

INSTITUTIONAL BIOSAFETY COMMITTEE MEETING
August 20th, 2024
Zoom Meeting

MEMBERS PRESENT: *Chair:* Deidra Mountain, Liz Fozo, Ashley Carroll, Paul Dalhaimer, Lezlee Dice, Doris D'Souza, Kelsey Finnie, Brittany Isabell, Joseph Jackson, Andi Lear, Jessica Velez, Ling Zhao

Ex-Officio: Bryan Cranmore, Carolina Carter, Alanah Garner, Linda Hamilton, Daniel Thomas, Jessica Woofter

MEMBERS ABSENT: Bryce Burton, Reza Hajimorad, Tarek Hewezi, Jun Lin, Jae Park

Ex-Officio: Scott Moser, Brian Payne, Brian Ranger

OTHERS PRESENT: Ahmed Bettaieb, Marc Caldwell, Rebecca Trout Fryxell

Opening:

The IBC Chair called the meeting to order. The minutes for the July 16th, 2024, IBC Meeting were reviewed and approved as written.

Full Member Review IBC Registrations:

IBC-15-432-2 (Bettaieb, Ahmed) - Metabolic Functions of Protein Tyrosine Phosphatases and Their Interacting Partners – 3rd Year Rewrite (HDM, IA, Nano, RDNA)

Dr. Ahmed Bettaieb was present to discuss his registration. The purpose of the registration is to use lentivirus to either knock out, knock in, or mutate a gene of interest. Focus will be on key signaling proteins involving transaction of pathways involved in obesity, such as Diabetes pyruvate kinase M2 – involved in glycolysis by pathway or soluble epoxide hydrolase. In terms of risk, lentivirus protocols assembled in house using constructs will be used; for this, 3rd generations will mostly be used. Dr. Bettaieb's research will also use human adipose tissue that is collected either from the University of California Davis or UT Med Center. Also used are human cell lines, which are both primary and established cell lines; these cell lines are maintained and cultured in house and are used for the gene editing approaches. The human tissues from UT Med Center are sourced through Biobank. Upon review, it was found that the committee reviewer had minor comments that are editorial in nature. It was found that an individual had not been added to the lab personnel list and protocol. Because the research uses lentivirus, it was questioned if Dr. Bettaieb will need to complete the infectious agent form. The committee's discussion of the registration contained questions that may relate to clarifications of the forms. Upon committee discussion, it

was determined this registration is low risk. The committee voted to approve pending administrative corrections.

IBC-14-418-2 (Caldwell, Marc) - Bacterial and Viral Pathogenesis in Ruminant Models – 3rd Year Rewrite (IA)

Dr. Marc Caldwell was present to discuss his registration. Dr. Caldwell's research is using Mannheim Haemolytica to experimentally infect calves using a Brachy selective induction model; an endoscope is passed into the trachea to identify either the accessory tracheal bronchus or the main stem bronchi to deposit organisms CF used to initiate an infection. The base model is used to answer clinical questions. Dr. Caldwell's project has done: biomarker research; clinical illness scoring in precision agriculture work using accelerometers to assess illness behavior; and used the model to pull back cells from the BAL from the lower respiratory tract to inquiry those cells on their responsiveness in the backdrop of them whether they were translating infected in utero with BBD or not. The organism is usually generated in the lab, then put into one closed container, which is typically vials; this is then put into another closed container that is labeled biohazard. It is then transported after this. On the day of inoculation, Tyvek is worn; eye protection is not typically worn, but gloves are. With this study, a clean group, control group, and an infected group are used. The clean group is first, then the sham inoculum with sterile saline, then the follow up while PPE is worn; when completed, the disposable PPE is thrown away, and then cloth coveralls are worn. The cloth coveralls are laundered after each handling of the infected calf. Upon committee review, it was noted that there is no biosafety information regarding the animal work in the application; this information will need to be included in the registration. Information on the transportation of the pathogen between the lab and the location where the work will be performed will also need to be added to the registration. It was found that there is not an IACUC protocol or location in any of the forms; clarification on this will be needed. Once IACUC is approved, the facilities information will need to be added to the registration with the biosafety specific requirements of each location. The committee would like clarification on how infectious clothing would be handled at the end of sampling days. The committee voted to approve pending designated member review.

