INSTITUTIONAL BIOSAFETY COMMITTEE
12:04 p.m.
President's Conference Room
Meeting Minutes
December 10, 2025

Members Present:
Jovanka Voyich-Kane, Microbiology & Cell Biology, chair
Amy Robison, Biosafety Officer
Alyssa Evans, Microbiology & Cell Biology
Jerod Skyberg, Microbiology & Cell Biology
Kristen Connolly, Center for Biofilm Engineering
Matt Taylor, Microbiology & Cell Biology, IACUC Chair
Kim Hilmer, Chemistry/Biochemistry

Members Absent:
Jennifer DuBois, Chemistry/Biochemistry
Mike Giroux, Plant Sciences & Plant Pathology
Blake Wiedenheft, Microbiology & Cell Biology
Josh Charles, Bozeman Fire Department, Community Member

Ex-Officio Members Present:
Tammy Lynn, Safety & Risk Management
Nicole Soll, Research Integrity & Compliance
Kirk Lubick, Research Integrity & Compliance

Ex-Officio Members Absent:
Jaspur Kolar, Bridger Occupational Health & Urgent Care

Guests:
Mark DeWald, Research Integrity & Compliance

I. **Review and approval of IBC Meeting Minutes from September 10, 2025.**
The minutes were approved as written. Approved 7, Nays 0, Abstained 0

II. **Announcements from the Chair:**
No announcements

III. **Protocols/Amendments/Renewals/Interim Reviews Approved since September Meeting:**

Protocol #	Reference #	Principal Investigator	Title	Protocol Type...	Approval Date	Expiration Date
2023-11-IBC	11	Rynda-Apple, Agnieszka	Influenza viruses for use in research projects in the Apple lab	Amendment	10/24/2025	1/31/2026
2023-14-IBC	14	Merzdorf, Christa	The role of Zic1 and of its direct targets, such as aqp3b, during gastrulation ...	Amendment	10/6/2025	1/31/2026
2023-22-IBC	22	James, Garth	Evaluation of Treatment on Medical Biofilms	Amendment	10/9/2025	4/30/2026
2023-231-IBC	231	Loveday, Emma	Drop Based microfluidics for BSL 3 Pathogens.	Amendment	9/26/2025	7/31/2026
2023-49-IBC	49	Stowers, Steve	Functional role of dual neurotransmitter usage in aggression	Amendment	12/1/2025	5/31/2026
2023-53-IBC	53	Voyich, Jovanka	Mechanisms of Innate Immune Evasion Used by Pathogenic Bacteria	Amendment	10/29/2025	6/30/2026
2023-59-IBC	59	Pincus, Seth	Infectious disease and biodefense	Amendment	9/23/2025	8/7/2026
2023-99-IBC	99	Miles, Mary	Nutrition Research Laboratory Exposure Control Plan for Human Materials	Amendment	9/26/2025	1/31/2026
2024-50-IBC	50	Flenniken, Michelle	Flenniken Lab Virology and Immunology	Amendment	10/23/2025	4/30/2027
2024-538-IBC	538	Skyberg, Jerod	Investigating the pathogenesis of Brucella Infection	Amendment	11/20/2025	10/31/2027
2024-540 -IBC	540	Secor, Patrick	Biosafety in the Bacteriophage Pathobiology Laboratory	Amendment	9/16/2025	10/31/2027
2024-77-IBC	77	Copie, Valerie	Pathogen evasion of immune cell killing via metabolic reprogramming & me...	Amendment	10/17/2025	10/31/2027
2025-125-IBC	125	Wiedenheft, Blake	Isolating phages and understand the microbial immune response	Amendment	10/17/2025	6/30/2028
2025-377-IBC	377	Loveday, Emma	Virus and mammalian cell studies using drop-based microfluidics	Amendment	10/20/2025	2/28/2028
2023-468-IBC	468	Callaway, Heather	Structure and binding of rhabdovirus glycoproteins	Interim Review	10/9/2025	10/31/2026

