Boston University
Institutional Biosafety Committee (IBC)
September 19, 2023 Meeting Minutes
Location: Zoom and/or by phone
Start time: 12:00 PM End time: 1:29 PM

Members Present:	R. Ingalls, B. Slack, V. Gouon-Evans, W. Lu, E. Loechler (joined 12:35), T. Winters, R. Morales, S. Niemi, C. Thurman, V. Britton, J. Keeney, R. Timmerman, N. Dey, S. Ghosh
Guests Present:	N. Sullivan, T. Strange, D. Siwik, V. Carlo-Carson, N. Yun, C. Fernald, J. Ignacio Moliva, M. Fitzgerald, F. Fortin, T. Killeen, A. Ellis, K. Tuohey, S. Muchohi (BPHC)
Staff Present:	C. McGoff, L. Campbell

I. Introduction to the Public Meeting

The Chair opened the meeting welcoming all attendees; members, staff, and guests introduced themselves.

II. Review of August 15, 2023 IBC Meeting Minutes (R. Ingalls)

No concerns were voiced.
Motion: Approve
For: 13; Against: 0; Abstain: 0; Absent: 1

III. Chair's report:

The Chair informed members and guests that the public meeting of the IBC is mandated under NIH guidelines and provided background on the scope and purpose of the committee.

IV. Presentations:

A. **Biological research at BSL-3/ABSL-3 (Select and Non-Select Agent) and BSL-4/ABSL-4 laboratories**
Dr. Nancy Sullivan, Director of the NEIDL, informed members and guests on the mission of the NEIDL and current and upcoming research.

B. **EHS Research Safety Annual Report**
EHS Program Manager and Biosafety Officer, N. Dey provided the EHS annual report.

V. New Business:

A. IBC Office Updates: Members were informed that a group of members of the DURC/P3CO subcommittee will review and provide requested feedback from institutions on proposals to revise the White House DURC/P3CO policies.
B. Incident Report: No incidents to report.
C. Review of Research Occupational Health Program (ROHP) Report: Members were reminded to check email for upcoming flu vaccination notifications.
D. Environmental Health and Safety (EHS) Report: R. Morales, Research Safety Director, provided updates on the CDC's requested inventories of institutions' polio containment surveys and surveillance at BU.

VI. Protocol Review

1. rDNA/Bhz – New Application

BUA	(PI)	Title	BSL	ABSL	Campus
2618	[redacted]	Bacterial Drug Delivery System for Disease of the Urinary System	2	N/A	CRC
Primary Reviewer: Sajal Ghosh		Secondary Reviewer: Colleen Thurman			
Applicable NIH Guidelines: Sections III-A, III-D, Appendices B, C, G, and I					
Meeting Comments: The goal of this new protocol is to develop therapeutic bacteria to treat or reduce kidney stone using synthetic biology approach. The project plans to engineer bacteria to express proteins that reduce stone formation. They will introduce plasmids which express proteins known to reduce stone formation in Lactobacilli					

species which naturally colonizes urinary tract, as well as in E. coli Nissle 1917, a bacterial strain engineered to be nonpathogenic. Extensive rDNA manipulation will be performed to make sure these proteins are properly secreted from the bacterial cells as well as have tags for their quantification (fluorescent or His-tag) by Ni-NTA resin or spectrophotometry. Bacterial colonies with appropriate stable expression will be tested in a solution containing Na-oxalate and calcium chloride for their ability to block calcium oxalate precipitate formation. Lacobacillus or E. coli Nissle may be handled in BSL1 and as such biosafety cabinet is not required for their work. The protocol is simple and straightforward. Liquid bacterial cultures, nevertheless will be treated with bleach for 30 min before discarding in sink. The following will be communicated to the PI:

- PI needs to take Chem. Safety training.
- If additional members are working in the lab, please list them in the protocol.
- Bleach concentration should be final 10%.
- Uncheck Hazardous Biological Agent box in Section IX.
- Highest biosafety level should be BSL1. There is no need to check BSL2 in Section IX.
- Check N/A for highest animal biosafety level.
- Bacterial strains *E. coli* Nissle 1917, DH5alpha, WK6, BL21, and *Lactobacillus crispatus* all are BSL1 agents and as such should be removed from Hazardous agent list.

