

INSTITUTIONAL BIOSAFETY COMMITTEE MEETING
December 14th, 2023
Zoom Meeting

MEMBERS PRESENT: *Chair:* Elizabeth Fozo, *Vice Chair:* Deidra Mountain, Lori Cole, Lezlee Dice, Doris D’Souza, Brittany Isabell, Joseph Jackson, Andi Lear, Jessica Velez, Ling Zhao

Ex-Officio: Christopher Baker, Bryan Cranmore, Carolina Dolislager-Carter, Linda Hamilton, Sandra Prior, Brian Ranger, Daniel Thomas, Jessica Woofter

MEMBERS ABSENT: Paul Dalhaimer, Ashley Carroll, Reza Hajimorad, Tarek Hewezi, Jun Lin, Jae Park

OTHERS PRESENT: Alanah Aldridge, Joshua Baccile, Michael Danquah

Opening:

The IBC Chair called the meeting to order at 12:00 PM. The minutes for October 18th, 2023, IBC Meeting were reviewed and approved as written.

Full Member Review IBC Registrations:

#IBC-23-596-2 (Michael Danquah) Infectious Agents & Nanoparticles, New Registration

Dr. Danquah was present to discuss his study regarding the development of aptasensors for detecting *Staphylococcus Aureus*, representing a significant advancement in food safety monitoring. The process involves designing and synthesizing specific aptamers that selectively bind to *S. Aureus* surface proteins. The technique begins with developing DNA shots for DNA or RNA molecules, which are developed using computational approaches to target specific membrane proteins on the pathogen of interest. After the sequences are sent to an external lab for synthesizing, the synthesized aptamers are used for developing the sensors; Electrochemical and optical senses and approaches are used during this step. *Staphylococcus Aureus* is primarily used during testing after the sensors are developed. The primary function of the registration is to enable the process for detecting, growing small cultures, and testing of *Staphylococcus Aureus* on a more routine basis. The process for creating sensors from the aptamers involves the creation of electrodes made from varying materials, along with immobilization of the conductive glass plate and the aptamer; once the aptamer binds to the target, the Conductivity Effect or Refractive Index Changes will be measured upon binding.

The committee noted that Dr. Danquah’s biosafety cabinet is still on order. The technical description is not as well explained. It was noted that this section needs to be explained in more detail. The committee would like to see further explanation of the detailed biosafety procedures,

such as details of hands-on activities and how the experiments are performed. The biosafety procedures section mentioned that work would be done in a laminar flow hood; it is assumed that this is an error and should read biosafety cabinet. Still, the committee would like to see this corrected in the biosafety cabinet. It was questioned whether vacuum line protection should be added to the engineering controls. In the propagation and subculturing of the staph, there would be in-line aspiration of culture median. This engineering control could have been left out or possibly not. This needs clarification. In the antibiotic resistance question, it was selected as “non-applicable.” Assumptions can be made based on this; however, the committee agrees there should be further explanation on what staph strains are being used due to the capability of certain staph strains to produce dangerous toxins. If no vacuum line is used for the aspiration, Dr. Danquah could be pipetting the solution off. Despite this, the committee would like to know how it is being treated. The committee voted to approve the registration pending designated member review to assess changes, especially focusing on the area concerning staph and their toxin byproducts.

#IBC-20-556-2 (Joshua Baccile) Recombinant DNA & Human Derived Materials, 3rd-year Rewrite

