Plant Biological Safety Level 2

Campus: ____________________________________________________________

Department: __________________________________________________________

Building: _____________________________________________________________

Room: ________________________________________________________________

Roster Assignments (Email)

Hazardous Waste Manager: _____________________________________________

Lab Manager: __________________________________________________________

Principal Investigator: _________________________________________________

Parent /Child Questions

Access (BioSafety)

1. Is access to laboratory/facility controlled?
   a. Is access to laboratory controlled during experiments?
   b. Is access to the greenhouse limited or restricted, at the discretion of the Greenhouse Director, when experiments are in progress?

Annual Verification (BioSafety)

1. Is airflow at lab or animal room entrance negative (flowing into lab)?
2. Do greenhouse windows have screens?

Biomedical Waste (BioSafety)

1. Is Biomedical Waste collection and specimen/agent transport being handled properly?
   a. Are materials containing experimental microorganisms, which are brought into or removed from the greenhouse facility in a viable or intact state, transferred in a closed non-breakable container?
2. Is infectious Biomedical Waste / Biological waste and/or rDNA decontamination and waste transport compliant?
   a. Are experimental organisms rendered biologically inactive by appropriate methods before disposal outside of the greenhouse facility?
   b. If part of the greenhouse is composed of gravel or similar material, are appropriate treatments made periodically to eliminate, or render inactive, any organisms potentially entrapped by gravel?

Biosafety Training (BioSafety)

1. Prior to entering the greenhouse, are personnel required to read and follow instructions greenhouse practices and procedures? Are all procedures performed in accordance with accepted greenhouse practices that are appropriate to the experimental organism?
2. Is a greenhouse practices manual prepared or adopted? The manual should: 1) advise personnel of the potential consequences if such practices are not followed, and 2) outline contingency plans to be implemented in the event of an unintentional release of organisms.
**Chemical Fume Hoods**
1. Is storage of items in chemical fume hoods kept to a minimum?
2. Are the fume hood alarms working properly?
3. Are the side panels in place and sealed properly?
4. Is the fume hood velocity within range?
5. Is there sufficient visibility through the fume hood sash?
6. Is the fume hood sash at the proper height and closed if not in use?

**Chemical Safety**
1. Is an appropriate chemical spill kit available?
2. Are chemicals stored safely?
   a. Are liquid chemicals stored below shoulder height?
   b. Are dry and liquid chemicals kept separate?
   c. Are all containers in good condition, no rusted containers or broken bottles?
   d. Are all containers properly capped with a tight sealing lid?
   e. Are flammable solvents only stored in approved fridges or freezers?
   f. Are liquids stored in secondary containers (not stored directly on the floor)?
3. Are all containers of chemicals properly labeled in the lab?
   a. Are labels legible and easily read (not deteriorating or falling off)?
   b. If the lab is using abbreviations or chemical formulas, do they have an abbreviation sheet posted?
   c. Are all chemicals labeled (no unlabeled containers)?
4. Are chemicals stored by compatibility?
   a. Are organic and inorganic chemicals kept separate?
   b. Are acids and bases segregated?
   c. Are corrosives separated from metals, flammables, and oxidizers?
   d. Are oxidizers separated from metals and flammable chemicals?
   e. Are inorganic acids separated by compatibility?
5. Are proper dating/storage/use/disposal procedures followed for perchloric acid?
6. Are proper dating/storage/use/disposal procedures followed for peroxide forming compounds?
7. Are all transfers of liquid nitrogen done in a well ventilated area?
8. Are lab chemicals in use and within expiration dates (not unused or outdated)?
9. Is use of Chromic acid for cleaning glassware discouraged?
10. Is air quality in the lab acceptable (no particulates or chemical odors)?
11. Are cold rooms being used properly?
    a. Is cold room free of excess clutter and cardboard?
    b. Is the amount of flammables in the cold room kept to a minimum?

**Compressed Gases**
1. Are gas cylinders securely transported using a hand truck?
2. Are the UF Compressed Gas Rules posted in a prominent location?
3. Are cylinders stored away from heat sources?
4. Is the regulator connection leak tested after installation and before each use?
5. Are cylinders with no regulators capped (even when empty)?
6. Are contents of cylinders clearly labeled?
7. Are hydrostatic tests current (cylinders have not been stored more than 5-10 years)?
8. Are compressed gas cylinders adequately secured (even when empty)?
Compressed Gases, cont’d
9. Are gas cylinders stored by compatibility?
10. If the lab has any high hazard gases is there an emergency plan in place?
11. Are highly toxic gasses kept in cabinets vented to the outside (not loose in the open room)?