BUA Site Assessment: BSC not needed for the experiments suggested in the protocol, but there is one available in the lab which is calibrated until 7/24. PI needs to take Chem. safety training. The PI may need to add additional members of the lab into the IBC protocol.

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

2. rDNA/Bhz – Three-Year Renewal

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

Primary Reviewer: Barbara Slack | Secondary Reviewer: Jim Keeney

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

Meeting Comments: The goal of this protocol is to better understand the mechanism of breast cancer heterogeneity and better predict the responses to different therapies. They use *in vitro* models with coculture of varies types of breast cancer cell lines along with macrophages and stromal cells that constitute the tumor microenvironment. They will also study the cellular modeling with actual patient samples for the same overall goal. The protocol will use normal breast epithelial cell line, luminal breast cancer cell and triple negative breast cancer (TNBC) cell lines along with primary human lung fibroblasts, monocytic cell line, or primary peripheral blood mononuclear cells (PBMCs). Purified exosomes derived from patients' blood or tissue will be added to some cell cultures. Barcoding library using lentiviral vectors packaged in HEK293T cells along with a fluorescent marker to track individual TNBC clones will be used in a mouse model in collaboration with another PI. Patient samples to be used in the study will be derived from core-needle biopsies or surgical resections from de-identified breast cancer patients. They will also create patient derived organoids (PDOs) for analysis. Tissue from patients or cell cultures will be embedded in OCT for cryo-sectioning, fixed in formalin and embedded in paraffin for microscopy, or harvested for DNA, RNA, protein analysis. Sections will be analyzed using spatial-omics technology. Steps using Trizol, Phenol-chloroform or beta-mercaptoethanol will be performed in the fume hood while wearing labcoat, gloves, eye protection. Personnel will be trained to work safely with cryostats or microtomes. The following will be communicated to the PI:

- Section I.2- please leave box for amendments blank.
- Section III.3- Following safety training and ROHP clearances need to be updated:
  - PI, [redacted] and [redacted] - Chem. safety and BBP trainings.
  - [redacted] - Chem. safety and BBP training.

- [redacted] and [redacted] - BBP, Chem. safety and rDNA/IBC.
- Section VI-For resubmittals- 'This continues to be a non-DURC project'- 'Yes' should be checked.
- Section VII.3- Recommend the use of cut-resistant gloves for tissue sectioning.
- Section A- HEK 293T cells should be added to the table.
- Primary gingival fibroblasts are listed in the table, but not mentioned under lab procedures. Please clarify. Primary human lung fibroblasts should be added to Section B. (First check Other Potentially Infectious Material in the Section IX table and then complete section B. remove Gingival fibroblast from the Section A table). Note that both human primary lung and gingival (if applicable) cells should be listed in section B (since they are human primary cells and not cell lines).
- Two IRB numbers are provided in the Lab Procedures section ([redacted] and [redacted]). Please include both numbers in the list.
- Is there an IRB number for the exosomes purified from patient blood and tissue (by Dr. [redacted]) as described in the 'In vitro modeling' paragraph of the Lab Procedures section?
- Section H. The TNBC cell lines that will be transduced with lentiviral vectors should also be listed as host strains in the Eukaryotic Experiments section of the rDNA table (if the transduction will be performed in your laboratory). If not, please clarify in the Lab Procedures section.

BUA Site Assessment: Safety training and ROHP clearances are not current for few members and they have been notified to complete them as soon as possible. The patient samples are already available from a neighboring lab and the lab use those samples for their work. The lab has cryotome in lab (room [redacted]) but they don't have cut resistant gloves. The lab has been recommended to use these gloves while working with the tissues. Human fibroblast are BSL2 and not BSL1 as mentioned in Section A.