Dr. Baccile was present to discuss his study regarding engineering protein-based soft materials for biomedical purposes. The study involves experiments with bacteria expressing recombinant proteins, none of which are harmful proteins. The study also uses B-strains of *E. Coli*, *DH5alpha*, *Bacillus Subtilis*, and *BSL-1 mammalian cancer cell lines*. It was noted that *Bacillus Subtilis* is used for testing synthetic probes and inhibitors. Safety procedures include using a registered biosafety cabinet, goggles, and lab coats. After use, items are sterilized with 10% bleach, and surfaces are sprayed with 70% ethanol. Safe laboratory practices are applied; lab personnel have completed biosafety training online. Dr. Baccile’s research also involves cloning, which is part of the rDNA (PCR). Human derived primary samples are not used in the study. *U-87 (Glioblastoma line)*, *MDA-MB-231 line*, and *A-375* are all BSL-1 lines but will be handled with BSL-2 care. Dr. Baccile’s work utilizes the overexpression of telechelic, isomerase, and esterase proteins. The use of telechelic proteins is to make material, essentially nonenzymatic proteins. The isomerase protein sequence was originally derived from humans, specifically in the isoprenoid pathway. Limited work with esterase proteins is involved in the research. The experiments heavily involve growing *E. Coli* and observing the growth rates and responses of synthetic compounds. The biosafety cabinet used was not originally included in the registration. Dr. Baccile stated that the biosafety cabinet is inspected annually and registered with the University. The biosafety cabinet is in an isolated room within the lab, used specifically for mammalian cell cultures.

The committee noted that the application was incomplete; there is a lack of information regarding biosafety cabinets and information concerning the use of plasmids. The project narrative is difficult to understand; the committee suggests that Dr. Baccile rewrites this in a manner that is easier for others to understand. More information needs to be added to the section titled “*Detailed Biosafety Procedures.*” Details regarding what is being expressed, how it is being expressed, and cleanup must also be added to the section. The committee also found that Dr. Baccile needs to complete information regarding how PPE would be cleaned, laundered, and stored. The committee voted to table this registration because the application was incomplete.

#IBC-08-334-1 (Gladys Alexandre) Recombinant DNA, 3rd Year Rewrite

Elizabeth Fozo was present to discuss this study. Dr. Alexander's research involves the study of soil bacteria and their movement to plants. The rDNA-based protocols focus on how the bacteria move and any metabolic interactions between the plants. The study involves cloning the different genes of interest onto plasmids that are, in some cases, considered "knock-out plasmids." This originates from the idea of "knocking out" specific genes in the organisms that are being studied. In addition, other plasmids are used for complementation or overexpression. In the section titled "*Detailed Biosafety Procedures*," the committee found that a summary is needed detailing how Dr. Alexander is generating the rDNA molecules and how the rDNA technology is being used. The committee voted to approve the registration pending designated member review to evaluate the addition of technical information.

#IBC-10-330-2 (Eric Boder) Human Derived Materials & Recombinant DNA, 3rd Year Rewrite

Lezlee Dice was present to discuss Dr. Boder's registration. The study aims to understand, control, and use membrane proteins and protein switches. The committee questioned whether all agents used and described are listed in the proper sections. The only cell line of concern is BL-21 *E. Coli* – this was found in the technical summary but not in the itemization list. It was agreed that the *E. Coli* strains need to be specified in both registration areas for clarification. The autoclave validation date was questioned; this will depend on whether Advantra or liquids are being used. The committee found that there were missing yeast genes in a section of the registration. While vectors are being created during the study, they are not listed accordingly as vectors being used. Plasmid origins and sources need to be listed and explained. The committee found that clarification is needed on which *E. Coli* strains are being used, along with their capacity. The review found that cell types, plasmids, and vectors found in the technical summary need to be represented in the itemized lists. The committee voted to approve the registration pending designated member review to verify changes have been made to align the technical summary with the Plasmid and Vector profile segment.

Administrative Report

i. Contingencies

(IBC-05-265-2) Dr. Jun Lin's registration was contingent pending the correction of the IACUC numbers, indication of "Yes" for a centrifugation question 7.7, trimming of the Technical Summary, clarification about work with polymyxin-resistant strains, clarification if lab members and their fit testing, addition of autoclave validation date, and an edit to the exposure time to make the assumption that Shiga is present and use the 60 minute inactivation period. Dr. Lin stated that the IACUC numbers listed are active, and any new animal studies related to this IBC registration will be subjected to IACUC approval in the future. Dr. Lin clarified that work will continue with the polymyxin-resistant strains listed and indicated lab members have been enrolled in the fit testing program. Dr. Lin indicated the validation date

was unnecessary because there is no requirement for validation. In addition, they don't have a SOP for liquid autoclave validation. Dr. Lin corrected the registration to indicate that work with Shiga toxin gene-free *E. albertii* strains will be performed and that a 20-minute autoclave inactivation period would be sufficient. This was approved by FMR on 10/18/2023 and closed on 11/13/2023.

