section of the prokaryotic rDNA work.
- Section H: Modify the applicable NIH Guidelines sections to "Sections III-D-1-a and III-D-2-a", as the latter is consistent with the rDNA work in prokaryotes involving genes from RG2 or higher agents.

Committee voted in favor of the motion that no Annual renewal will be required for this protocol next year (*For: 17; Against: 0, Abstain: 0, and Absent: 1).*

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

8. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus

2361		Testing medical countermeasures against high consequence pathogens in rodents	4	4	BUMC

Primary Reviewer: Robin Ingalls	Secondary Reviewer: Colleen Thurman/Steve Niemi Additional Reviewer: Guillermo Madico

Applicable NIH Guidelines: N/A

Meeting Comments: The goal of this protocol is to set up animal models for the infection of high consequence pathogens. Biohazards in the protocol include risk group 4 (RG4) pathogens including filoviruses and other hemorrhagic fever viruses, hendra and nipah viruses, RG3 viruses including SARS, MERS and SARS-CoV-2. Stocks of the viruses are obtained from NEIDL Biomolecule Production Core and other NEIDL collaborators and then grown in PI's lab in the NEIDL according to the procedures described in PI's other approved IBC protocol. Rodent and guinea pig models are used where animals are infected with the viral agents and then are treated with small molecules or other treatment modalities. Blood samples or tissue samples from anesthetized or euthanized animals are collected for monitoring virus load and virus spread by various immunological methods. The protocol provides extensive details of the safety issues of each of the animal handling and sample collection steps. It also provides reference to NEIDL approved SOPs for each procedures. The protocol describes in detail how the samples are inactivated and inactivations are validated. The committee noted that some of the risk group 3 agents are used in BSL4 containment which is for convenience only, rather than requirement. The protocol has been reviewed multiple times during the past year for various amendments. However, no changes have been made in this 3-year renewal, except for updating the biosafety cabinet certification dates. The following will be communicated to the PI:

- Please update the experiences of all animal research service personnel.
- Please state in the Laboratory Procedure section that Risk Group 3 agents used in this protocol, such as SARS, MERS and SARS-CoV-2, are used in BSL4 containment (which is higher than requirement) as a convenience of working in same laboratory location.
- Please update the inactivation section by adding "Inactivation of animal tissues using Aldehyde based fixatives a using TRIzol have been approved by the IBC and BPHC. Procedures will follow SAF-SOP-0301 Inactivation of Ani Tissues with Aldehyde Based Fixatives Derived from the BSL-4 Laboratory and SCI-SOP-0542 Inactivation of BSL- material derived from animals using TRIzol or TRIzol LS."

BUA Site Assessment: All personnel listed are current on their training. BSCs in the BSL-4 ' lab room were certified Dec 2021. BSCs in other rooms are certified annually by EHS at NEIDL. All annual certifications were completed EHS and are available at NEIDL. Lab was last inspected October 2022.

Committee voted in favor of the motion that no Annual renewal will be required for this protocol next year (*For: 17; Against: 0, Abstain: 0, and Absent: 1).*

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

9. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1880		Corneal epithelium and signaling with age and diabetes and wound healing	2	1	BUMC

Primary Reviewer: Valerie Gouon-Evans	Secondary Reviewer: Steve Niemi

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

Meeting Comments: The goal of this protocol is to study cornea injury that results in blindness and pain. The lab specifically investigates how purinoreceptors, ion channel proteins, and EGF receptors play a role in corneal wound repair during diabetes and also examines limbal stem cell deficiency in the cornea that are involved in the repair mechanism. They use combination of imaging studies, biochemical assays and machine learning approach to determine how epithelium and nerves communicate. They use both cell culture and ex vivo organ culture

models. Biohazard materials include use of corneal epithelial human cell line (purchased from various companies and also obtained from collaborators at Schepens Eye Research Institute of Boston. They will also use short term organ cultures of rodent corneas and mouse corneas ex vivo. Transient transfection with various key genes using the PLNCX2 vector are performed and followed by confocal microscopy, qPCR, WB and mass spectrometry. They will also use commercially purchased siRNA as well as retrovirus vector-mediated transductions with viruses prepared in the lab using 293-GPC cells. For their ex vivo organ culture work, they will harvest, image and culture eye globe. PPE is appropriate, and their biological safety cabinet is recently certified. Transportation of cells from cell culture room to microscopy facility is appropriately described. BUA Site Assessment: Not completed yet.