2023-478-IBC	478	Fields, Matthew	3D Printing with Fluorescently Labeled Bacteria	Interim Review	10/22/2025	12/31/2026
2023-479-IBC	479	Smith, Heidi	Genetic manipulation of polar bacterial isolates	Interim Review	11/20/2025	11/22/2026
2023-481 -IBC	481	Voyich, Jovanka	Wildlife Microbiome Analysis	Interim Review	10/7/2025	11/30/2026
2023-88-IBC	88	Fields, Matthew	Predictive Multiscale Modeling of Microbial Consortia Biofilms	Interim Review	10/20/2025	10/31/2026
2024-366-IBC	366	Stewart, Philip	Biofilm Mitigation Strategies in Microgravity Water Systems	Interim Review	10/22/2025	10/31/2027
2024-52-IBC	52	Walk, Seth	Ecology of the Mammalian Microbiome	Interim Review	9/23/2025	9/30/2027
2024-75-IBC	75	Carlson, Ross	Analysis and Predictive Multiscale Modeling of Microbial Consortia Biofilms	Interim Review	9/17/2025	9/30/2027
2024-76-IBC	76	Lawrence, Charles	Expression and purification of proteins for structural studies by cryo-EM and...	Interim Review	9/12/2025	9/30/2027
2024-85-IBC	85	Schmidt, Ed	In situ somatic cell genetics	Interim Review	10/8/2025	10/31/2027
2025-566-IBC	566	Heinemann, Joshua	Midkine analysis from human saliva, and human cell culture	Original	10/20/2025	10/31/2028
2025-581-IBC	581	Evans, Alyssa	Detection of orthobunyaviruses in Montana mosquitoes.	Original	9/11/2025	9/30/2028
2025-112-IBC	112	Jones, Christopher J.	Development and use of standard methods for the growth, treatment, sampl...	Renewal	9/12/2025	9/30/2028
2025-113-IBC	113	Jones, Christopher J.	Methods to assess biofilm prevention on medical devices	Renewal	9/12/2025	9/30/2028

Amendments

2023-11: updated personnel

2023-14: updated personnel, protocol objectives, assurances and sharps usage

2023-22: updated personnel and added microorganism

Biohazardous Agents: Klebsiella pnuemoniae

Strains: ATCC 29011 **Biosafety Level:** 2

2023-231: rescinded LPAI strains to BSL2 per updated USDA permit, updated where acquisition of virus stocks

2023-49: updated personnel, chemical for cleaning, disposal of flies, updated lab specific manual

2023-53: added shipping information

2023-59: updated personnel

2023-99: updated personnel, BSC certification, merged protocol with IBC 399 protocol

2024-50: updated personnel

2024-538: updated USDA permit, added microorganism and how it will be used

Biohazardous Agents: Brucella ovis

Strains: Buddle, and mutant strains **Biosafety Level:** 2

2024-540: added subcutaneous (SC) administration of *Borrelia burgdorferi* to mice

2024-77: updated protocol objectives, personnel, funding and human materials information

2025-125: added plasmid

Host: E. coli

Vector/Plasmid: pACYC

Inserted Nucleic Acids/Genes of Interest: RT-based phage defense systems

Biosafety Level: 1 **NIH Guidelines:** III-F, III-D

2025-377: updated personnel and virus strains

New Business

A. Review of Protocols

Originals

590 Bassing "Understanding prairie dog colony connectivity to inform conservation"

Overview: Assess connectivity among black-tailed prairie dog (BTPD) colonies using genetic data to quantify movement across the landscape and assess BTPD responses to predation risk from raptors. Results from this work will be used to inform conservation and management decisions for prairie dogs. Exposure to sylvatic plague, tularemia, or other wildlife diseases is a potential hazard to humans that will be handling these animals.