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

3. Bhz – Three Year Renewal

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

Primary Reviewer: Robin Ingalls	Secondary Reviewer: Ron Morales

Applicable NIH Guidelines: N/A

Meeting Comments: This protocol use noble metal nanoparticles and polymer nanoparticles to investigate the signaling mechanisms of cell surface receptors looking specifically at the movement of labelled nanoparticles across membranes utilizing a few different human cell lines. They also are investigating the role that specific lipids play in the recognition of virus particles through dendritic cells and macrophages. In some experiments the nanoparticles are loaded with polycyclic aromatic hydrocarbons, to assess the risk of a nanoparticle associated mobilization of polycyclic aromatic hydrocarbons. They also study the inactivation of *E. coli* and of the bacteriophage Phi X174 bound to metal nanoparticles and then exposing the samples to light to trigger a photophysical and photochemical response that results in inactivation. The PI states that the *E. coli* strain being used is BSL1 but no strain designation is provided in the protocol. The protocol has also added the use of 3 high hazard chemicals that will be loaded onto the nanoparticles for the studies. The following will be communicated to the PI:

- Please add the PI back to the personnel table and remember to answer all questions on the form.
- PI-Chem. safety and BBP training-expired.
- [redacted] and [redacted] will need to complete their annual BBP training and ROHP clearances.
- [redacted], [redacted] and [redacted] - rDNA/IBC training need to be completed.
- Please clarify what E. coli strain in being used in the protocol.
- For the liquid waste disposal question in Section VIII.7A, please indicate that the waste container for the mix nanomaterials and chemically treated biological will be labeled with the “Chemical Disinfectant” and the word “nanomaterial waste”.

- Please add "fresh" to the 10% bleach preparation in the liquid waste section.
- E coli (if is BSL1) and the PhiX174 can be removed from the biohazard table in section A.
- If H. pylori is no longer used in the lab, please remove it from the Hazardous Biological agent list.
- The lab does not have SOPs for the new nanomaterials added to this protocol: [redacted] and [redacted] The PI will need to contact the Chemical Safety Officer and work with EHS to adopt an appropriate SOP.
- [redacted] is not an HHC. Please remove it from the HHC table.

BUA Site Assessment: For the bacterial work, a new location in the basement of the photonics lab is being operationalized. No H. pylori is used in the lab. Its reference should be removed from the protocol. All nanoparticle work should be performed inside a BSC or a fume hood.

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

4. rDNA/Bhz – Three Year Renewal

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

Primary Reviewer: Weining Lu	Secondary Reviewers: Colleen Thurman

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

Meeting Comments: The protocol investigates cellular and molecular mechanisms driving liver development and regeneration by using mouse models of liver diseases, human iPS cell-derived liver cell lineages, transplanted primary human hepatocytes into mouse spleen and the liver, and diseased human livers obtained from a collaborators. The goal of this research project is to study various strategies using nucleoside-modified mRNA to improve liver regeneration and repair, as well as novel stem cell-based cell therapy to treat pre-clinical animal models of human liver diseases. The laboratory procedures in this project include utilizing many genetically modified liver disease mouse models. The team will also study chemically-induced liver injury mouse models with hazardous chemicals such as CCL4, acetaminophen (APAP), dimethylnitrosamine (DMN) including BrdU for cell proliferation studies and tamoxifen to induce Cre-mediated DNA recombination in mice in vivo. The protocol will use AAV8 to express senescence genes and Lentiviral-luciferase vector (based on a five-plasmid transfection system) to mark iPS cells that will be differentiated into liver cells in vitro. Mouse tail DNA genotyping, liver histology, flow cytometry, mRNA-lipid nanoparticles (LNP) will also be used. Double gloves and a biosafety cabinet will be used to handle these hazardous chemicals at BU Animal Science Center (BUASC). This IBC protocol is clearly written with no major biosafety concerns. The following will be communicated to the PI:

