

INSTITUTIONAL BIOSAFETY COMMITTEE MEETING

February 16, 2022

3:00 PM, Zoom Meeting

MEMBERS PRESENT: Chair- Elizabeth Fozo, Vice Chair-Stephen Kania, Paul Dalhaimer, Feng Chen, Lori Cole, Lezlee Dice, George Dizikes, Doris D'Souza, Brittany Isabell, Jun Lin, Deidra Mountain, Jae Park, Jessica Vélez, Ling Zhao

Ex-Officio – Bryan Cranmore, Linda Hamilton, Ahmad Mitoubisi, Brian Ranger, Jessica Woofter

MEMBERS ABSENT: Marc Caldwell, Reza Hajimorad

OTHERS PRESENT: Hameeda Sultana

Opening:

The IBC Chair called the meeting to order at 3:00 PM. The minutes of November 17, 2021, were reviewed and approved as written.

Full Member Review IBC Registrations:

#IBC-16-437-2 (Rachel McCord) Human Derived Materials & Infectious Agents, 3-year rewrite

Dr. McCord's is researching linear genome sequence functions in a three-dimensional context as chromosomes are folded and packaged into the cell nucleus. Three-dimensional folding has implications for the proper expression, replication, and repair of genes, and misfolding can lead to disease. This research will use a combination of microscopy and molecular biology techniques to investigate the three-dimensional structure of the mammalian genome. A complementary imaging approach will target a fluorescent protein to certain chromosomal regions using the new CRISPR approach in human and mouse cell lines so that the position of that genomic region can be monitored in live cells. Specifically, these techniques will be used to identify changes in 3D genome structure in the following systems: 1) B16-F1 mouse melanoma cell lines migrating through small pores, 2) nuclei isolated from GM12878 human lymphoblast cell line subjected to artificial physical perturbations, and 3) human K562 cell line cells expressing mutant protein progerin that mimics the cellular effects of the premature aging disorder Hutchinson Gilford Progeria Syndrome. Finally, the registration outlined SOPs for using a lentiviral vector delivery of the CRISPR/Cas 9 if transient transfections do not work. Containment was set at BSL-2. The committee voted to approve the registration as written pending the revision of the non-technical summary to be shortened and use more layman language, and include human-derived materials in the rDNA host table.

#IBC-19-535-1 (Scott Lenaghan) Recombinant DNA, III-E-2a, 3-year rewrite

Dr. Lenaghan's research studies the improvement of relevant crops through the metabolic

engineering of chloroplasts. This research includes increasing the efficiency of photosynthesis in potatoes, designing and installing synthetic chloroplast genomes in tobacco, and developing sense-and-report circuits in potatoes. Chloroplasts will be engineered by transforming native plastids with DNA constructs and integrating the transgenic DNA. The committee approved the registration pending correction of minor typographical errors in the non-technical summary, clarification about procedures and handling of transgenic plants prior to autoclaving, the addition of prime before UTR in the technical summary, and clarification about "natural bioconfinement" in the last paragraph.

#IBC-21-562-2 (Hameeda Sultana) Recombinant DNA, Infectious Agents, & Human Derived Materials, Amendment

Dr. Sultana was present to discuss their research covering the study of molecular mechanisms at the flavivirus-mosquito-vertebrate host interface and the transmission of pathogens by the vectors. Her amendment will cover the study of the pathogenesis with WNV/HSF11 and ZIKV. Sultana laboratory works with mosquito-borne flaviviruses such as Dengue Virus (serotypes 1-4; DENV1-4), Zika Virus (ZIKV), and West Nile Virus (WNV). Experiments related to DENV, ZIKV, and WNV will be performed at Biosafety Level-2 (BSL2) laboratories (A329 and A329A), making them ideal model pathogens to study molecular mechanisms of flavivirus-vector-host interactions. The committee approved to review of the registration through Designated Member Review (DMR) pending the correction of Question 7.3 to indicate "Yes" for centrifugation; an addition to the Technical Summary a statement that cages are completely enclosed, a description of risk prevention measures, clarification about animal care plan, correction of minor typographical errors; correction of Question 10.6 to indicate the use of scalpels; and the addition of an IBC-approved animal facility.

Designated Member Review IBC Registrations - None

Old Business:

Administrative Report

i. Contingencies

Following up on November 17, 2021, IBC Meeting, Dr. Neal Stewart's registration (#12-393-1) was corrected to include the addition of clarification about the method(s) used for disposing of transgenic plant material, the disinfection procedures for safety glasses, and the inclusion of an updated promoters list. Dr. Alison Buchan's registration (#15-431-1) was corrected to include insert genes and target genes used and the disinfection procedures for lab coats and safety glasses. Dr. Joseph Jackson's registration (#21-573-2) was corrected to include the addition of a description of the lentivirus production and use for transduction; checking Question 6.12 as "Yes"; correction of the spelling for Murine Cytomegalovirus in Question 7.1; addition of the volume range for viruses; clarification of HCMV use; correction of 1000% CPE to 100% CPE in Question 9.1; the correction of the lab animal facility from UTMCK to Mossman; and the replacement of the health surveillance statement to read "All personnel handling human-derived materials are offered the hepatitis B vaccine as required by (T)OSHA and the UT Biosafety Program." Dr. Andrea Lear's registration (#21-574-2) was corrected to include the addition of a statement regarding centrifugation and

resuspension as well as the use of sharps in the Technical Summary; clarification of "...animals will receive 10 – 10 median tissue culture infective dose (TCID50) of the viral isolate in 5 7 MEM (2 ml aliquot/nostril)..."; and the correction of the freezer storage location.

ii. Administrative Approvals

None.

iii. Administrative Terminations

Dr. Neal Stewart's registration (#21-564-2) was administratively terminated on 2/22/2022.

iv. Administrative Exemptions:

None.

v. Accidents, Injuries/Exposures:

None.

vi. Laboratory Report (Hamilton)

None.

vii. iMedRIS Update, Manual Reviews, & System Orientation (Woofter)

None.

New Business:

New Community Representative & Committee Member

The committee welcomed its newest member, Dr. Jessica Velez, who will be serving as a community representative for the IBC. She is a graduate of the University of Tennessee and currently works for the Genetics Society of America.

Human Gene Therapy Trials

Brian Ranger notified the committee that the IRB chair from the UT Medical Center reached out to have the UTK IBC possibly review human gene therapy trials. The medical doctors involved would not be affiliated with UT, and reporting structures would not be similar to other academic departments affiliated with UT. Brian explained that the UTK IBC is not set up to take on the liability and has not been conditioned to review human gene transfer protocols. Brian recommended they seek a third party to administer these reviews and oversight.

IACUC Triennial SOP Review (Using Sharps in Animal Research & Teaching Environments)

Linda Hamilton notified the committee that the "Safe Handling of Sharps Devices in Animal Research & Teaching Environments" is in the process of being revised in coordination with Bryan Cranmore, Alicia Robino, and Brian Ranger. The revised document will reiterate that needles are not to be recapped, sharps should be disposed of in FDA-approved biohazardous sharps containers, and justifications for recapping must be evaluated on a case by case basis. A new web form was developed to capture justifications for recapping. These outlined procedures only apply to animal work or teaching environments.

The meeting adjourned at 5:09 PM. The next meeting scheduled is for March 22, 2022, via Zoom.