Motion: Approve	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

10. Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
602		Plasma Amyloid-Beta Peptides, Depression and Alzheimer's Disease in the Homebound Elderly: Name Longitudinal Study of a Subset	2	1	BUMC

Primary Reviewer: Tom Winters	Secondary Reviewer: Steve Niemi

Applicable NIH Guidelines: N/A

Meeting Comments: The goal of this protocol is to advance knowledge of the potential causal connection between systemic disease / depression and Alzheimer's disease (AD) using biomarkers. Human samples (blood and CSF) have been collected and stored with a previously approved experiment. A questionnaire has been performed with all human subjects. A longitudinal follow-up will be performed at a later date. In order to confirm their findings from the biomarker analysis study, tissue samples from multiple AD mouse models will be used where animals will be injected with amylin and then fluid and tissue samples collected and analyzed. Blood, Brain CSF, Spinal CSF and Brain tissue from the mouse models will be analyzed. Biosafety Risks in this study include handling of human bodily fluids (blood and CSF). Samples have already been collected and are currently stored. Upon transport, thawing and handling of the samples will be done which involves risk of spillage, contamination, and exposure to lab workers. Gloves and masks will be used to mitigate the risk of any open sores. Sharps will be used for dissecting anesthetized mice. Masks, and goggles should be worn and sharps are disposed of in sharp container. Liquid waste is treated with bleach at a 10% final concentration for 30 minutes and solid waste are disposed in red biohazard boxes. Precautions as written are appropriate. The following will he communicated to the PI:

- Section III. Please update personnel list. Remove those who are no longer working in your lab).
- Section IV: The new room in use also needs to be added to the list.
- Please correct typos in Section VII.1 (human) and VII.2 (Westin).
- Section VII.3 - provide updated IACUC approval date (it say valid only through 4/24/2020)
- Section VIII.5 – Update Biosafety Safety Cabinets certification date (currently it says: 4/30/2020
- Section IX- Uncheck live animal use box (because no rDNA or biohazardous materials are being injected to the animals).

BUA Site Assessment: Two personnel left the lab. Current personnel list needs update. One new room to be added. Biosafety cabinet is duly certified.

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

11. Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2172		Storage, Propagation and Distribution of BSL-2 Emerging Pathogens	2	N/A	BUMC

Primary Reviewer: Sajal Ghosh	Secondary Reviewer: Jim Keeney
Applicable NIH Guidelines: N/A	
Meeting Comments: This project serves as a storage protocol for uncommon and novel agents that have been associated with zoonotic diseases in humans. This protocol will provide quick access to the stocks of agents to investigators in the NEIDL or other authorized investigators so that urgent research work can be initiated without delay. Stocks are generally obtained from BEI or WRCEVA (World Reference Center for Emerging Viruses and Arboviruses), opened in BSC, and package stored in FreezerPro System. A trained listed member of the protocol will prepare a passage 1 stock from the master stock using VeroE6 cells or MDCK cells as appropriate, aliquot and store them in freezer. Many of the microbes identified for storage in this protocol are known to cause human disease. Strict control over their shipping and receipt into the NEIDL is followed. When a pathogen shipment is scheduled, University security as well as EH&S staff in the NEIDL are alerted that such a shipment is anticipated. Similarly, when a shipment arrives, package will be opened and the contents verified in a BSC. The verified master stocks are then transferred in a leak-proof and shatter-proof container to a freezer and inventoried as the master stock. In this renewal, there are no changes compared to the previously approved version. PI clarified that when new NEIDL director settles in, he will hand over the responsibility to her. The following will be communicated to the PI: • Please update the biosafety cabinet certifications dates. BUA Site Assessment: No concerns noted for this protocol	

Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

12. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2416		Telomere length and nuclear structure alterations in cancer	2	N/A	BUMC

Primary Reviewer: Valerie Gouon-Evans	Secondary Reviewers: Barbara Slack
Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a; Appendix B-II-D, C-II, G-II-B	
Meeting Comments: The lab investigates whether telomere alterations and nuclear lamin dysfunction are drivers in cancer initiation, promotion, and progression to metastatic disease. Using cancer cell lines from prostate cancer, gliomas, and pancreatic neuroendocrine tumors they will create isogenic lines where they will make relevant genes those for pathway nonfunctional and evaluate how those affect the normal telomere function. They will also alter the expression of lamin genes to ascertain their role in cancer cell migration and invasion. They will use CRISPR Cas9 nickase genome editing system or CRISPR-mediated homology-directed repair system to knock-out genes of choice. Lipofectamin will be used to transfect cancer cells. GFP+or red fluorescence+ transfected cells will be purified by FACS, and further clonally cultured. Reintroduction of genes will be performed by lentivirus transduction. Gene silencing will be performed with siRNA transfection with lipofectamine. Standard molecular biology techniques such as, southern blotting, western blotting, microcopy, gamma irradiation of cells to test impaired G2/M checkpoint, immunoblotting, RTqPCR, clonogenic assay in agarose, transwell migration assays, bulk RNA-seq assays, and others will be performed. The following will be communicated to the PI: • Section I.3- ROHP clearance for needs update. • Please correct the laboratory location room numbers. It should be and . • Provide a brief description of the lentivirus work in the Lab Procedures section. • Section VIII.5- update BSC certification date • Section IX. If gamma irradiation of cells will be carried out, then radiation and X-ray should be checked. • Section H. Please list the cancer cell lines to be used in the rDNA table. If lentiviral vectors will be used to (as indicated in Lab Procedures), please add this information to the DNA table, and if the vectors will be prepared in the lab, please indicate which packaging system will be used, and provide a brief description in	