Controlled Substances
1. Does the PI have a FL Department of Business and Professional Regulations medical exemption letter?
2. If controlled substances are used, is the DEA permit current?
3. Does the lab have an inventory of all in-use controlled substances?
4. Have all employees using controlled substances or novel compounds (neurotrophic or addicting) filled out an Employee Questionnaire?
5. Is the lab completing a biennial(every 2 year) inventory of all controlled substances?
6. Are controlled substances stored in a secure location?
7. Is the lab free of any outdated pharmaceutical products?
8. Are outdated or unwanted DEA substances disposed of appropriately?

Documentation
1. Is the lab's CHP complete?
   a. Does the lab have a CHP?
   b. Is appendix D filled out and current?
   c. Does the lab have sufficient SOPs?
   d. Is the hazard assessment and PPE determination completed?
2. Does the lab have documentation of hazardous waste training for the lab's waste manager?
3. Is the lab's ChemTracker inventory compliant?
   a. Does the lab have an inventory listed in ChemTracker?
   b. Has the inventory been updated in the past 12 months?
4. Does the lab have SDSs for all of their chemicals in the lab?
5. Is the UF Laboratory Safety Manual readily accessible?
6. Does the lab have Voluntary Use forms for lab members using N95 type respirators voluntarily and they are being used correctly?

Electrical Safety
1. Is access to circuit breaker panel unobstructed?
2. Are openings on breaker panel, receptacle boxes, etc. sealed?
3. Are Ground Fault Circuit Interrupters (GFCI) used near sinks and wet areas?
4. Is the lab only using extension cords temporarily?
5. Are extension cords manufactured commercially (not shop made)?
6. Are electrical cords undamaged (not frayed)?
7. Is the lab free of electrical hazards?
8. Do extension cords, power strips, and surge protectors have long enough cords (not inter-connected or Daisy Chained)?
9. Are electrical panel covers secure? Are all unused openings in electrical enclosures and fittings appropriately plugged or covered?
10. Are power strips UL listed?
11. Are all electrical cords routed properly (not running through doors, walls or partitions, under rugs/matts, or above drop ceilings)?
Electrical Safety, cont’d

12. Are power strips being used only for small electronics?
13. Are all power strips either mechanically affixed or resting on a flat surface?

Emergency

1. Is a fully stocked First-Aid kit compliant?
   a. Is the first aid kit complete and are all contents within their expiration dates (unexpired)?
   b. Is a first aid kit in evidence? (check no if they need a new first aid kit)
   c. Is the first aid kit easily accessible/unobstructed?
2. Is calcium gluconate available where hydrofluoric acid (HF) is stored or handled?
3. Is the overhead emergency shower(s) compliant?
   a. Is overhead emergency shower(s) working properly?
   b. Is overhead emergency shower(s) tested regularly?
   c. Is overhead emergency shower(s) unobstructed?
4. Is the emergency eye wash station(s) compliant?
   a. Is eyewash station working properly?
   b. Is eyewash tested regularly?
   c. Does eyewash station does have dust covers?
   d. Is eyewash unobstructed?
5. Are chemical exposures in the lab being reported appropriately?
6. Is lab staff trained in the lab’s emergency procedures?
7. Are fire extinguishers compliant?
   a. Is a Fire Extinguisher located near or in the lab?
   b. Have fire extinguishers been checked monthly by Fire Safety?
   c. Is fire extinguisher unobstructed?

Emergency (BioSafety)

1. Does the Principal Investigator report any greenhouse accident involving the inadvertent release or spill of microorganisms to the Greenhouse Director, Institutional Biosafety Committee, NIH/OBA and other appropriate authorities immediately (if applicable)? Is Documentation of any such accident prepared and maintained?
2. Are biological spill kits and spill management procedures compliant?
   a. Is a Biological Spill kit available and fully stocked?
   b. Is a biological spill kit present in the facility in areas where contaminated liquids or soil is located?
   Consideration for the containment and removal of large amounts of potentially contaminated water should be given. The use of thresholds/berms in the facility design is recommended. For PBSL3, is a HEPA-filtered WetVac or similar should be available.
   c. Is a biological spill SOP readily available?
   d. Are the spill and incident management procedures posted?
   e. Is the bleach in spill kit unexpired?
   f. Are infectious materials spills reported and evaluated?
   g. Is the biological spill kit kept segregated (in a separate container) from any chemical spill kits?