Risk mitigation includes: animals are sedated during ear punch sampling and flea/tick combing; personnel handling animals wear heavy shirts with long sleeves, long pants, closed toed shoes, disposable and heavy-duty work gloves, insect repellent, N95 respirator; clothing worn on study site is removed and bagged prior to getting in a vehicle and clothing remains outside of field housing until it is laundered; field team will carry a first aid kit and seek immediate medical attention locally near the study site in South Dakota if necessary.

Motion to return for modification and DMR upon submission.
Approved 7, Nays 0, Abstained 0
Approved items to be addressed include:

Protocols Objectives:

- Clarification of who personnel are to see in case of an incident in South Dakota

Personnel:

- Update personnel with co-I info

Related Protocol:

- IACUC protocol still pending SD permit

Lab Manual:

- Needs to be included

Training:

- Shipping training needs to be completed and section updated

N95:

- Needs to be completed and update information

591 Wiedenheft "Immune systems across domains of life"
Overview: To test whether immune systems that protect bacteria from phage infection can also protect human cells from viral infection. To address this, we will clone and overexpress type III CRISPR complexes, Defense-associated Reverse Transcriptases (DRTs), and DRT-associated NEO proteins in human cell lines.
Risk mitigation includes: all work with infectious virus or transfected human cells in a BSC; viral samples are inactivated by chemical fixation prior to microscopy; and third-generation lentiviral vectors may be used to generate stable expression lines.

Biohazardous Agents: Escherichia coli cloning
Strains: DH5-alpha, BL21DE3 **Biosafety Level:** 1
Biohazardous Agents: Lentivirus
Strains: 3rd generation **Biosafety Level:** 2
Biohazardous Agents: Alphavirus (Sindbis)
Strains: Sindbis-GFP **Biosafety Level:** 2

Recombinant/Synthetic Nucleic Acid Molecules:

Host: HEK293	**Vector/Plasmid:** lenti-guide-puro
Inserted Nucleic Acids/Genes of Interest: sgRNAs	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pDAC439
Inserted Nucleic Acids/Genes of Interest: Cas genes	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pDAC435
Inserted Nucleic Acids/Genes of Interest: Cas genes	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pDAC627
Inserted Nucleic Acids/Genes of Interest: Cas genes	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pDF0159 pCMV
Inserted Nucleic Acids/Genes of Interest: Cas7-11	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pEGFP-N1
Inserted Nucleic Acids/Genes of Interest: EGFP	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pEGFP-N1
Inserted Nucleic Acids/Genes of Interest: EGFP-Neo	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** XLone-Puro eGFP
Inserted Nucleic Acids/Genes of Interest: EGFP-Neo	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** XLone-Puro eGFP
Inserted Nucleic Acids/Genes of Interest: EGFP-DRT	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pCBh_NLS_hfCas13X
Inserted Nucleic Acids/Genes of Interest: Cas13x	**Biosafety Level:** 2
Host: HEK293	**Vector/Plasmid:** pSauCas9
Inserted Nucleic Acids/Genes of Interest: Cas9	**Biosafety Level:** 2

Host: HEK293 **Vector/Plasmid:** BPK2660
Inserted Nucleic Acids/Genes of Interest: CRISPR **Biosafety Level:** 2

NIH Guidelines: III-D, Appendix G

Motion to return for modification and DMR upon submission.
Approved 7, Nays 0, Abstained 0
Approved items to be addressed include:

Protocol Objectives:

- Answer if something besides a glass-bottom dish can be used.
- Remove wording in second paragraph about viral work being done in BSC, it is covered in first paragraph
- Are samples fixed prior to microscopy? It looks like a GFP SINV will be used, so will microscopy be done with live virus or fixed? This should be clarified, and risk mitigation if imaging live virus should be clarified. If fixing, please include the fixative, concentration and contact time/temp.