the Lab Procedures section. Also, if viral vectors will be used, please indicate this in Section H, questions 15 and 16. If they will not be used, then, please remove the reference to lentivirus in Lab Procedures section. BUA Site Assessment: Biosafety cabinet is duly certified. Lentivirus vectors are third generation vectors. RNA sequencing will be done in the sequencing core facility. The correct laboratory locations are X-443 and X-440.					
Motion: Conditional Approval (Administrative Review)	For: 17	Recuse: 0	Against: 0	Abstain: 0	Absent: 1

13. Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1832		MRSA Colonization in the ICU - Sample Storage Only	2	N/A	BUMC
Primary Reviewer: Inna Afasizheva		Secondary Reviewer: Ron Morales			
Applicable NIH Guidelines: N/A					
Meeting Comments: This 3-year re-submission supports storage of samples collected from ICU BMC patients. The original goal of this protocol was to define whether methicillin-resistant *Staphylococcus aureus* (MRSA)–infected patients in the intensive care unit (ICU) contracted the bacteria inside the ICU or in the community. The protocol is now on hold. No samples are being collected anymore. All previously collected clinical samples (nasal swabs) are being stored at – 80°C freezer until access will be requested by other investigators with approved IBC protocol. Research staff will transport samples to the destination ( ) in the sealed biohazard bags placed in the small Styrofoam box that was sealed shut with tape. All appropriate PPE are marked. The PI is the only one researcher included in the protocol and indicates experience in the area of research. BUA Site Assessment: No sample processing is being done. Biosafety cabinet is not required for their work. Transportation may be done in future if needed but will be dictated by the procedures described in the receiving PI's IBC approval.					
Motion: Approve	For: 16	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

14. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
897		Ah Receptor, Androgen Receptor and Estrogen Receptor: Controlling Receptor Activation and Breast Cancer Growth	2	N/A	BUMC
Primary Reviewer: Weining Lu		Secondary Reviewer: Ron Morales			
Applicable NIH Guidelines: Section III-D-1-a, III-D-2-a					
Meeting Comments: The goal of this protocol is to study the role of environmental chemical toxins and antagonists on aryl hydrocarbon receptor (AhR), Androgen Receptor (AR) and Estrogen Receptor (ER) in controlling receptor activation and breast cancer growth. Reducing environmental chemical toxins and mixtures and the activity of these receptor proteins may suppress the growth and spread of breast cancers.The PI developed a predictive method for the risk assessment of environmental chemical toxins and complex mixtures called Generalized Concentration Addition (GCA). This project will test the ability of GCA to predict the biological effects of more complex receptors and mixture scenarios using breast cancer cell lines and cell culture experiments, in which they can measure both receptor activity and changes in cell proliferation and biological activity. Different breast cancer cell lines, DNA constructs expressing AhR, ER and AR luciferase reporters, *E. coli* (K12) culture, environmental chemical toxins, and some high-hazard chemicals will be used in the cell culture experiments. Medical Director clarified that PI is no longer using many of the pesticides previously listed in the protocol. This is a nicely written protocol. The following will be communicated to the PI: • In Section VII. RESEARCH PROJECT DESCRIPTION, item 3, laboratory procedure, several highly hazardous chemicals used in this protocol are listed, including vinclozolin, DDE, HPTE, methoxychlor, TCDD, etc.					

However, only three are described in detail in IX MATERIALS USED IN RESEARCH Section F, "High Hazard Chemicals." Please add other highly hazardous chemicals to Section F, "High Hazard Chemicals" Table.