IBC-23-384-1 (Trout Fryxell, Rebecca) – Vector Ecology – 3rd Year Rewrite (IA)

Dr. Rebecca Trout Fryxell was present to discuss her registration. The research studies vector biology and ecology, and their associated pathogens. The research involves visiting different areas across Tennessee and other Southeastern US areas to collect mosquitoes, ticks, flies, and different arthropods that could be transmitting different pathogens. When they are collected, they are typically fixed in ethanol right away. The research also involves collecting mosquito eggs and rearing them from eggs to adults in the Johnson Facility. The risk is similar to walking outside without repellent; because of this, repellent is offered as a safety measure. Upon committee review, it was found that clarification on how the La Crosse virus is involved in the project narrative is needed. The committee voted to approve pending administrative corrections.

IBC-09-344-2 (Zhao, Ling) – Environmental Chemicals, Dietary Factors, and Obesity – 3rd Year Rewrite (HDM, NANO, RDNA)

Dr. Ling Zhao was present to discuss her registration. The registration is titled, “Exploring Dietary and the Pharmacological Factor for Fighting Against Obesity.” The research mostly works with white fat cells or brown fat cells that are mostly derived from mice origin or from human origin. The difficulty with fat cells is due to them having more lipids on the cell membrane; therefore, the approach to modify the gene pathways to introducing SHR and a small hairpin RNA to knock down indulgence gene expression, to overexpress the genes, or to do the CRISPR, Dr. Zhao relies on lentivirus based vectors in order to increase the efficiencies because the lentivirus has a higher affinity for mammalian cells. Mammalian cells have a special receptor that can be recognized by the virus protein; lentivirus is the best system for increasing transfection and infection efficiency to study at the molecular levels of how things work to address the mechanistic insights: how diets combined with pharmacological factors work to decrease white fat cell differentiation and inflammation; but at the same time, promote brown fat cell differentiation, their function, and also understand their underlying mechanistic. The research involves rDNA technology, human cell lines, and nanoparticles while seeking to gain translational insights. Collaborators from Arizona State make the lentivirus; then, nanoparticles are used to encapsulate the bioactive compound. The nanoparticles are made of biodegradable materials, but they are not made at UTK; they are shipped to UTK and tested in cell systems. Upon committee review, it was found that clarification on the shipping & receiving of infectious materials is needed. In the Scope of work section, more technical details concerning risk mitigation, containments, etc. are needed. The committee voted to approve pending administrative corrections.

IBC-06-277-2 (Sparer, Timothy) - Chemokines in Cancer and Cytomegalovirus – 3rd Year Rewrite (HDM, IA, RDNA)

Dr. Timothy Sparer is a urologist in microbiology that studies Cytomegalovirus. CMV causes birth defects and things of that nature. There are different types of CMV which are both organism specific; mouse CMV (MCMV) does not affect humans and the human CMV does not normally infect mice, unless genetic engineering is used. Both types produce chemokines, which are produced by the immune system and used to attract immune cells. The focus of Dr. Sparer’s lab is to understand the viral chemokines by expressing both types of CMV so that the effects as to their role in terms of virulence, dissemination, etc. can be studied. The research heavily involves genetic engineering to add the CMVs from human to the mouse version; then, they will be used to infect mice or used in tissue culture cell assays where the tissue culture cell response is looked at. In the infectious agent list, coronavirus, bovine coronavirus, and porcine transmissible gastroenteritis virus are included. It was noted that the safety assessment form lacks information. Dr. Sparer will need to address comments regarding what work he is doing with the coronavirus or PTGV specifically, along with expanding on details in the safety assessment form to explain how they will be handling work with the viruses. It was noted that the IACUC number in the registration is correct and active. Additional comments were made regarding whether the biosafety cabinet dates were correct. Clarification on vector concentration is needed. The committee voted to approve pending designated member review.

