

## INSTITUTIONAL BIOSAFETY COMMITTEE MEETING

August 3, 2016

3 PM, 333 Plant Biotechnology Building

MEMBERS PRESENT: Chair, Jun Lin; Seung Baek, David Bemis, Tamara Chavez-Lindell, Paul Dalhaimer, Elizabeth Fozo, Al Iannacone, Melissa Kennedy, Reggie Millwood, , Jae Park (3:12 PM), Ling Zhao

Ex-Officio – Linda Hamilton, Scott Moser, Brian Ranger, Jessica Woofter

MEMBERS ABSENT: Patti Coan, Doris D'Souza, Reza Hajimorad, Brittany Isabell, Deidra Mountain

OTHERS PRESENT: None

### Opening:

The Chair called the meeting to order at 3:00 PM. The minutes of June 21, 2016 were reviewed and approved as written.

### IBC Applications:

#### **#313-16 (Elena Shpak) Recombinant DNA Registration, III-E-2-a, 3-year rewrite**

Dr. Shpak's research involves the generation of transgenic *Arabidopsis thaliana* plants to investigate the mechanisms regulating plant size and shape. Recombinant constructs are designed so that growth-related genes are either overexpressed or turned off. Briefly, Agrobacterium strains carrying recombinant binary vectors are grown overnight and used to inoculate the aboveground parts of plants (dipping). Seeds are harvested and selected for transformants using antibiotic or herbicide selectable markers. Following analysis, seeds/plants are autoclaved and disposed. The committee approved the registration pending clarification of the prospective insert genes, re-validation of autoclaves used to devitalize seeds/plants, and minor administrative corrections. The containment level was set at BSL-1/BL-1-P.

#### **#349-16 (Michael Karlstad) Infectious Agents Registration, 3-year rewrite**

Dr. Karlstad's research examines the effect of atmospheric plasma treatment on wound healing of splinted excisional wounds in biofilm-challenged SWR/J (normal) and TallyHo/JngJ (diabetic) mice. Surgical incisions will be performed, followed by inoculation with routine isolates of *E. coli* (nontoxigenic), *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Staphylococcus aureus* (methicillin-sensitive and resistant). Wounds are then treated with atmospheric plasma and analyzed to determine its effect on the rate of surgical site healing. Cage changes, disease challenges and necropsy are all to be performed in Dr. Karlstad's Class II BSC. The committee approved the registration pending completion/clarification of strain characteristics, including toxin production and antibiotic resistance profiles, correction of BSC certification date, and minor administrative corrections. The containment level was set at BSL-2.

#### **#354-16 (Paul Dalhaimer) Recombinant DNA Registration, III-E, 3-year rewrite**

Dr. Dalhaimer's research covers the molecular mechanisms of lipid droplet (LD) formation. LDs are especially prevalent in mammals that are obese or diabetic. Genes encoding neutral lipid synthesis enzymes as well as genes involved in the formation of endoplasmic reticulum are being studied using

*Schizosaccharomyces pombe* as a host. Established molecular biology techniques, including cloning, transformation, and homologous recombination will be used to generate recombinant *S. pombe*. The containment level was established at BSL-1. The committee approved the registration as written.

#### **#434 (Colleen Jonsson) Human Derived Materials, Infectious Agents & Recombinant DNA Registration, III-D-2, Amendment**

Dr. Jonsson's amendment covers the use of a third-generation lentiviral vector system (pSin; Addgene) to express genes from the three genome segments of the Prospect Hill virus (PHV), a Risk Group 2 hantavirus that does not typically infect humans. Briefly, each construct contains a gene of interest cloned under the control of the EF1 $\alpha$  promoter and a unique selectable marker expressed from an IRES element. The three constructs are co-transfected into HEK293T with rescue plasmids to generate replication-incompetent lentiviral particles carrying hantaviral genes. Particles are isolated and used to stably transduce fresh HEK293T cells. Hantaviral protein expression will be measured by Western blot and various assays. Ultimately, the transduced cells will be used to generate hantavirus-like particles that can be used for reporter assays and as a reverse genetic system to study the relative fitness of various PHV genetic variants. The committee approved the amendment pending general editorial review/corrections of syntax, typos, etc. Containment was set at BSL-2 per the risk category of PHV and standard safety features of the lentiviral vector/packaging system.