Facility Design (BioSafety)

1. Is Facility Design compliant? Check NO to reveal initial (commissioning) checklist.
   a. Is an autoclave available for the treatment of contaminated greenhouse materials?
Facility Design, cont’d

b. Is the greenhouse floor composed of an impervious material. Concrete is recommended, but gravel or other porous material under benches is acceptable unless propagules of experimental organisms are readily disseminated through soil. Soil beds are acceptable unless propagules of experimental organisms are readily disseminated through soil.

c. If intake fans are used, are measures taken to minimize the ingress of arthropods? Are Louvers or fans constructed such that they can only be opened when the fan is in operation?

d. If a growth chamber or growth room is in use, is it compliant with the PBSL level requirements? Greenhouse containment requirements may be satisfied using a growth chamber or growth room within a building provided that the location, access, airflow patterns, limitation of access and escape of micro and macro organisms, and provisions for decontamination of experimental materials and supplies meet the intent of the associated PBSL safety level requirements.

Fire Safety

1. Are large metal drums of flammable liquids grounded during transfer and storage?
2. Is no more than 10 gallons of flammable liquids stored in the open (outside of a flammables cabinet or safety can)?
3. Are sprinkler heads clear (i.e. at least 18 inch clearance)?
4. Are vents on flammable storage cabinets sealed?
5. Are flammable liquids stored in approved containers?
6. If the lab has any propane gas, is the quantity less than 2 x 1lb cylinders loose in the lab with another 2 x 1lb cylinders in a flammables cabinet?
7. Is the lab free of any gasoline and/or any gasoline containers?
8. Are all ceiling tiles in place in the lab?

General Safety

1. Are vacuum pumps (with a belt/pulley) equipped with a belt guard?
2. Are walkways clear of obstructions?
3. Are work surfaces and benches free of clutter to reduce risk of spills and accidents?
4. Is mouth pipetting prohibited; Are mechanical pipetting devices used?
5. Are lab appliances properly labeled?
6. Do all older style vacuum pumps have oil traps inline of their exhaust?
7. Is water conserved as much as possible?
8. Are lab rooms all closed and locked when no personnel are in the lab?
9. Is food consumption or storage, smoking, drinking, handling of contacts, or applying cosmetics prohibited within the laboratory work area?
10. Is there no food for human consumption stored in lab fridges/freezers?
11. Is lab space being utilized safely?
12. Are workspaces un-crowded?
13. Are benches and shelves never overloaded?
14. Are chairs appropriate for laboratory environment?
   a. Are chairs non-porous and cleanable?
   b. Are chairs undamaged?
   c. Do chairs have a 5 star base?
Hazardous Waste

1. Is the current SAA sheet posted?
2. Is the current SAA waste manager listed?
3. Is the Laboratory Hazardous Waste Manager trained?
4. Have all staff completed Hazardous Waste Management Training?
5. Is waste compatible with the container?
6. Are waste containers in good condition?
7. Are waste containers closed?
8. Is waste properly segregated?
9. Is the SAA free of spills and leaks?
10. Are waste containers properly labeled?
11. Is all waste identified (no unknown present)?
12. Is waste being properly disposed of (not poured down sinks)?
13. Is waste stored at or near the point of generation?
14. Is waste under the control of the generator?
15. Are SAA waste totals under the limit?
16. Is all waste being stored in the SAA (not in additional points throughout the lab)?
17. Is the monthly SAA self-audit up to date and available?

Pest Management (BioSafety)

1. Is a program implemented to control undesired species (i.e. weed, rodent, or arthropod pests and pathogens), by methods appropriate to the organisms and in accordance with applicable state and Federal Laws.