IBC-21-566-2 (Su, Chunlei) - Develop a System for Molecular Detection and Identification of Zoonotic Pathogens – 3rd Year Rewrite (HDM, IA)

Dr. Chunlei Su's registration involves using a metagenomic approach, multilocus sequence, and multilocus genotyping to detect overall a wide array zoonotic pathogens including viruses, bacteria, and fungi from animals and the environment. Dr. Su's research plans to extract nucleic acids sequences and type. They plan to use two viruses and one parasite using three cell lines; the viruses and parasite would be propagated in the lab. Samples will be collected from wild animals sought in the environment; it was noted that this poses a high risk. The committee found there are no details regarding specimens they will be using; the use of biological samples is not detailed. The committee would like to know how much will be collected, along with what the targeted animals are. It was assumed that those collecting wild animal samples will be trained. The committee requested that details on the levels for Toxoplasma be elaborated & added. It was questioned if, in the disinfectant section, the quaternary type needs to be specified or not. The committee reviewer had minor comments that are editorial in nature. The committee voted to approve pending administrative corrections.

Designated Member Review (DMR):

IBC-21-577-2 (Dalhaimer, Paul) Nano, RDNA – Amendment

IBC-21-567-2 (Joshi, Amit) HDM, RDNA, IA – 3rd-Year Rewrite

IBC-24-600-2 (Abouelkhair, Mohamed) HDM, IA – New Registration

IBC-24-601-2 (Burcham, Zachary) IA, RDNA – New Registration

IBC-24-602-2 (Ibberson, Carolyn) HDM, IA, RDNA – New Registration

Administrative Report

i. Contingencies (FMR)

(IBC-06-276-2, HDM, IA - Eda, Shigetoshi) This registration has been submitted to be reviewed at the 09/17/2024 meeting.

(IBC-12-385-1, RDNA - Fernandez, Elias) This registration has been submitted to be reviewed at the 09/17/2024 meeting.

(IBC-21-568-1, RDNA – Bruce, Barry) This registration has been submitted to be reviewed at the 09/17/2024 meeting.

(IBC-18-527-2, HDM, NANO – Mountain, Deidra) This registration has been submitted to be reviewed at the 09/17/2024 meeting.

(IBC-12-380-1, RDNA – Stewart, Neal) This registration is waiting on the PI.

(IBC-12-382-1, RDNA – Stewart, Neal) This registration is waiting on the PI.

(IBC-09-342-2, HDM, NANO, RDNA – Wall, Jon) This registration is waiting on the PI.

(IBC-15-430-2, IA, RDNA – Kerro Dego, Oudessa) This registration is waiting on the PI.

ii. *Contingencies (DMR)*

(IBC-12-376-1, RDNA – Stewart, Neal) On 05/15/2024, this was approved pending DMR. This registration is waiting for the PI to add the list of insert genes to be included in the submission.

(IBC-12-379-1, RDNA – Stewart, Neal) On 05/15/2024, this was approved pending DMR. This registration is waiting for the PI to add the list of insert genes to be included in the submission.

(IBC-21-557-2, NANO, RDNA – Dalhaimer, Paul) On 07/16/2024, this was approved pending DMR. This registration needs waste sections to be completed and is waiting for ABSO approval.

(IBC-21-567-2, HDM, RDNA, IA – Joshi, Amit) On 07/16/2024, this was approved pending DMR. The PI still needs to address comments. The form has been updated to include 2nd generation option for lentiviral vectors.

(IBC-24-600-2, HDM, IA – Abouelkhair, Mohamed) On 07/16/2024, this was approved pending DMR. The PI may be discontinuing all projects. This registration is pending PI confirmation.

(IBC-24-601-2, IA, RDNA – Burcham, Zachary) On 07/16/2024, this was approved pending DMR. This registration is waiting for LSS approval.

(IBC-24-602-2, HDM, IA, RDNA – Ibberson, Carolyn) On 07/16/2024, this was approved pending DMR. This registration is waiting for LSS approval.

iii. Administrative Approvals

(IBC-05-245-2, IA, RDNA, HDM – Reynolds, Todd) This registration was an annual update with no changes; the approval date was 07/22/2024. This has been approved by ABSO and was closed on 08/14/2024.