ii. Administrative Approvals

(IBC-09-389-2) Dr. Graciela Cabana's registration is a 3rd-year renewal of human-derived materials registration involving the use of archaeological mortuary specimens (long-deceased humans), blood, body fluid, skin, hair, fingernails, human teeth, and human cellular material found within soils from various locales. This registration's approval was pending signoff by the BSO and was closed on 12/12/2023.

(IBC-13-409-2) Dr. Franc Barrera Olivares's registration is an annual update pending review and approval by the LSS review.

(IBC-14-418-2) Dr. Marc Caldwell's registration is an Annual Update with updates to spill response and biosafety cabinet information. This registration was approved by the BSO and closed on 11/14/2023.

(IBC-12-393-1) Dr. Neal Stewart's registration is an Annual Update with updates to personnel and autoclave validation dates. This registration was approved by the BSO and closed on 11/16/2023.

(IBC-19-540-2) Dr. Elizabeth Barker's registration is an Annual Update with the addition of St. Jude patient-derived tumor cells, the addition of in vivo treatment of mouse models to the technical summary, Mossman LAF location, an update to the biosafety cabinet certification date, and the use of needles and scalpels. This registration was approved by the BSO and closed on 11/29/2023.

(IBC-19-539-2) Dr. Jennifer DeBruyn's registration is an Annual Update with disinfectant contact time and shelf life updates. This registration was approved by the BSO and closed on 11/15/2023.

(IBC-21-573-2) Dr. Thomas Denes's registration is an Annual Update with updates to grant information, the addition of *E. coli* and *Shigella* spp., the addition of FSP 25A location, updates to BSC certification, and the addition of -80C freezer, refrigerator, and razor blades. This registration was approved by the BSO and closed on 11/28/2023.

(IBC-22-584-2) Dr. Andrew Monteith's registration is an Annual Update with an update to the rDNA Host table to include the addition of Murine hematopoietic stem cell and progenitor cells (HSPCs) for hosts, ecotropic retrovirus generated from Plantinum-E packing cell line for vectors, commercially available guide sequences for promoters and insert genes, and an update to the IRB number. This registration was approved by the BSO and closed on 11/29/2023.

(IBC-23-595-2) Dr. Maureen Groer's registration is a new registration for human-derived materials involving human plasma and peripheral blood mononuclear cells from pregnant women and cord blood samples from umbilical cords. This registration was approved by the BSO and closed on 12/21/2023.

iii. Administrative Terminations

(IBC-21-571-2, IA and Nanoparticles) Dr. Sree Rajeev's registration on Leptospira Research was terminated and closed on 11/28/2023.

iv. Administrative Exemptions:

None

v. Accidents, Injuries/Exposures:

None

vi. Laboratory Report:

Old Business:

i. Safety Stratus Update

There have been issues with notifications, but Jessica Woofter is working with Safety Stratus's support team to fix the issues.

New Business:

ii. Jessica Woofter shared that EHS has a new admin. Bailey Tutor has moved over to Industrial Workers Safety within EHS. Alanah Aldridge is the new admin with EHS, who will be helping with the IBC. Jessica Woofter will still be here to help, but Alanah will be taking over the majority of the committee management.

iii. Brian Ranger has filed the annual IBC Registration with the Office of Science Policy. The Office of Science Policy has requested three working weeks for the review and approval.

The IBC Vice Chair adjourned the meeting at 1:11 p.m. The next meeting has been scheduled for Thursday, January 11th, 2024, from 9:00 am – 11:00 am EST via Zoom.