Shared Microscope Facility:

- Please update

Renewals
402 Walk "Archer Biologicals: E. coli characterization from industrial/agricultural wastewater"
Overview: Environmental retention ponds samples will be tested for the presence of E. coli. Wastewater is filtered to collect bacteria on the membrane, cultured on agar plates, then colonies are picked and cultured in a well plate format. Putative E. coli colonies will be characterized by DNA extraction and PCR to determine the phylotype and whether E. coli is a human pathogen (i.e. EHEC, EIEC, EPEC, ETEC, STEC).
Risk mitigation includes: Water sources are downstream of wastewater processing plants and not expected to carry any human derived pathogens; culture work is conducted in a BSC; no new colonies will be picked and no new bacteria will be cultured following the original collection into the well plates; any clone or sample that contains genes associated with human pathogens will be immediately destroyed.

Biohazardous Agents: Escherichia Coli
Strains: Environmental **Biosafety Level:** 2

Recombinant/Synthetic Nucleic Acid Molecules: n/a

Motion to return for modification and DMR upon submission.
Approved 7, Nays 0, Abstained 0
Approved items to be addressed include:

Lab Room:

- Update if applicable

Protocol Objectives:

- Explicitly state how "Candidate clones will also be assessed for virulence factors" The reference to Tobias et al. 2012 is necessary but insufficient.
- Remove "Results from all E. coli tested from each site will be reported."
- Remove volumes and temperature.

Personnel:

- Add personnel and list as co-I

Interim Reviews
None

Amendments

540 Secor "Biosafety in the Bacteriophage Pathobiology Laboratory"

Overview: Added E. coli, Salmonella, and Klebsiella bacterial strains (including clinical isolates) and their phages, and Citrobacter spp., to be studied in mice. Overall goal of the project is to study bacteriophages (viruses) that infect BSL-2 bacterial pathogens in regulating virulence phenotypes and establishing infections. Molecular, genetic, and biochemical techniques are used to dissect the mechanistic details underlying phage–host–microbe interactions in bacterial infection models.
Risk mitigation includes: enteric bacteria used in these studies are not environmentally persistent outside the host under laboratory conditions; bacteriophages used in enteric experiments are host-restricted bacterial viruses that are not infectious to mammalian cells and do not replicate in the absence of their specific bacterial hosts; recombinant modifications are limited to nonfunctional tags or reporters that do not confer increased host range, virulence, or environmental stability; antibiograms will be generated for all clinical isolates and included in the lab specific biosafety manual.

Biohazardous Agents: Salmonella enterica typhimurium
Strains: LT2, SL1344, clinical isolates **Biosafety Level:** 2
Biohazardous Agents: Klebsiella pneumoniae
Strains: LD240, clinical isolates **Biosafety Level:** 2
Biohazardous Agents: E. coli phages
Strains: P1, P22, RSB01, RSB02, RSB04 **Biosafety Level:** 1
Biohazardous Agents: P. aeruginosa phages
Strains: D3, OMKO **Biosafety Level:** 1
Biohazardous Agents: Citrobacter freundii
Strains: ST22, clinical isolates **Biosafety Level:** 2
Biohazardous Agents: Citrobacter rodentium
Strains: DBS100, ICC168, clinical isolates **Biosafety Level:** 2

Recombinant/Synthetic Nucleic Acid Molecules:
Host: E. coli, Salmonella, Citrobacter, Klebsiella (enteric bacteria)
Vector/Plasmid: pXs
Inserted Nucleic Acids/Genes of Interest: SpyCatcher-fusion
Biosafety Level: 2
Host: E. coli, Salmonella, Citrobacter, Klebsiella (enteric bacteria) and the phages that infect each bacterial host
Vector/Plasmid: pTn7xTS chromosomal insertion system
Inserted Nucleic Acids/Genes of Interest: SpyCatcher-fusion
Biosafety Level: 2
Host: Salmonella enterica and the phages that infect this bacterial host
Vector/Plasmid: pXS, pHERD, or pUCP vectors
Inserted Nucleic Acids/Genes of Interest: SpyCatcher-tagged proteins, fluorescent reporters
Biosafety Level: 2
Host: Citrobacter spp. and the phages that infect this bacterial host
Vector/Plasmid: pXS or pUCP vectors
Inserted Nucleic Acids/Genes of Interest: SpyCatcher-tagged proteins, fluorescent reporters
Biosafety Level: 2
Host: Klebsiella pneumoniae and the phages that infect this bacterial host
Vector/Plasmid: pXS, pHERD
Inserted Nucleic Acids/Genes of Interest: SpyCatcher-tagged proteins, fluorescent reporters
Biosafety Level: 2

