Caltech

California Institute of Technology
Administrative Committee on Biosafety
Minutes of the Institutional Biosafety Committee (IBC)

Date: June 3, 2025 **Time: 2:30 PM** **Location: Zoom Videoconference**

Voting Members:	R. Ismagilov, L. Cai, M. Doshi, A. Aravin, A. Hoelz, W. Gao, A. Grossman, M. Barsever, K. Lencioni, C. Cortese, E. Hisserich
Nonvoting:	3 attendees
Guests:	1 attendee
Other:	1 attendee

Called to order at 2:33pm

1. Announcements
    A. Thank You: A. Aravin

    B. Welcome New IBC Member: L. Cai

2. Old Business
    A. Protocols - Approved Pending Modification, Modification Complete

    The following protocol was approved pending modifications at the April 10 meeting. The modifications have been completed and the protocols are approved:

Protocol:	24-299-A2	Amendment	Expiration Date:	4/12/2027
Title:	Membrane Protein Characterization			
PI Name:	Clemons/Rees			
Modifications Completed: 5/30/2025				

The following protocol was approved pending modifications at the May 6 meeting. They modifications have been completed and the protocols are approved:

Protocol:	22-182-A7	Amendment	Expiration Date:	10/10/2025
Title:	Modulation of the Mammalian Nervous System for Psychiatric and Neurological Indications			
PI Name:	Gradinaru			
Modifications Completed: 5/30/2025				

B. Protocols - Approved Pending Modification, Modification Pending

The following protocols were approved pending modifications at the May 6 meeting. The labs are still working on completing the modifications for validation from the BSO. If it is past the expiration date, all work on the protocol has ceased until the modifications have been completed.

Protocol:	25-065	De Novo	Expiration Date:	5/12/2025
Title:	Viral Vectors for dissecting neural circuits for Social Interactions			
PI Name:	Anderson			
Anticipated Completion: 7/1/2025				

Protocol:	25-261	De Novo	Expiration Date:	5/12/2025
Title:	Engineering and evaluation of anti-viral therapeutics in vitro and in vivo			
PI Name:	Bjorkman		De Novo	
Anticipated Completion: 7/1/2025				

Protocol:	24-381-A2	Amendment	Expiration Date:	7/12/2027
Title:	Identifying Phages that Target Antibiotic-Resistant Bacteria			
PI Name:	Karthikeyan		Amendment	
Anticipated Completion: 7/1/2025				

3. New Business

A. Approval of Minutes: May 6, 2025

The May 6 meeting minutes were approved by a majority of the IBC. There was one abstention from a member who was not present at the May 6 meeting.

B. Occupational Health Updates

The BSO reported that there were no occupational health items to review at this time.

C. Protocols – Full Committee Review

In review of the following protocols, the IBC conducted a robust risk assessment to determine the appropriate biocontainment levels for the proposed research and to confirm that the research is compliant with the NIH Guidelines, as applicable.

Protocol:	25-265	De Novo	Expiration Date:	6/12/2025
Title:	Neural crest development and evolution in vertebrates			
PI Name:	Bronner			
Brief Description of Project: Embryonic neural crest cells (NCCs), are a stem cell-like population unique				

to vertebrates that give rise to bones of the face, the peripheral nervous system, the enteric nervous system, and pigment cells, among many other cell types. To better understand vertebrate evolution and the role of neural crest in developmental disorders, we examine the development of NCCs in a variety of vertebrate species.
Biological Materials Review Summary: Work in the lab utilizes the following biological materials: 1. Animal models 2. Viral vectors (replication incompetent) 3. Cell lines (human and chicken) 4. E.coli (basic cloning and plasmid production) 5. Plasmid vectors 6. CRISPR/Cas9
NIH Guidelines: III-D-3, III-D-4, III-E, III-F Highest BSL Level: BSL2 / ABSL2 (72h)
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1) or Biosafety (BSL2), Bloodborne Pathogens, and Viral Vector Training. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.
IBC Action/Decision: Approved with Stipulation
❖ The committee reviewed and unanimously approved the protocol subject to the adherence to the following special stipulations, along with all standard stipulations: • Protocol will be approved in the original form, with BSL2 /ABSL (72 hours) handling for replication-incompetent viral vectors. A request to downgrade the biosafety level was not approved. • The lab must clarify their BSL2 waste disposal procedures with BSO

