



**MOLECULAR BIOLOGY
AND
INTERDISCIPLINARY LIFE SCIENCES
CORE FACILITY
STANDARD OPERATING PROCEDURES
2023**

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NMSU MOLB-ILS CORE FACILITY.

The NMSU Molecular Biology and Interdisciplinary Life Sciences Graduate Program is an interdisciplinary graduate degree program that is composed of faculty from four colleges, nine departments, with approximately 41 faculty involved in the program. This interdisciplinary approach has worked seamlessly across colleges and departments since 1987 and has facilitated fruitful collaborative efforts. The purpose of the core facility is to provide a central research space to facilitate research for MOLB-ILS graduate students, faculty, and affiliated personnel.

ADMINISTRATIVE OVERSIGHT OF FACILITY.

The Overall Administrative Oversight for the core facilities is assigned to the Director of the MOLB-ILS Program. This includes construction, equipment, assigned users, daily oversight, and safety. Biosafety oversight is provided by the Institutional Biosafety Officer. After consultation with the MOLB-ILS Space Use Committee and MOLB-ILS faculty, the MOLB-ILS director makes the final decisions on how MOLB-ILS space is allocated and used.

MOLB-ILS Core Facility Locations. The Molecular Biology-ILS core facility is located within the Chemistry/Biochemistry building. The MOLB-ILS space includes W357-357A, W365A, W353, W359, W361, W363, W350, W350A-W350E, W375 (see image).

MOLB-ILS Core Laboratory

The core laboratory facilities include:

1. Core laboratory space equipped for MOLB research
2. Sequencing facility with ABI 3100
3. Bio-Atomic Force Microscope (Bio-AFM)
4. Core equipment in W357
 - a. Thermocyclers
 - b. Nanodrop
 - c. Bioanalyzer
 - d. Pipetmen
 - e. Spectrophotomer
 - f. Centrifuges/Microcentrifuges
 - g. Growth chambers
 - h. -80C Freezer
 - i. Refrigerator
5. Tissue culture BSL2 facility, fluorescence microscopy facility, autoclave

FACILITY USERS

The MOLB-ILS core facility Standard Operating Procedures (SOP) is intended for the NMSU MOLB-ILS faculty, graduate students, staff, post-doctoral fellows, and affiliated faculty who have completed all safety and operational training and have been approved for access.



SCOPE

The MOLB-ILS core facility is a shared research and teaching laboratory that provides infrastructure to conduct molecular biology experimentation. All facility users are expected to be knowledgeable in equipment operation and safety procedures to work independently. This manual provides guidelines for safe use of the facility and equipment but does not provide methods for specific experimentation. It is assumed that all users/researchers will plan proper preparation of their samples and evaluate risks of their experiment prior to entering the facility.

ACCESS TO MOLB-ILS FACILITY AND RESTRICTED ACCESS

Potential users must complete (1) training modules (see next section page); (2) application for core facility use (appendix A) with a short write-up for experimentation evaluation. Applications for facility use and experimentation evaluation will be evaluated by the MOLB-ILS director (jrandall@nmsu.edu). If the experimentation evaluation indicates that the experiment requires a Biosafety Review, the NMSU Biosafety officer will review and evaluate the plan prior to experimentation. The director will notify the user and provide access once these criteria are met. Access to the facility is restricted for safety and security reasons. Depending upon the amount of use a determination will be made as to whether individual users will be issued individual programmed key cards or if they will be given access by MOLB-ILS personnel.

MANDATORY TRAINING

All MOLB-ILS core facility users must complete mandatory safety training prior to being granted access to work in the core facility. All trainings are available from the NMSU Environmental Health and Safety office <https://safety.nmsu.edu/training/safety-training-requirements/lab-training-requirements/>.

All trainings listed below need to be completed prior to entry into the MOLB-ILS core facility. Following successful completion of each safety training course, it is necessary to complete the yearly refresher course.

TRAINING COURSES:

1. Fundamentals of lab safety
2. HazCom (online training)
3. Fundamentals of Biosafety

If users are planning to use the Bio-AFM instrument, then an additional course (Fundamentals of laser safety) along with specific Bio-AFM training will be necessary.

