INSTITUTIONAL BIOSAFETY COMMITTEE MEETING
September 15, 2021
3:00 PM, Zoom Meeting

MEMBERS PRESENT: Chair - Elizabeth Fozo, Vice Chair-Stephen Kania, Marc Caldwell, Feng Chen, Lori Cole, Paul Dalhaimer, Lezlee Dice, George Dizikes, Doris D'Souza, Reza Hajimorad, Jun Lin, Deidra Mountain, Ling Zhao

Ex-Officio – Bryan Cranmore, Linda Hamilton, Ahmad Mitoubsi, Sarah Pruett, Brian Ranger, Jessica Woofter

MEMBERS ABSENT: Brittany Isabell, Jae Park

OTHERS PRESENT:

Opening:

The IBC Chair called the meeting to order at 3:00 PM. The minutes of August 18, 2021, were reviewed and approved as written.

Full Member Review IBC Registrations:

#IBC-09-344-2 (Ling Zhao) Human Derived Materials, Nanoparticles, & Recombinant DNA, III-D-3, 3-year rewrite
Dr. Zhao's registration covers: (1) identification and characterization of environmental chemicals that contribute to obesity (i.e., obesogenic) and (2) identification and characterization of dietary factors, encapsulated in nanoparticles or not, that have potential to prevent and/or treat obesity. Two types of cellular models of adipogenesis will be used: white adipocyte and brown adipocyte. The effects of environmental chemicals or dietary factors in promoting or inhibiting conversion of precursor cells into mature white adipocytes and/or mature brown adipocytes will be assessed. Lentiviral vector systems will be use to either overexpress or knock down (shRNA) endogenous genes of interest, primarily those related to glucocorticoid signaling and transcriptional regulation. Briefly, replication incompetent lentiviral vector constructs will be packaged in HEK293 cells, purified and used for various in vitro assays on primary human stromal cells. Similarly, adenoviral vectors will be used to introduce dominant negative forms of signaling molecules (e.g. IkB) to demonstrate the consequences of blocking a specific signaling pathway. Finally, pGL3-luciferase reporter constructs will be use to study the transcriptional response to various dietary and environmental stimuli. The safety practices and containment were set at BSL-2. The committee approved the registration pending a title change to "Fighting obesity and breast cancer with natural products and diet"; correction of typographical error in non-technical summary; the addition of clarification about what is done with the breast cancer cell lines versus the obesity cell lines; and correction of a typographical error in the laundering procedures.

#IBC-14-418-1 (Marc Caldwell) Infectious Agents, 3-year rewrite
Dr. Caldwell is investigating bacterial and viral pathogenesis in large animal models. One model investigates the role of *Mannheimia haemolytica* in pulmonary inflammation and bronchopneumonia in a calf model. Additionally, the mechanisms whereby bovine viral diarrhea virus (BVDV) causes primary respiratory infection along with immunosuppression, as well as reproductive pathologies in cattle, sheep, goats, or pigs, will be investigated. Animal Hazard Control Forms detailing biosafety and biosecurity measures are available for all approved animal protocols. Briefly, (A)BSL-2 biosafety/biosecurity measures include limiting contact with infected animals to authorized study personnel, avoiding trafficking to other areas of the research facility after handling infected animals, rigorous disinfection of contaminated surfaces, and suitable PPE. The committee approved the registration pending an update to the biosafety cabinet certification date and the attachment of the AHCF for associated IACUC protocols.

#IBC-15-430-2 (Oudessa Kerro Dego) Recombinant DNA & Infectious Agents, III-D-1-a, 3-year rewrite
Dr. Kerro Dego's registration covers the testing and identification of known virulence factors of *Escherichia coli, Staphylococcus aureus*, *Mycoplasma bovis*, and *Streptococcus uberis* isolates from bovine mastitis using standard and special culture methods and PCR. The research objectives also include co-incubating *E. coli, S. aureus*, or *S. uberis* with mammary epithelial cell line (MAC- T cells) and evaluation of bacterial gene expression patterns by real-time PCR or RNA-Sequencing. Both methods will help evaluate the presence of zoonotic and foodborne pathogens in the dairy farm environment. Several other Risk Group 2 pathogens may be used as reference strains for these assays. Additionally, gene knockouts will be created in *S. aureus*, *E. coli*, *M. bovis,* and *S. uberis* via overlapping extension PCR/homologous recombination using temperature-sensitive shuttle vectors. The committee voted to approve the registration pending the inclusion of all students involved in the study; the addition of strains (i.e., *S. dysgalactiae, T. pyogenes*); checking question 7.1 to "Yes" to indicate IACUC work; clarification about challenge models listed; clarification about *Mycoplasma bovis* use; clarification about how samples are being processed; clarification about plating and high-risk procedures that could involve aerosol generation; identification of disinfectants used in the spill response; and the attachment of AHCFs for IACUC protocols and approval letter from the State Vet.