Protocol:	25-315	De Novo	Expiration Date: 6/12/2025
Title:	Genome Engineering in Bacteria		
PI Name:	Wang		
Brief Description of Project: This project aims to develop methods to efficiently move large segments of DNA between safe bacterial species and downstream delivery of these large pieces of DNA into either varied microbiomes and/or mammalian cell lines.			
Biological Materials Review Summary: This project aims to develop tools for the construction and delivery of DNA between distinct organisms. The study utilizes the following biological materials: RG1 bacterial strains are used for construction of recombinant DNA and production of P1-like phage particles. Model host systems include both RG1 and RG2 bacterial strains. Frequently used **Human Cell Lines** are used for delivery experiments of constructed DNA. All work is conducted under BSL-2 conditions. **Vertebrate Animal Models:** Specific pathogen-free animals are used to assess delivery of DNA using P1-like phage particles. Vertebrate animals are housed in a specific pathogen-free facility under IACUC-approved protocols. All bacterial, animal, and phage work was conducted in compliance with institutional biosafety and animal ethics regulations. All regulatory approvals, including MTAs, were obtained for the relevant biological materials.			
NIH Guidelines:	III-D-2, III-E, III-F	Highest BSL Level:	BSL2 / ABSL1

Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1) or Biosafety (BSL2) and Bloodborne Pathogens Training. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.
IBC Action/Decision: Approved pending Modifications
❖ The committee reviewed and unanimously approved the protocol subject to the adherence to the standard stipulations, as well as pending the following modifications: • The lab must clarify that transfers of BSL1-derived DNA includes only genes or gene clusters for which the functions are known and these functions are not known to be associated with virulence or pathogenesis. • The IBC did not approve projects involving use of plant leaves or soil as described. The IBC also did not approve of experiments involving the transfer of BSL2-derived genes or gene clusters. These experiments must be removed from the protocol.

Protocol:	24-345	De Novo	Expiration Date:	6/12/2025	
Title:	Genome Engineering in Bacteria				
PI Name:	Wang				
Brief Description of Project: This project aims to create and use bacteria as a shuttle vector to deliver DNA to eukaryotic cells. To accomplish this, the bacteria containing the target DNA would have to be able to: i) Be phagocytized by a eukaryotic cell; ii) Escape the specific anti-bacterial cellular response mechanisms, iii) Transfer the DNA from the bacterial cell into the host eukaryotic cell and iv) Use CRISPR/Cas9 or other integrase proteins to integrate the DNA into the host eukaryotic cell. Each functional step will be engineered independently, tested and optimized, then, eventually, combined in order to develop a fully functional system. We will focus on developing this system in vitro, and use S2 insect cells, animal cell lines, and mammalian cells as our recipient cellular models.					
Biological Materials Review Summary: This submission is for a brief extension of the protocol approval to allow for storage of biological materials prior to transfer to 25-315 and subsequent protocol closure. Material storage includes: 1. RG1 bacterial strains 2. Human, animal, and insect cell lines					
NIH Guidelines:	III-D-2, III-E, III-F	Highest BSL Level:	BSL2		
Training: This approval is for storage only. Previously, the protocol required the following biosafety trainings: Basic Principles of Biosafety (BSL1) or Biosafety (BSL2) and Bloodborne Pathogens Training.					
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.					
IBC Action/Decision:	Approved				
❖ The committee reviewed and unanimously approved the protocol, extending the expiration date to 7/12/2025, allowing the lab to store materials, subject to the adherence to the standard stipulations. After the 1 month extension, the materials should be removed from the lab or destroyed.					

