IBC COMMITTEE MINUTES
July 15, 2024
Virtual, 11 a.m.

MEMBERS PRESENT
Primary:

	Name	College
X	**Cassandra (Dawn) Pauling	r/sNA molecules, Biosafety, Animal Containment
X	Selene Nikaido	r/sNA molecules, Plant Expert
X	Deb Hudman	Community Representative/Non-Affiliate
X	Rachelle Beattie	Community Representative/Non-Affiliate
X	Cori Brown	Laboratory Facility Representative
X	William Kirby	Laboratory Staff Representative
	Tim Crowley	UCM Institutional Official (ex-officio)
X	**Kathy Schnakenberg	UCM Research Compliance Officer-Biosafety Adm (ex-officio)

**RCR Training Complete

MEMBERS ABSENT:

MINUTE TAKER: Kathy Schnakenberg

MINUTES
The minutes of 7/1/2024 were approved with/**without** revision. Motion to approved made by Dawn second-Cori. Approved with a vote of 6/0.

PROTOCOLS APPROVED FOLLOWING REVISION

PI Name	Project Title	Date	Action

Business Items

Topic	Discussion	Action	Vote
		N/A	

PROTOCOLS REVIEWED BY COMMITTEE

PI Name and Title of Protocol: *Brown, Cori-General Biology Laboratory Series (BIOL 1500 & 1505)*

Contact Information: coribrown@ucmo.edu

Initial Review/ Continuing Review

Summary of Protocol:
This is a general biology course series primarily geared toward first-year college students at the University of Central Missouri. Students in BIOL1500 will be introduced to fundamental laboratory skills with a cellular and molecular biology focus. The aim of this course is to build a foundation of laboratory safety and familiarity with common laboratory equipment and techniques. Topics covered that will involve microorganisms or OPIM include Microscopy and microbiology, serial dilution, yeast fermentation, enzymes, Caenorhabditis elegans handling, and PCR/gel electrophoresis.
BIOL 1505 focuses on organismal biology and the aim of this course is to familiarize students with the diversity in life as well as plant and animal functions. Topics covered in this course that will involve microorganisms include: fungal and protist diversity and soil microbial communities.

Specific Agent:
Associated risks:
Containment process and levels:
Involvement of r/sNA molecules:

Conflicts of Interest:

PI Biosafety Training:

Discussion [for each, indicate if controverted and resolution if controverted]
Section 1-Q 1-Change to "no" since it is BSL-1
Experimental Design-1st para-Please include more details on whether or not it is an open bench, will there be an open flame to ensure no contamination of TSA

2nd para-Need protocol on how serial dilutions are being done is necessary for the risk assessment

3rd para-How and with what concentration of the stock/overnight and what is the time frame it is being allowed to set before consumption.

4th para-This will generate aerosols so how is it being conducted? Initial amount & concentrations should be included.

5th para-Are you using EtBr? Identify procedure, usage, & disposal

6th para-Please outline how students will be subculturing & transferring

7th para-Include the sources of the pond water & soil & how & who is obtaining it.

Risk Assessment-Please detail the type of PPE that will be used

1st para-What stains will be used? If the amount of liquid is minimal, aerosol generation is possible with heat fixation. What PPE will be used?

2nd para-Add details on whether or not the slides will be air dried before heat fixing.

3rd para-Add that cups will be autoclaved & destroyed.

5th para-Who will be wiping down the handles? Will the 70% ethanol be in close proximity to open flame?

Biological Waste Disposal-List what will be disposed of and include that EHS will be handling disposal.

Section 6-Infectious Agents-uncheck "no" under volume since N/A is listed

Human-Derived Materials-Include saliva, cheek, and skin swabs

Potentialy hazardous chemicals, etc-Indicate what is used, EtBr? Stains? Explain disposal methods

Documentation of Findings

Motion Selene
Second Deb
Description of Motion: Approve pending revisions to the chair

Cori recused herself for this protocol
Vote (**For**, Against, Abstain): Motion **Passed**/Failed 5-0-1, Total Voting = 5

PROTOCOLS REVIEWED BY COMMITTEE

PI Name and Title of Protocol: *Nikaido, Selene-Genetics Laboratory Exercises*

Contact Information: nikaido@ucmo.edu

Initial Review/ Continuing Review

Summary of Protocol:

Four experiments will be performed in the Genetics laboratory to demonstrate molecular genetics principles. 1. First, the cloning and characterization of rRNA ITS amplicons may be used to show students concepts of PCR, cloning genes in E. coli plasmids including transformation of E. coli, restriction fragment length polymorphisms and restriction enzymes. 2. Alternatively, pAMP and pKAN may be used to demonstrate an experiment similar to the first demonstration of making recombinant DNA. In this multi-week experiment, students will learn about restriction enzyme, ligation of DNA, transformation of E. coli, selection of E. coli with two antibiotics (e.g., principles of antibiotics and antibiotic resistance), isolation of plasmid DNA, and restriction enzyme mapping. 3. The third experiment will be performed in addition to the others. A recombinant plasmid, pGLO, will be purchased from Bio-Rad. This plasmid has a GFP reporter gene connected to an arabinose operon. The operon is regulated and will demonstrate to students how genes can be turned on or turned off. This experiment will demonstrate regulation of gene expression. 4. Lastly, students will isolate their own cheek cell DNA. The collection of anonymous DNA will be analyzed for mitochondrial D- loop single-nucleotide polymorphisms to estimate their maternal ancestral origins. Also, the collection of anonymous DNA will be analyzed for Alu retrotransposon insertion into the PV-92 locus. This analysis will demonstrate principles of population genetics.