(IBC-05-238-2, RDNA – Chen, Feng) This registration was an annual update to include the addition of information about disinfectants; the approval date was 07/24/2024. This has been approved by ABSO and was closed on 08/14/2024.

(IBC-10-352-2 HDM, IA, RDNA – Fozo, Elizabeth) This registration was an annual update to include the addition of *Streptococcus agalactiae* A909 (Group B Strep), the addition of Vk2/E6E7 cell line (vaginal epithelial cell line from endometriosis case), updates to personnel listed, the addition of MSS 641A1A (Reynolds' tissue culture room), and updates to biosafety cabinet certification dates. The approval date was 08/13/2024; this was approved by ABSO and was closed on 08/14/2024.

(IBC-15-429-1, HDM – Dia, Vermont Punongba) This registration was an annual update with no changes; the approval date was 08/13/2024. This has been approved by ABSO and was closed on 08/14/2024.

(IBC-16-444-2, IA, RDNA – Denes, Thomas Gardner) This registration was an annual update with the addition of *Proteus mirabilis* and *Proteus vulgaris*; the approval date was 07/18/2024. This has been approved by ABSO and was closed on 07/18/2024.

(IBC-13-398-1 – Hewezi, Tarek) The original approval date is 06/15/2022. The registration is pending pre-review.

(IBC-20-549-2, IA, HDM – Hazen, Terry) The original approval date is 08/10/2023. The registration is pending pre-review.

(IBC-23-590-2, HDM, IA, RDNA – Shelby, Sarah Ann) The original approval date is 08/10/2023. The registration is pending EHS admin processing.

(IBC-23-592-2, IA – Anderson, David Edgar) The original approval date is 09/14/2023. The registration is pending pre-review.

(IBC-22-580-2, HDM, IA, RDNA – Burcham, Lindsey) The original approval date is 09/14/2022. The registration is pending pre-review.

(IBC-22-581-2, HDM – Chapel Gore, Ivis Francis) The original approval date is 09/26/2022. The registration is pending pre-review.

(IBC-23-593-1, VENOM – Hemingway, Claire) The original approval date is 09/21/2023. The registration is pending pre-review.

(IBC-05-240-1, RDNA – Von Arnim, Albrecht G) The original approval date is 09/14/2023. The registration is waiting on the PI.

(IBC-11-364-1, RDNA – Trinh, Cong) The original approval date is 09/14/2023. The registration is waiting on the PI.

(IBC-13-404-1, RDNA – Wilhelm, Steven W) The original approval date is 09/1/2023. The registration is waiting on the PI.

(IBC-16-446-2, HDM – Steadman, Dawnie Wolf) The original approval date is 09/26/2022. The registration is waiting on the PI.

(IBC-17-450-2, IA, RDNA – Trinh, Cong) The original approval date is 09/14/2023. The registration is waiting on the PI.

(IBC-19-538-1, RDNA – Zinser, Erik Ross) The original approval date is 09/14/2022. The registration is waiting on the PI.

(IBC-20-550-2, IA – Rajeev, Sree) The original approval date is 09/14/2023. The registration is waiting on the PI.

iv. Administrative Terminations

None

v. Administrative Exemptions:

None

vi. Accidents, Injuries/Exposures:

None

vii. Laboratory Report:

None

viii. Safety Status Update:

Stephenie Langston is the Director of Operations as Safety Stratus; she will be attending the next IBC meeting. Safety Stratus will be doing an onsite visit for this meeting.

Old Business:

i. RRR SOP Updates

During the July meeting, the committee had discussed modifying the SOP to include a grace period; this would allow more time for committee business after the submission of the registration to eliminate the need for the Chair to continually issue letters of expiration extension. These changes are aimed at integrating this into the SOP. This has been discussed; the committee voted on this item. The committee voted to approve as written.

New Business:

i. None

The IBC Chair adjourned the meeting. **The next meeting is tentatively scheduled for Tuesday, September 17th, 2024, 10:00AM- 12:00PM EST.**