Protocol:	25-393	New		Expiration Date:	New
Title:	Evolutionary biochemistry of animal colors: leveraging natural history to uncover novel protein functions				
PI Name:	Taboada				
Brief Description of Project: In our lab, we purify, sequence, and identify proteins from multiple amphibian species to characterize their biophysical properties and describe their novel functions in the creation of colors and signaling in nature. We use an evolutionary biochemistry approach to resuscitate ancestral proteins by inferring their ancestral sequences and physically expressing them.					
Biological Materials Review Summary: Work in the lab will utilize the following biological materials: - RG1 bacteria (exempt only) - Animal model					
NIH Guidelines:	III-F		Highest BSL Level:		BSL1
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1). Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.					
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.					
IBC Action/Decision:	Approved with Stipulation				
❖ The committee reviewed and unanimously approved the protocol subject to the adherence to the following special stipulation, along with all standard stipulations: • Training must be completed prior to work commencing.					

Protocol:	25-311-A1	Amendment		Expiration Date:	2/10/2028
Title:	Genetic dissection of invertebrate neural circuits				
PI Name:	Anderson				
Brief Description of Project: This project uses genetic and chemical approaches to manipulate neural function in Drosophila to investigate the neural basis of aggression, followed by analysis of behavior and brain activity.					
Biological Materials Review Summary: Biological materials used include transgenic Drosophila with targeted gene expression and chemical reagents for neural manipulation, along with standard materials for brain imaging and behavioral analysis.					
NIH Guidelines:	III-B, III-D-4		Highest BSL Level:		BSL2 / ACL1
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1) or Biosafety (BSL2) and Biological Toxins. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.					
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.					
IBC Action/Decision:	Approved				
❖ The committee reviewed and unanimously approved the protocol subject to the adherence to the standard stipulations.					

D. Protocols - Expedited Review

Protocol:	25-281	De Novo	Expiration Date:	10/12/2025
Title:	Transgenic Drosophila			
PI Name:	Lois			
Brief Description of Project: We use transgenic flies to design a system that will allow us to monitor which cells are in contact with other cells. The goal of the research is to be able to monitor the interactions between cells in animals. This research will be particularly useful to understand how neurons are connected to each other in the brain.				
Biological Materials Review Summary: To study questions related to brain organization we use genetically engineered flies (transgenics), and we use E. Coli to modify genes in their plasmids. These experiments are performed under ACL1 and BSL1 conditions.				
NIH Guidelines:	III-D-4, III-F	Highest BSL Level:	BSL1	
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1). Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.				
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.				
IBC Action/Decision:	Chair Approved			

Protocol:	25-350	De Novo	Expiration Date:	6/12/2025
Title:	Opto-electrical control of cell motility for integrated manipulation platform			
PI Name:	Hajimiri			
Brief Description of Project: This project involved development of optoelectronic chip that will guide the ontogenetically enabled bacteria to swim in different pathways.				
Biological Materials Review Summary: K-12 Nonpathogenic E. coli with ontogenetically activated motility genes.				
NIH Guidelines:	III-F	Highest BSL Level:	BSL1	
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1). Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.				
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.				
IBC Action/Decision:	Chair Approved			

Protocol:	25-349	De Novo	Expiration Date:	6/12/2025
Title:	Developing new genetic tools in the Hawaiian bobtail squid, Euprymna scolopes			
PI Name:	Ruby			
Brief Description of Project: Determine colonization factors that allow a symbiotic marine bacterium to specifically colonize a squid light-emitting organ. The association initiates through a series of nutritional and signaling interactions, and competition between strains involves bacterium-host, and bacterium-bacterium interactions.				
Biological Materials Review Summary: This project investigates host-microbe communication pathways				

using the Hawaiian bobtail squid and marine bacterium Aliivibrio fischeri as a model. The squid are housed and bred in an IACUC approved facility and all bacteria are cultured under BSL-1 conditions.			
NIH Guidelines:	III-D-4, III-F	Highest BSL Level:	BSL1
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1). Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.			
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.			
IBC Action/Decision:	Chair Approved		

