INSTITUTIONAL BIOSAFETY COMMITTEE MEETING
Oak Ridge National Laboratory (ORNL)
May 23, 2025
Bldg. 1520, Room 304 – Green River Conference Room

Meeting Time: 1:00 PM – 4:00 PM

MEMBERS PRESENT:

Brian Davison (Chair), Lisa Fagan (BSO), Hugh O'Neill, Xiaohan Yang, Tia Hollander

NON-AFFILIATED MEMBERS: Laurel O'Connor and Ahmed Bettaieb

MEMBERS ABSENT:

Lori Manis, Steve Childs, Socorro Guy

OTHERS PRESENT:

Sarah Mesiner

I. Opening

The meeting was called to order at approximately 1:00 PM by the IBC Chair with quorum present.

II. Preliminary Remarks and Discussion

- BSO transition updates; collaboration with ABWC and BESSD pilot programs
- ORNL 562 registration document updated
- BSO contact email confirmed: BSO@ornl.gov
- IBC Charter updated and posted to SharePoint and SBMS
- SharePoint migration completed
- SBMS updated to align with BMBL 6th Edition; Plant Biosafety section added
- Upcoming communication regarding BSL-1 updates (lab coat requirements)
- DURC-PPEP policy under revision

- IBC meeting minutes to be made publicly available beginning June 1, 2025
- NIH OSP will publish ORNL IBC rosters effective June 1, 2025

III. Full Committee Review (FCR)

The following twenty projects were reviewed and approved with minor modifications as noted.

2025-01 – Yuan, Y.

Fungal Biopolymer Production and Deuteration (NEW; RG1; NIH III-F-3)
This project will use microbiology and molecular biology-based technologies and techniques to produce microbial derived chemicals and for deuteration of non-protein biomacromolecules, mainly with filamentous fungi that are non-pathogenic to humans or plants.

Action: Approved as submitted with minor clarifications.

Controls: BSL 1 /BL-1P / non-etiologic

2025-02 – Davern, S.

Next Generation Radiotherapeutics (RENEWAL; RG1; NIH III-F-2, III-E-1)
Develops targeted delivery systems for radioactive isotopes using tumor models, including 3D cultures and organ-on-chip platforms that will allow them to be specifically delivered to cancer cells and retained at the target site.
Action: Approved with required modifications to protocols for human cell lines.

Controls: BSL 2, BBP compliance, and Hepatitis B provisions.

2025-03 – Morrell-Falvey, J.

Blood-Brain Barrier Models (RENEWAL; RG1; NIH III-F-2, III-E-1)
Establishes in vitro models of the blood-brain barrier and tumor systems using commercially available human and animal endothelial cell lines.
Action: Tabled pending clarification with PI. Work may continue under prior approved scope.

Controls: updated BSL 2 controls for RG1 materials.

2025-04 – Guss, A.

Genetic Engineering of Microbes (NEW; RG1; NIH III-E-2)
Genetically modifies microbes by removing or inserting genes into the organism(s) to optimize metabolic pathways in the organism to enhance conversion of biomass and plastics into biofuels and industrial chemicals.
Action: Approved with minor revisions.

Controls: BSL1

2025-05 – Morrell-Falvey, J.

Bacterial Infections and Biofilm Control (RENEWAL; RG1/RG2; NIH III-D-1)
Investigates antibiotic resistance and develops nanoparticle-based approaches to treat infections and disrupt biofilms. Study of nonlethal effects of antibiotics on bacteria using various RG1 and RG2 bacteria and mechanisms to make antibiotics more effective. The study of the effects of physical, chemical and biological treatments on the formation of biofilms formed by some of these bacteria will also be conducted to evaluate means to prevent or reduce biofilm production.

Action: Approved with minor updates to strain listings and room designations.

Controls: BSL1, BSL 2

2025-06 – Morrell-Falvey, J.

BSL-1 Recombinant DNA Operations (RENEWAL; RG1; NIH III-F)
Supports multiple projects involving recombinant DNA techniques and protein expression in non-pathogenic organisms. Standard molecular biology and recombinant DNA techniques, as well as purification and characterization of recombinant proteins, will be performed.

Action: Approved with required clarifications regarding facilities and disinfection procedures.

Controls: BSL1

2025-07 – Graham, D.

VOC Detection for Agricultural Biosecurity (NEW; RG1; NIH III-F)
Measures volatile organic compounds from agricultural products and soils to develop non-contact detection methods. The agricultural products will include raw, fermented, and cooked meats or animal products, obtained from commercial sources and intended for human consumption

Action: Approved with minor modifications.

Controls: BSL1

2025-08 – Chen, J.

Plant Systems Biology Group (RENEWAL; RG1; NIH III-F-6, III-E-2, III-D-5)
Uses model and genetically modified plants to study gene function related to bioenergy and environmental processes to understand the molecular mechanisms underlying core functions of plant genes related to bioenergy and environmental research.
Action: Approved with request for additional clarification on containment transitions and facility usage.