#### **#441 (Jeremiah Johnson) Infectious Agents & Recombinant DNA Registration, III-D (1, 2, 4), New registration**

Dr. Johnson's research investigates the factors that affect *Campylobacter jejuni* colonization in natural chicken hosts. He will use a both wild type and genetically modified strains of *C. jejuni* to identify and characterize genes/proteins involved in colonization. Briefly, genes of interest (e.g. heme-utilization genes) will be knocked out via homologous recombination with insertion/deletion constructs (based on pGEM T-Easy). Complementation constructs will be used to restore the deleted gene/function. Finally, genes of interest will be subcloned and expressed in *E. coli* hosts for recombinant protein production (to be used in various downstream assays). Recombinant strains will be used to study heme utilization and mechanisms of resistance to bacteriostatic compounds. Additionally, wild type *C. jejuni* will be used in animal models to determine the effects of persistent infection on gut health. *Listeria monocytogenes*, *Salmonella enterica* Typhimurium, *Campylobacter coli*, and *Klebsiella pneumoniae* will be used as controls in several comparative assays. The committee approved the registration pending clarification of virulence characteristics of *L. monocytogenes* PrfA\* phospholipase mutants, inclusion of control strains in the non-technical summary, and completion of BSC certification information. Containment was set at BSL-2.

#### **Old Business:**

##### Administrative Report

Brian Ranger provided the administrative report. Following up on June 21, 2016 IBC meeting, Dr. David Golden's registration (#299-16) was updated to include Dr. Faith Critzer's training information. Dr. Faith Critzer's registration (#399-16) was updated to include her training information. Dr. Steve Wilhelm's registration (#404-16) was updated to include a statement in the technical summary that off-target effects which would increase the risk of the heterologous *E. coli* host are not anticipated. It was also noted that the SERF 6<sup>th</sup>-floor autoclave has been delivered and awaiting installation, but BSC certification is pending. Dr. Colleen Jonsson's registration (#434) was updated to include the verification of BSL-2 competency and SOP congruency by users completed for listed personnel. Dr. Faith Critzer's amendment to registration #399-16 was administratively approved by the IBC Chair to include transfer of Dr. P. Michael Davidson's foodborne pathogen cultures to her inventory. Approval was for the addition of species not currently listed in #399-16, specifically *Bacillus cereus*, *Clostridium perfringens*,

and *Staphylococcus aureus* (no changes in procedural scope or containment requirements). Dr. Davidson's registration (#300-13) was administratively terminated (retirement). Dr. Valerie Berthelie-Jung's registration (#348-13) has been administratively terminated, and all materials have been destroyed or disposed of according to GSM SOPs for biowaste disposal. Dr. Jaana Mannik's registration (#427) has been administratively terminated, and all primary human tissues have been returned to UTMCK for disposal as pathological waste. There was one reported injury at the FAC Anthropology Research Facility. A volunteer scraped her stomach on wire caging used to cover the decomposition sites while moving it. The caging was associated with soil near the remains. The individual followed appropriate BBP/injury response protocols and was examined and treated at UTMCK according to BBP risk. FAC staff have been given precautionary reminders and instructed to review cage handling procedures, reduce exposed edges, etc. Linda Hamilton provided a brief update of laboratory inspections. All BSL-2 lab audits have been completed, and she is currently working on the BSL-1 labs. October will begin the concurrent annual update/audit procedure. CVM diagnostic labs will also be inspected during the Fall semester. Finally, Linda indicated that eyewashes are still an issue, and that other potential emphasis areas (aerosol containment procedures) have been identified.

#### iMedRIS Update

Jessica Woofter gave the committee a brief update on iMedRIS and provided a sample introductory training video.

#### Teaching Lab Program Update

Brian notified the committee that he is currently working with Dr. Libby Barker, MABE, to set up a biomechanical engineering training lab. He will be contacting department heads for a list of other affected courses.

#### **New Business:**

#### Annual Report (FY16)

Brian provided the FY16 Annual Report for review/comment. Recommendations were made to identify outliers and explain the reduction in annual lab inspections (based on new 1x/year procedure).

#### Division of Biology Annual Safety Training, August 16th

Brian notified the committee that the Division of Biology annual safety training is scheduled for Tuesday, August 16<sup>th</sup> (8:30-4:30; 302 Earth & Planetary Sciences).

#### Biosafety and Biosecurity Training Course recap (Hamilton)

Linda gave a brief recap of the BBTC (Ft. Collins, Colorado).

The meeting adjourned at 4:04 PM. The next meeting has been tentatively scheduled for August 24, 2016 starting at 3 pm.