4. Fundamentals of laser safety
5. Bloodborne pathogen training. (Bloodborne pathogen training is required annually if primary animal cells, tissues, and body fluids are utilized in the experiment.)

Training certificates must be indicated on application when applying for use of the MOBL-ILS core facility. In addition to the application further research compliance including supporting forms will need to be completed and approved if required. *All users will need to complete and submit Appendix B to determine if further approvals are required.*

- IACUC approval memo and expiration date
- IRB approval memo and expiration date
- IBC approval memo and expiration date. *IBC approval memo and expiration date (for procedures with Risk Group 2 microorganisms and cells, and recombinant or synthetic nucleic acid molecules that are capable of replication in cells)*
- Human cell lines- NMSU exemption memo
- Bloodborne Pathogen Exposure Control plan written provided by NMSU Bio-safety is required to be reviewed by each user.
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EMERGENCY RESPONSE PLAN

The MOLB-ILS core facility will follow the emergency response plan as laid out by NMSU, the NMSU Environmental, Health and Safety office, and the Biosafety offices. These can be found

1. https://webcomm.nmsu.edu/emergencyplanning/wp-content/uploads/sites/2/2019/01/2018-AHEOP-08_23_18_FINAL-web-version-1.pdf
2. <https://hr.nmsu.edu/safety/wp-content/uploads/sites/72/2014/05/2019-08-Biosafety-Manual-v5.4.pdf>
3. https://safety.nmsu.edu/wp-content/uploads/sites/72/2019/02/NMSU-Chemical-Hygiene-Plan_2019.docx
4. <https://safety.nmsu.edu/campus-safety/employee-safety/safety-at-nmsu/safety-policy/employee-safety-handbook/>

In case of a fire all personnel are to evacuate the area using the stairs on either end of the MOLB-ILS facility and meet at the middle of the NMSU Horseshoe.

MOLB-ILS CORE FACILITY SAFETY

The MOLB-ILS core facility has areas that are designated either BSL1 or BSL2. Users are expected to familiarize themselves with the different areas based on their required research. All units are locked 24/7 with restricted access.

DRESS CODE AND PERSONAL PROTECTIVE EQUIPMENT

MOLB-ILS facility users are required to adhere to the dress code for laboratories as laid out in by NMSU Environmental Health and Safety. This includes closed toe shoes and long pants/scrubs. Disposable items such as gloves will be available. Lab coats will be provided by the MOLB-ILS facility. After use these will be placed into a designated lab coat hamper and will be laundered by MOLB-ILS personnel. There are a limited number of safety glasses available in the core facility, but individual users are highly encouraged to provide their own.

PERSONAL BELONGINGS

Approved users are to supply and wear their own clean designated PPE. Food and drinks are prohibited. If needed, a locked space for personal property such as backpacks and purses will be provided. The NMSU MOLB-ILS program does not accept any liability for the loss of personal property.

SAFETY EQUIPMENT

The MOLB-ILS core facility is outfitted with the following safety items

- Fire alarms/fire extinguishers
- Eye washes and showers in case of a chemical spill (checked on a regular basis).
- Fume hood for working with chemicals. (Checked on a regular basis)
- Fire safety cabinet for flammables.
- First aid kit
- Chemical spill kit (note: any spill that is beyond minor will require evacuation and immediate notification of the Director of MOLB-ILS and EH&S.)
- Landline phone with emergency numbers is located within the laboratory.
- Specialized receptacles for
 1. Biohazard waste. This will be autoclaved according to NMSU Biosafety requirements.
 2. Hazard waste collection. All contents need to be recorded on the attached hazard waste sheet. NMSU Environmental Health and Safety will collect all hazardous waste for disposal.
 3. Sharps container. All sharps including needles and scapples will be disposed of in this area.
 4. Glass container. All glass items will be disposed of in the glass container.

MOLB-ILS CORE POLICIES FOR CONSUMABLES AND SUPPLIES

MOLB-ILS users will provide their own consumables and supplies for their experiments. The experimentation sheet has a space for listing all items required for the experiment. Items including gloves, Kim wipes, ethanol, autoclave bags, autoclave sterilization strips, dedicated pipetmen and tips will be available within the facility. Bio-AFM consumables are located in a locked cabinet within the facility and limited supplies will be available for users. All users will be informed following evaluation of their experimental plan what Bio-AFM supplies will be provided for by the facility.