NIH Guidelines: III-D

Motion to return for modification and DMR upon submission.
Approved 7, Nays 0, Abstained 0
Approved items to be addressed include:

Protocol Objectives:

- There are organisms listed in the agents list that are not included in the protocol objectives.

The agent list is likely accurate, so either remove the specific agents from the Objectives narrative, or include the missing bacteria.

- Briefly summarize the animal samples that will be taken, and how they are handled in the lab. Note if certain steps (centrifugation of blood to collect serum/plasma for cytokine analysis; and sonicating, vortexing, etc.; or if any of the DNA/RNA extraction should be performed in the BSC) are performed in the BSC or on the benchtop.

Microorganisms/Infectious Agents to be Used:

- The committee is concerned about the use of clinical isolates in mice, it is suggested that proof of concept experiments are done using established strains rather that clinical isolates. The committee is asking for antibiograms to be done. Ensure these are incorporated in your lab specific biosafety manual (update and reattach to section 11.5).

Unlisted Microorganisms/Infectious Agents to be Used:

- Pleismonas is not present in other elements of the protocol or in alignment with IACUC and should be removed. Alternatively, it needs to be incorporated in the other areas identified.

Biological Materials:

- Include Plesiomonas shigelloides here if applicable.

Biological Safeguards:

- Are there any biological safeguards to address regarding the enteric bacteria experiments?

Laboratory Biosafety Manual:

- Lap specific manual needs to be updated and attached.

B. Post Approval Monitoring (PAM) Report (MD)
    - PAM Protocol 2023-49-IBC, "Functional role of dual neurotransmitter usage in aggression": The committee reviewed and endorsed the PAM results
    - PAM Protocol 2023-466-IBC, "Investigation of gene regulation during animal development using the Drosophila experimental model system": The committee reviewed and endorsed the PAM results

C. Unfinished Business
    1. Shipping Biological Materials Quick Reference Guide
        - Added Fish & Wildlife Services import/export information webpage
        - Added "required" per review by TTO
        - Added live animals and select agents per IBC comments from last meeting
            - Approved 7, Nays 0, Abstained 0
    2. Exporting Importing and Shipping Biological Materials Decision Tree
        - Updated information to contact Export Control Officer or TTO office
            - Approved 7, Nays 0, Abstained 0

D. Biosafety Officer Updates
    1. Announcement of new Occupational Health and Medical Surveillance form(s)
        - New form(s) for the Occupational Health and Medical Surveillance program have been created and have been implemented.
        - These will have to be completed annually
    2. MSU Collection of Human Biological Specimens Policy – 3-year review
        - Terms were clarified
            - Approved 7, Nays 0, Abstained 0
    3. IBC Manual update
        - Added clarification that not all permitted materials needs an IBC protocol
        - Added clarifying wording per amendment to MSU Collection and Storage of Human Specimens Policy
            - Approved 7, Nays 0, Abstained 0
    4. 2025 Biosafety Inspection Report
        - BSO summarized findings
    5. Exposure Control Plan for MSU Research Laboratories
        - Review of ECP
            - Committee endorses

6. Updated OSHA BBP training to reflect non-paid people, sent to CITI will be uploaded
    - Updated training has been sent to vendor, waiting for vendor to upload on their timeline.

The meeting was adjourned at 1:37 p.m.