PPE

1. Is PPE (e.g. gloves, safety glasses/goggles, lab coats, thermal protection, etc.) available (stored clean and in good repair) and worn for the activity being conducted?
2. Are full coverage shoes with good sole grips worn in the lab?
3. Is hearing protection worn for high noise areas (e.g. sonicators, grinders)?
4. Has a noise survey been conducted to determine the need for using hearing protection?
5. Are lab personnel aware that contact lenses should not be worn in the labs, and that if contact lenses are worn they must be accompanied by goggles?
6. Are respirator wearers trained, fit tested and enrolled in the respiratory protection program and/or Biopath as appropriate?
7. Are cryogenic materials handled with the proper PPE?
8. Is PPE removed before leaving the lab?
9. Is lab staff wearing safety glasses or goggles for work that necessitates it?
10. Is laser specific safety glasses or goggles available if the lab is working with lasers?
11. Is the lab using the appropriate gloves for their work (have they consulted the glove compatibility reference chart)?
12. Is required PPE provided and its use enforced?
13. Is PPE stored in a manner to prevent damage or contamination?
14. Are Eye and face protection (goggles, mask, face shield, or other splatter guard) used for anticipated splashes or sprays of infectious or other hazardous materials when the microorganisms must be handled outside the BSC or containment device?
15. Are gloves being used and disposed of properly?
PPE, cont’d

a. Are gloves being changed when contaminated, integrity has been compromised, or when otherwise necessary?
b. Are gloves being removed and hands being washed when work with hazardous materials has been completed and before leaving the laboratory?
c. Are disposable gloves prohibited from being washed or reused?
d. Are used gloves being disposed of with other contaminated laboratory waste?

PPE (BioSafety)

1. Is eye and face protection compliant?
   a. Is eye and face protection disposed of with other contaminated laboratory waste or decontaminated before reuse?

Practices (BioSafety)

1. Are all project(s) personnel list(s) current?
2. Are non-research animals or plants prohibited in the laboratory?
3. If experiments involving other organisms that require a containment level lower than the designated PBSL# are conducted in the greenhouse concurrently with experiments that require the designated PBSL# is all work conducted in accordance with the designated PBSL# practices?
4. Are arthropods and other motile macroorganisms housed in appropriate cages? If macroorganisms (i.e. flying arthropods or nematodes) are released within the greenhouse, are precautions taken to minimize escape from the greenhouse facility? When appropriate to the organism, are experiments conducted within cages designed to contain the motile organisms?
5. Is a record kept of experiments currently in progress in the greenhouse facility?
6. Is a record kept of experimental plants, microorganisms, or small animals that are brought into or removed from the greenhouse facility?
7. Are effective measures taken to prevent the excursion of transgenic materials outside of the greenhouse or growth chamber?

Roster

1. Is the Lab Safety Manager assigned?
2. Is a Hazardous Waste Manager assigned?

Sharps

1. Are sharps handled and disposed of properly?
   a. Are non-disposable sharps placed in a hard-walled container for transport to a processing area for decontamination, preferably by autoclaving?
   b. Are containers of contaminated needles, sharp equipment, and broken glass decontaminated before disposal, and disposed of according to any local, state, and federal regulations?
   c. Are sharps containers conveniently located to the work being performed?
   d. Are sharps containers not overfilled?
   e. Are sharps properly segregated (gloves, paper towels or other 'soft' items are never in the sharps containers)?
   f. Are needles not bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal?
Sharps, cont’d
g. Is broken glassware being handled properly (removed using mechanical means such as a brush and dustpan, tongs, or forceps)? Is plastic ware substituted for glassware whenever possible?
h. Are safety devices being chosen for sharps being used with infectious material/rDNA?
i. Are sharps generated in the BSC being collected into sharps containers within (not outside) BSC?

Signs and Postings
1. Are the Notice Board (NB) with Emergency Call list and hazard warning labels compliant?
   a. Is the Notice Board posted at the lab entrance?
   b. Is the notice board legible? (check no if they need a new NB)
   c. Are the hazard stickers on the NB complete (none need to be added)?
   d. Does the emergency call list have two names with after hours phone numbers?
   e. Does the NB have a current emergency call list? (check no if they need a new ECL sticker)
   f. Does the lab have signage identifying the lasers present in the lab?
   g. If the NB has a privacy ECL, is it updated?
2. Is warning signage posted to alert entrants what PPE is required?

Signs & Postings (BioSafety)
1. Is Laboratory (Biosafety) Signage compliant?
   a. Does all laboratory equipment have the appropriate hazard stickers?
   b. If there is a risk to human health, is a sign incorporating the universal biosafety symbol posted?
   c. If organisms that have a recognized potential for causing serious detrimental impacts on managed or natural ecosystems are used, is their presence indicated on a sign posted on the greenhouse access doors?
   d. Is a sign posted to indicate that a restricted experiment is in progress. The sign indicates: 1) the name of the responsible individual, 2) the plants in use, and 3) any special requirements for using the area?
   e. Are people entering the lab advised of hazards present?