- BBP and rDNA/IBC trainings are required for [redacted] and [redacted]
- Chem Safety training update required for [redacted]
- In Section III, PERSONNEL INFORMATION, research experiences for postdoc fellow [redacted] needed to be included.
- In Section IV, RESEARCH LABORATORY FACILITY INFORMATION, for Animal BSL, it is not clear the meaning of ABSL2 w/ ABSL3 Practices. Should ABSL2 be sufficient for this IBC protocol?
- The main lab location has changed from lab # [redacted] to lab # [redacted] .This needs to be changed in the IBC protocol.
- In Section F, High Hazard Chemicals, 5 chemicals are listed in the table. But, only N-Nitrosodimethylamine (DMN) is listed in the BU Highly Hazardous Chemical List. The [redacted], [redacted], [redacted], and [redacted] may be removed from this High Hazard Chemicals table.
- Sharp containers do not need to be autoclaved before placing them in the Biohazard red box.
- The IACUC approval needs update in the rDNA animal experiments section. Protocol [redacted] is approved through 8/14/2026 (Breeding protocol), [redacted] is approved through 10/25/2023 (Experimental protocol).

BUA Site Assessment: Safety training for three members is not complete or needs update and individuals have been informed. The main lab location has changed from lab # [redacted] to lab # [redacted].This needs to be changed in the IBC protocol. The lab also uses lab # [redacted], [redacted], [redacted], [redacted], [redacted] and [redacted], but they are all connected to the main lab [redacted]. The lab is BSL2/ABSL2 instead of ABSL2 with ABSL3 practices as mentioned in Section IV. Third generation Lentiviral vectors are used in the lab. An appropriate transportation container for carrying biohazardous materials is not available in the lab. Cut resistant gloves are not available in the lab for their cryotome work. No filled sharps containers are autoclaved in the lab.					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

VII. List of Protocols reviewed by DMR (not discussed in the meeting)

List of protocols (below) that were reviewed by DMR was displayed in the meeting.

5. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
603	[redacted]	Characterization of drug delivery from biomaterials and bioconjugates	2	2	CRC
Primary Reviewer: Valerie Gouon-Evans		Secondary Reviewer: Steve Niemi			
Applicable NIH Guidelines: Sections III-D-1-a, III-D-2-a, III-D-4-a, III-E-1; Appendix-B-II-D, Appendix G-II-B					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

6. Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
840	[redacted]	Molecular Genetics Core Facility	2	N/A	BUMC
Primary Reviewer: Tom Winters		Secondary Reviewer: Bob Timmerman			
Applicable NIH Guidelines: N/A					
Motion: Conditional Approval (Approve)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

7. rDNA/Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
1151	[redacted]	Mechanisms regulating megakaryocyte endomitosis and polyploidy	2	1	BUMC
Primary Reviewer: Robin Ingalls		Secondary Reviewer: Steve Niemi			
Applicable NIH Guidelines: Section III-D-1-a, III-D-2-a, III-E-1, appendix B-I					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

8. rDNA/Bhz – Three Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2473	[redacted]	Promoting neural repair of central nervous system injuries	2	1	CRC
Primary Reviewer: Barbara Slack		Secondary Reviewer: Steve Niemi			
Applicable NIH Guidelines: Section III-D-1-a, III-D-2-a, III-D-4-a, III-E-1					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0

9. Bhz – Three-Year Renewal

BUA	(PI)	Title	BSL	ABSL	Campus
2260	[redacted]	Optical imaging and phototherapy in drug-resistant microorganisms	2	2	CRC
Primary Reviewer: Pinghua Liu		Secondary Reviewer: Colleen Thurman			

Applicable NIH Guidelines: N/A					
Motion: Conditional Approval (Administrative Review)	For: 14	Recuse: 0	Against: 0	Abstain: 0	Absent: 0