Protocol:	25-156	De Novo		Expiration Date:	7/29/2025
Title:	Investigation of regeneration in Drosophila				
PI Name:	Goentoro				
Brief Description: This protocol performs experiments in the fruit fly to investigate tissue regeneration.					
Biological Materials Review Summary: This project aims to investigate mechanisms of wound healing and tissue regeneration. The study utilizes fly models (wild type and transgenic flies obtained from public repository) and microorganisms (cloning and probiotic agents). All work will be conducted under BSL1 conditions.					
NIH Guidelines:	III-D-4, III-E, III-F		Highest BSL Level:		BSL1/ACL1
Training: This protocol requires the following biosafety trainings: Basic Principles of Biosafety (BSL1). Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.					
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.					
IBC Action/Decision:	Chair Approved				

Protocol:	23-292-A2	Amendment		Expiration Date:	11/12/2026
Title:	Bioelectronic devices for personalized medicine				
PI Name:	Gao				
Brief Description of Project: This project involves analyzing human fecal fluid samples to evaluate the performance of biosensors for detecting gastrointestinal biomarkers. All work is conducted under BSL-2 conditions following institutional biosafety protocols.					
Biological Materials Review Summary: Human stool samples collected under IRB approval are processed into fecal fluid for in vitro sensor testing and biomarker analysis. No pathogens are cultured or propagated in this study.					
NIH Guidelines:	N/A		Highest BSL Level:		BSL2
Training: This protocol requires the following biosafety trainings: Biosafety (BSL2), Bloodborne Pathogens, and Aerosol-Transmissible Diseases Training. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.					
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.					
IBC Action/Decision:	Chair Approved				

❖ W. Gao was recused from the discussion of this protocol.

Protocol:	24-296-A1	Amendment	Expiration Date:	3/12/2027
Title:	Mechanisms of interaction between gut microbiota and the immune system and nervous system			
PI Name:	Mazmanian			
Brief Description of Project: This amendment includes the removal of RG2 bacteria that fall under the Aerosol Transmissible Disease Standard.				
Biological Materials Review Summary: Removal of RG2 bacteria that fall under the Aerosol Transmissible Disease Standard.				
NIH Guidelines:	III-D, III-E, III-F	Highest BSL Level:	BSL2	
Training: This protocol requires the following biosafety trainings: Biosafety (BSL2) and Bloodborne Pathogens Training. With this amendment, Aerosol Transmissible Diseases Training is no longer required. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.				
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.				
IBC Action/Decision:	BSO Approved			

Protocol:	23-370-A2	Amendment	Expiration Date:	10/12/2026
Title:	Culturing of bacteria from isolates and clinical samples			
PI Name:	Ismagilov			
Brief Description of Project: This amendment includes an additional variant/strain for items already approved.				
Biological Materials Review Summary: Work in the lab for this amendment will utilize the following biological materials: - RG2 bacteria				
NIH Guidelines:	III-D, III-F	Highest BSL Level:	BSL2 w/ BSL3 practices	
Training: This protocol requires the following biosafety trainings: Biosafety (BSL2), Bloodborne Pathogens, and Aerosol-Transmissible Diseases Training. Personnel who have not completed the required training will not begin this work until all appropriate training has been completed and documented.				
Review Summary: All facilities, procedures, and practices have been reviewed by the IBC and are considered appropriate and acceptable.				
IBC Action/Decision:	BSO Approved			
❖ R. Ismagilov was recused from the discussion of this protocol.				

E. Personnel/Admin Amendments

- 22-271 Prober
- 23-323 Glover
- 22-355 Yang (CLOSED)

- 23-365 Hampton (CLOSED)

4. Other Business

A. Noncompliance Update

The BSO updated the committee on a noncompliance incident discussed at the May meeting and reported that the NIH required no further action.

B. IBC Minutes

The Committee reviewed the revised IBC minutes template.

C. Biosafety Measures and Facility Staff Training Update

The BSO updated the committee that biosafety training for the facilities staff will be done in groups with the supervisor of each respective facility's staff taking the responsibility to ensure all their staff are trained. The BSO also provided a brief overview of the new training matrix.

Meeting adjourned at 3:54pm

Next Meeting – July 1, 2025

Approved by the IBC 7/1/25