- Also, many chemicals to be tested in the protocol are listed in Section VII. RESEARCH PROJECT DESCRIPTION, item 3, including testosterone, 5alpha-Androstan-17beta-ol-3-one, 11alpha-Hydroxytestosterone, CI-4AS-1, hydroxyflutamide, TFM-4AS-1, procymidone, vinclozolin, cyprodinil, BDE100, estradiol, EE2, PPT, DES, MPP, ICI 182,780, 4-hydroxytamoxifen, bisphenol, genistein, propylparaben, 2,4,4';-trihydroxy-benzophenone, nonylphenol), o,p'-DDT), triphenyl phosphate, rosiglitazone, S26948, 15-deoxy-delta12,14-prostaglandin J2, nTZDpa, mono-(2-ethylhexyl) phthalate, T0070907, TBT, LG1000268, TCDD, PCB126, PFOA, PFOS, etc. Are any of these considered as High Hazard Chemicals? Please clarify.
- If pesticides are no longer used in the protocol, that section of the laboratory procedure section needs to the current status of the research.
- In the IX MATERIALS USED IN RESEARCH table that states the type of materials to be used in the study, "Radiation and X-Ray" box is checked. But in Section G, nothing is listed. Please clarify.
- It was stated that cancer cells will be transfected with pGudLuc or p1B1Fluc plasmids before being exposed to test compounds. However, neither of these two plasmids are mentioned in the Recombinant DNA section. Please add them in the prokaryotic and eukaryotic experiments.

BUA Site Assessment: Not completed yet.

Motion: Conditional Approval (Administrative Review)	For: 16	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

15. Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1654		Complex Chemotypes: Discovery, Methodology, and Library Expansion admin/Compound Inventory Core	2	N/A	CRC

Primary Reviewer: Pinghua Liu	Secondary Reviewer: Tom Winters

Applicable NIH Guidelines: N/A

Meeting Comments: The goal of this protocol is to study how to identify bioactive compounds from synthetic chemical library. They determine the anticancer activity of chemical compounds in selected human cell lines by cell viability assay. The bloodborne pathogen standard is invoked as they are using human cell lines and the coronavirus, inactivated. The biosafety cabinet is not current in certification. Solid and liquid wastes are handled properly. They use 10% bleach and 70% ethanol as disinfectants. Transportation from lab to lab is accomplished with leak proof plastic containers on dry ice. The following will be communicated to the PI:

- Please add a brief statement to indicate that all generated chemicals will be treated as possible carcinogens and will be handled using universal precautions.
- If inactivated SARS-CoV-2 is not being used in the protocol, please remove its reference from the hazardous biological agent list.
- Please change the contact time for bleach treated liquid waste to 30 minutes.

BUA Site Assessment: One person left and one to be added. They are not working with any inactivated SARS-CoV-2 material. Bleach contact time needs to be changed to 30 minutes.

Motion: Conditional Approval (Administrative Review)	For: 16	Recuse: 0	Against: 0	Abstain: 0	Absent: 2

16. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1031		Chemical Probing of RNA Tertiary Structure in a Whole Transcriptome at Single-Atom Resolution	1	N/A	CRC

Primary Reviewer: Ed Loechler	Secondary Reviewer: Bob Timmerman

Applicable NIH Guidelines: Section III-F-6; Appendix C-II

Meeting Comments: The protocol uses the chemistry of the hydroxyl radical as a high-resolution chemical probe to investigate the shape of the surface of DNA and RNA. The proposal states that RNA tertiary structure in a whole transcriptome will be probed at single-atom resolution using high-throughput sequencing. Synthesis of a novel "catch and release" small molecule probes to capture the major product(s) of hydroxyl radical cleavage of RNA will be conducted. PCR is used to generate template DNA, which is transcribed *in vitro* by T7 RNA polymerase. DNA is labeled using PCR fluorescent-primers. DNA sequencing involves automated fluorescence-based capillary sequencing and is conducted at off-site labs. Even though the rDNA box is checked, PI did not complete the section and it appears from the discussion that he does not do any cloning work or any cell culture work. Under such circumstances, an IBC approval may not be necessary unless PI wants to do any biohazardous or rDNA cloning work later. The following will be communicated to the PI:

- Please clarify if in vitro transcription reactions are done directly on PCR products or after PCR products are cloned into plasmid vectors.
- If PCR products are cloned before in vitro transcription, the rDNA section of the application must be completed.
- No cell culture work is proposed. Does the protocol use any biosafety cabinet (BSC)? If not, uncheck the use of BSC.
- The committee determined that if no rDNA cloning work is involved and if there is no animal cell culture work in the protocol, an IBC approval may not be necessary. But IBC must receive your response on the above issues to make a determination.

BUA Site Assessment: PI does not use biosafety cabinet.

Motion: Conditional Approval (Administrative Review)	For: 16	Recuse: 0	Against: 0	Abstain: 0	Absent: 2