SAFETY PROTOCOLS FOR POWER FAILURES

In the case of a power failure all equipment including the ABI 3100, Bio-AFM, corresponding computers, centrifuges, chemical hoods, thermocyclers, freezers, refrigerators, etc. will cease to operate. The MOLB-ILS core facility **does not** have back-up power devices. Equipment such as freezers and refrigerators should not be opened during a power failure to prevent cool temperature dissipation. Other devices such as the ABI 3100, Bio-AFM, centrifuges, nanodrop, bioanalyzer, and thermocyclers should be turned off and unplugged until power is restored. Please note that if the Bio-AFM loses power it will take 6 hours until it may be used.

SAFETY PROTOCOL FOR SPILLS

Spills within the MOLB-ILS facility will be handled on a case-by-case basis as delineated in NMSU EH&S Handbook and Biosafety Manual (see links above for specific information). Chemical spill kits are available within the facility. If a biological spill occurs ethanol and bleach will be available. It is important for each user to access all possible risks prior to entry into the facility and to be prepared if a situation occurs. Following all spills, whether chemical or biological

all benches and affected equipment will be cleaned appropriately. Failure of the user to do so may result in access removal of the user.

SAFETY PROTOCOL FOR BIOHAZARD WASTE

Biohazard waste will be disposed of in an autoclave bag within the designated receptacle within the core facility. Each user is required to list all waste that is placed into the biohazard bag (e.g., gloves, plates, and etc.). Please note that all needles, scalpels, and other sharps will be disposed of in the designated sharps container(s). This biohazard waste will be autoclaved by the designated MOLB-ILS personnel. Autoclave safety strips will be utilized to ensure that sterilization occurred, and all biosafety autoclave runs will be recorded in a physical book in the core facility. Following proper sterilization, the trash will be disposed of in an outside trash dumpster.

SAFETY PROTOCOL FOR HAZARDOUS WASTE DISPOSAL

A hazardous waste designated is available in the MOLB-ILS core facility. The hazardous waste area is under the supervision of a designated MOLB-ILS person within the facility. All hazardous waste will be disposed of in the proper receptacle. It is imperative that all hazardous waste is recorded on the provided sheets. The hazardous waste will be collected by EH&S.

METHODS AND BEST PRACTICES OF WORKING IN THE MOLB-ILS CORE FACILITY

Advance preparation.

1. Fully complete experimentation document to evaluate what permissions will be required to utilize the facility, identify what hazards exist, and what materials are needed for the experiment.
2. Permissions that are deemed required must be acquired prior to access.
3. Users should label items that they have brought to the MOLB-ILS facility.
4. A locked cabinet will be available for some storage for users' items. This is limited so please be mindful of space.

Working in MOLB-ILS Core facility

1. Work carefully and avoid distractions from colleagues and cell phone.
2. Be mindful of the time you have reserved for the facility. Schedule plenty of time for your experiment so you do not need to rush.
3. Wear appropriate PPE.
4. Sign in on the log-sheets that you are working in the facility. These are located near the entrance.
5. Follow all procedures for instruments used in the facility.

Completion of Work in the Facility.

1. Handle all waste as appropriate. (See above).
2. Decontaminate areas appropriately.
3. Properly return equipment to their off/or standby position.
4. Store consumables/disposables appropriately. Remove all personal items that will not be stored in the facility. Materials that are left out will be disposed.
5. Remove PPE and wash hands prior to leaving facility.

6. Log-out of the facility prior to leaving.

Data Storage.

Data storage in the MOLB-ILS facility will be maintained in several ways.

1. ABI 3100 sequencing runs will be maintained on the local computer and will be made available to each user through email. The data will be stored on the computer and hard drive for six months. Each user is expected to maintain their own sequencing data files.
2. Nanodrop and spectrophotometer data will need to be stored by the user immediately.
3. Bio-AFM data will be stored on the local computer for a short time. It is important for users to store their data under their folders on the network so they can retrieve their data.