#IBC-18-527-2 (Deidra Mountain) Human Derived Materials, Nanoparticles, 3-year rewrite
Dr. Mountain's research covers the optimization of liposome development for peripheral vascular therapeutics and theranostics via lipid surface modifications for co-localization to vascular injury and design a cell selective nanocarrier system capable of differentially targeting vascular cell types in order to simultaneously deliver molecular therapeutics with opposing modes of actions. The committee reviewed this registration the description of how listed human-derived materials are used; correction of typographical errors in the technical summary; clarification of saRNA; and the removal of the old autoclave date in the solid/non-sharp waste section.

Old Business:

Administrative Report

i. *Contingencies*

Following up on August 18, 2021, IBC Meeting, Dr. Shigetoshi Eda's registration (#06-276-2) was updated to include the addition of procedures and outcome measures to the non-technical summary; checking "on-campus collection/researcher" for the Tulane virus, Hepatitis A virus, and murine norovirus; correction of typographical errors; checking "yes" to indicate centrifugation; clarification regarding *E. coli* and Tulane virus usage; clarification in the technical summary about needle and slide usage; the addition of the uprose and aims of the project to the technical summary; a brief description of all methods needs to be added; clarification about type of serological test being developed; addition of the methods beings used for *S. uberis* detection; correction of IACUC information; correction of the source for the calicivirus; the addition of the methods for HAV and MNV assay development; the correction of the OHP nurse information; and removed mention or use of CWD. Dr. Jon Wall's registration (#09-342-2) was update to include correction of minor typographical issues; clarification of what tissues in humans will the cDNA be isolated from, what are the "proteins of interest," mouse response to injection of human proteins, and are SCID mice used; clarification about the source of the nanoparticles, how is siRNA coated with the nanoparticles; clarification of how is siRNA not getting degraded in the vasculature of the mice; and clarification of "200 | NP/siRNA" in the technical summary. Dr. Neal Stewart's registration (#12-380-1) was updated to include changes to the title to reflect the project's scope; addition of information to the summaries regarding "other" listed genes; addition of a statement that work with plant pathogen resistance is inactive and that the committee will be notified upon work activation; and an update regarding off-campus collaborator information. Dr. Neal Stewart's registration (#12-382-1) was updated to include the departmental approver; the addition of information in the technical summary regarding the AtPAP1 reporter gene; an update of the autoclave validation date; and correction of the medical contractor from Stericycle to Advantra. Dr. Gladys Alexandre's registration (#12-392-1) was updated to include updates to the research and storage sites listed; removal of the autoclave and addition of the medical contractor, Advantra, to reflect the new waste procedures; and the completion of the biohazardous sharps waste section.

ii. *Administrative Approvals*

Dr. Albrecht von Arnim's amendment to their registration (#05-240-1) was approved by the IBC Chair on 9/30/2021 to include the addition of new plant hosts (*Pisum sativum* (garden pea), *Nicotiana benthamiana*), and new insert genes (herbicide resistance genes such as Basta-resistance, antibiotic resistance genes such as kanamycin resistance for the selection of transgenic plants). Dr. Todd Reynold's amendment to their registration (#05-245-2) was approved by the IBC Chair on 9/30/2021 to include the addition of new fungi hosts (*Aspergillus sydowii* and *Baudoinia compniacensis*) and the addition of new bacterial hosts (Bacillus *licheniformis, Bacillus brevis, Bacillus cereus* (BSL1 from BGSC at Ohio State U. [This is not *B. cereaus biovar anthracis*]), *Bacillus lentus*). Dr. Maitreyi Das' amendment to their registration (#13-412-1) was approved by the IBC Chair on 9/30/2021 to include the updates to personnel listed, updates to grant information, the addition of *Pichia pastoris*, and the update to the autoclave validation dates.

iii. Administrative Terminations
Dr. Stephen Kania's registration (#20-553-2) was terminated on 9/21/2021.

iv. Administrative Exemptions:
None.

v. Accidents, Injuries/Exposures:
None.

vi. Laboratory Report (Hamilton)
None.

vii. iMedRIS Update, Manual Reviews, & System Orientation (Woofter)
None.

Subcommittee Report

The subcommittee consisted of Dr. Stephen Kania, Dr. Deidra Mountain, Dr. Brad Binder, and Ms. Lezlee Dice. Dr. Kania presented the committee findings to the IBC. Overall, the subcommittee found that the IBC complies with NIH Guidelines for Research involving Recombinant DNA Molecules and other responsibilities assigned to it by the University of Tennessee. The greatest challenges facing the IBC and biosafety program involve communication, staffing, and administrative organization. The subcommittee recommended to increase staffing to a minimum of two full-time positions in the biosafety unit to adjust for future needs as the program expands. The subcommittee also found that while consolidation of compliance efforts into the EHS Office has merit, it has also created barriers to the flow of information and coordination of tasks related to compliance activities normally associated with research.

New Business:

None.

The meeting adjourned at 5:04 PM. The next meeting scheduled is for October 20, 2021, via Zoom.