Specific Agent:

Associated risks:

Containment process and levels:

Involvement of r/sNA molecules:

Conflicts of Interest:

PI Biosafety Training:

Discussion [for each, indicate if controverted and resolution if controverted]

Section 3-Is this DNA from Morus spp. cloned into plasmids? If so, add to protocol. If not, and no human DNA is being used, uncheck.

Section 5-Experimental Design-Is the method to amplify DNA referring to spp? Will students be spitting the saline wash back into the 15 mL tube? Outline in risk assessment what is being done in the case of spills or student coughing, etc.

Risk Assessment-Change "no eating or chewing tobacco" to no eating, drinking, or chewing of anything. Detail what type of alcohol.

Biological Waste Disposal-Include who is handling & disposing of EtBr.

Section 6-Potentiall hazardous chemicals etc-Include EtBr and/or SYBR.
Section 7-Uncheck "No" on last line
Please complete and include the Risk Assessment Form with the revisions

Documentation of Findings

Motion Will
Second Cori
Description of Motion: Approval pending revisions to the chair and completion of the Risk Assessment Form

Selene recused herself from this protocol

Vote (**For**, Against, Abstain): Motion **Passed**/Failed 5-0-1, Total Voting = 5

PROTOCOLS REVIEWED BY COMMITTEE

PI Name and Title of Protocol: *Nikaido, Selene-Hybridization of red (Morus rubra) and white (Morus alba) mulberry*
Contact Information: nikaido@ucmo.edu

Initial Review/ Continuing Review

Research in hybridization is important for understanding how genes of two species mix to create individuals that are better able to survive in a changing environment. In plants, when two species mate, they may produce fertile offspring (fertile hybrids or hybrids, for short). These hybrids have a mixture of genes from both parents. A correct set of genes will allow hybrids to survive in their unique habitat.

Red mulberry (*Morus rubra*) is native to North America. Starting centuries ago, the Asian or white mulberry (*Morus alba*) was introduced to North America by European settlers. Some time after its introduction, the Asian mulberry started hybridizing with the native red mulberry.

This research aspires to characterize the genetic composition of hybrids in forests (red mulberry's preferred habitat) and open fields (white mulberry's preferred habitat). In order to do so, amplified fragment length polymorphisms (AFLP) will be identified. AFLP is a PCR-based method used to identify sites in DNA that are different among individuals, and when polymorphic sites are consistently found, these sites may define a species' unique DNA. As a PCR-based method, short DNA segments called primers are needed to locate and amplify sites in the plants' DNA. We will use DNA primers with a fluorescent tag so that amplified bands can be visualized. The AFLP method will generate bands of different sizes depending on the sequence of DNA at a locus. Mutations at

these loci will not generate these bands. Mutations that occur with one species, but not the other, will create polymorphic sites. After we determine polymorphic bands (sites), we will genotype individuals who are hybrids for their composition of red versus white mulberry bands. We expect that some hybrids will have compositions skewed in favor of one parent because hybrid mulberry are fertile and may backcross with red or white mulberry. Different habitats may favor hybrids with different compositions of genes from red versus white mulberry.

Because AFLP can produce large numbers of polymorphic sites, we will first determine red versus white mulberry individuals by examining one locus, the internally transcribed spacer (ITS) of ribosomal RNA (rRNA) genes. Phylogenetic methods will provide evidence for ITS sequences that clustered with database-derived Asian sequences and ITS sequences that do not cluster with database-derived Asian sequences, which are presumed to be red mulberry sequences. In eukaryotes, there are hundreds of copies of rRNA genes and their associated ITS. Any number of these copies may have been inherited from red or white ancestors. When several ITS sequences are examined from an individual, a hybrid may be identified because the hybrid will contain some samples of red and some samples of white mulberry ITS sequences. The cloning of individual rRNA- ITS PCR amplicons and the subsequent analyses of plasmids with the cloned DNA will indicate the composition of red versus white sequences in at least in one gene (rRNA).

Conflicts of Interest:

PI Biosafety Training:

Discussion [for each, indicate if controverted and resolution if controverted]
Section 5-Verify type of alcohol used. Risk Assessment- Change "eating or chewing tobacco" to No eating, chewing, or drinking of anything. Outline use ot EtBr.
Section 6-Potentially hazardous chemicals, etc-Include EtBr.
Section 7-Uncheck no on last question since no animals are being used.
Please complete and include the Risk Assessment form with the revisions

Documentation of Findings

Motion Cori
Second Deb
Description of Motion: Approval pending revisions to the chair and completion of the Risk Assessment Form

Selene recused herself from this protocol
Vote (**For**, Against, Abstain): Motion **Passed**/Failed 5-0-1, Total Voting = 5

Meeting adjourned at __12:06 pm_____