Controls: BSL1

2025-09 – Chen, J.

Center for Bioenergy Innovation (RENEWAL; RG1; NIH III-E-2)
Studies genetically modified plants to improve biomass production and conversion for bioenergy applications. This includes growing both unmodified, wild-type *Arabidopsis* plants and genetically modified plants. Many of these plant materials are publicly available from the *Arabidopsis* Biological Research Center (ABRC).

Action: Approved as submitted.

Controls: BSL ,1 BL-1P

2025-10 – Chen, J.

Cross-Kingdom Protein Motifs (RENEWAL; RG2; NIH III-D-1)
Examines conserved protein functions across plant and human systems using comparative genomics and cell-based assays. The project has identified > 4,000 putative orthologous proteins based on genome analysis of ~450 eukaryotic genomes using plant and human cell lines.

Action: Approved with minor revisions.

Controls: BSL 2

2025-11 – Schadt, C.

Microbial Ecology and Plant-Microbe Interactions (RENEWAL; RG1; NIH III-F)
Analyzes environmental microbial communities and gene functions using molecular biology and sequencing approaches are used to elucidate organismal and gene functions, within organisms that are non-pathogenic to humans (BSL1 / non-etiologic). All projects are using standard microbiological and molecular biology techniques and practices.

Action: Approved with comments regarding facility listings and PPE considerations.

Controls: BSL 1

2025-12 – Michener, J.

Gene Shuffling (RENEWAL; RG1; NIH III-F)
Combines genomes of bacterial strains to identify genetic traits that enhance desirable phenotypes. Strains will then be re-sequenced to determine which portions of the genome were contributed by each parent.

Action: Approved with modification to gene table documentation.

Controls: BSL 1

2025-14 – Yang, X.

Plant Bioengineering (RENEWAL; RG1; NIH III-E-2, III-D-5)
Develops plant synthetic biology tools for bioenergy, environmental sustainability, and genome editing applications with the objectives of enhancing photosynthetic performance and water use efficiency in plants (Populus).

Action: Approved as submitted.

Controls: BSL 1

2025-15 – Michener, J.

Genetic Engineering of Non-Model Bacteria (NEW; RG1, RG2; NIH III-F, III-E, III-D)
Applies genetic engineering to diverse bacteria to study gene function and improve metabolic capabilities. Objectives include determining the function of particular genes or improving useful bacterial phenotypes such as biomass degradation.

Action: Approved pending responses to committee questions.

Controls: BSL 1, BSL 2

2025-16 – Guss, A.

Guanidine Utilization Pathways (RENEWAL; RG1; NIH III-F, III-D-2)
Identifies and transfers genes involved in guanidine metabolism into model organisms for functional study.
Action: Approved with minor revisions regarding gene classification and facilities.

Controls: BSL 1

2025-17 – Evans, B.

Designer Algae for Biofuels (RENEWAL; RG1; NIH III-F)
Develops engineered algae strains to improve efficiency of biofuel production such as

hydrogen and ethanol. Uses standard recombinant and molecular biology methods to examine and manipulate naturally occurring and artificially designed genes in algae.

Action: Approved as submitted.

Controls: BSL1

2025-18 – Evans, B.

Deuterium Labeling of Switchgrass (RENEWAL; RG1; NIH III-E-2)
Studies structural properties of genetically modified plants using isotope labeling and advanced imaging techniques using recombinant gene constructs.
Action: Approved as submitted.

Controls: BSL 1

2025-19 – O'Neill, H.

Center for Structural Molecular Biology (RENEWAL; RG1; NIH III-E-1)
Produces and analyzes proteins using recombinant systems for structural and functional characterization for work at university, synchrotron, and neutron facilities.

Action: Approved with request for additional gene-specific information.

Controls: BSL 1

2025-20 – Podar, M.

Human Microbiota Characterization (RENEWAL; RG1/RG2; NIH III-F-1)
Investigates human-associated microbial communities and host interactions using sequencing and cell culture models of fixed and live human oral samples (saliva and tooth biofilm) from healthy volunteers. The project will also employ the use of immortalized human oral epithelial cells.

Action: Approved with clarifications required.

Controls: BSL1

2025-21 – Doughty, B. / Calhoun, T.

Sum Frequency Scattering from Bacterial Membranes (NEW; RG2)
Uses laser-based spectroscopy to study interactions between antibiotics, liposomes, and bacterial membranes.
Action: Pending; follow-up review required after additional information is provided.

Controls: not determined, more information needed.

IV. Other Business

- Strategy development for improved IBC communication and outreach
- Report on external biosafety training (X. Yang)
- DURC review updates provided to ALD
- NIH reporting requirements updated

V. Adjournment

The meeting was adjourned at approximately 4:00 PM.
