



Intermountain Forensics

SOP #

ADM-101

Revision #

01

Forensic DNA Technical Leader Approval

Issue Date

5/6/2020

Facilities and Security

1. Purpose

This document summarizes the physical space and security of the Intermountain Forensics Laboratory.

2. Summary

Describes the physical space and utilization of rooms within the Intermountain Forensics Laboratory. Defines security measures within the lab space, both physical and digital. Indicates contamination prevention measures that are required for staff, processing and physical space.

3. Procedure

Physical Space

1. Intermountain Forensics Laboratory is located at the following address:
4885 South 900 East
Suite 300
Salt Lake City UT 84117
2. This location is primarily office space and has several secured entry points
3. The laboratory is divided into five physical rooms
 - a. Administrative Entry (Admin)
 - b. Evidence Lock Up (Lock Up)
 - c. Preparation Laboratory (Prep)
 - d. Processing Laboratory (Lab)
 - e. Identification Lab (ID)
4. Each room is physically separated from each other by walls and door(s); there is no open passage between the rooms.
5. Administrative Entry (Admin)
 - a. Admin room is the only access to the rest of the building and provides the main door to the rest of the office building
 - b. The primary purpose of this space is for evidence receipt, package/reagents/consumable delivery and registration and administrative staff access (analysis, documentation, e-mails etc.)
 - c. There is one doorway to the main hall of the office building and three doorways that connect to other offices (not rented by Intermountain Forensics, but possibly available for laboratory growth)
 - i. Access to the office spaces that are connected to the Admin room are locked and physically bolted permanently shut and secured from the Intermountain Forensics side of the doorway, see **Physical Security** section)
 - d. A windowed steel door provides access to Prep, Lab and ID rooms. A steel, non-windowed door provides access to the Evidence Lock Up room.
6. Evidence Lock Up (Lock Up)
 - a. Lock Up room is only accessible from the Admin room and is the most secure location within the lab space
 - b. The primary purpose of this space is evidence storage, WiFi/Internet Router physical security
 - i. A combination Refrigerator/Freezer is housed in this room for cold/frozen storage
 1. This is the main location (freezer) for long term extract storage
 - c. There are no windows within this room.
 - i. West and South walls are inaccessible (underground) from outside
 - ii. East wall connects (via steel door) to Admin
 - iii. North wall is separated from ID lab by fully framed and sheetrock wall
 - d. A hard ceiling and walls are extended to the hard ceiling (above drop ceiling in admin room) and cannot be accessed from Admin or ID Lab
7. Preparation Laboratory (Prep)
 - a. Prep Lab is only accessible from Admin
 - b. The primary purpose of this space is Evidence Itemization, Serology testing, Bone/Teeth Pre-Processing and Known sample (direct amplification) setup
 - i. A combination refrigerator/freezer is housed in this room for cold/frozen storage of samples and reagents
 - ii. These are sequestered spaces within the refrigerator/freezer



Intermountain Forensics

SOP #

ADM-101

Revision #

01

Forensic DNA Technical Leader Approval

Issue Date

5/6/2020

- c. Bone/Teeth Pre-Processing as well as Known sample setup are restricted to the lab station with a hood/dead air box
- d. A hand wash/eye wash station is housed near the doorway to this room
- 8. Processing Laboratory (Lab)
 - a. Lab is only accessible from Admin
 - b. The primary purpose of this space is questioned sample DNA Extraction, DNA quantification and amplification setup
 - i. A combination refrigerator/freezer is housed in this room for cold/frozen storage of samples and reagents
 - ii. These are sequestered spaces within the refrigerator/freezer
 - c. This lab houses extraction instruments:
 - i. Qiagen EZ1 Advanced XL instrument(s)
 - ii. Qiagen Qiacube Connect Liquid Handling robot
 - d. A hand wash/eye wash station is housed near the doorway to this room
- 9. Identification Lab (ID)
 - a. Lab is only accessible from Admin
 - b. The primary purpose of this space is PCR Amplification and loading of identification instruments for Next Generation/Massively Parallel Sequencing (NGS/MPS) and/or STR fragment analysis
 - i. A combination refrigerator/freezer is housed in this room for cold/frozen storage of samples and reagents
 - ii. There are sequestered spaces within the refrigerator/freezer
 - c. This lab houses amplification and analyzer instruments:
 - i. Applied Biosystems ProFlex PCR Thermal Cycler
 - ii. Benchmark Thermal Cycler
 - iii. Applied Biosystems Quant Studio 5 rtPCR instrument
 - iv. Applied Biosystems 3500 Genetic Analyzer
 - v. Verogen Miseq FGX NGS/MPS Sequencer
 - d. A hand wash/eye was station is housed near the doorway to this room **and must be utilized to wash/decontaminate hands before exiting this room**
 - e. This lab is considered a post amplification or "dirty room" and houses amplified DNA product
 - i. This is a unidirectional processing room. Any samples, reagents or any other items can be brought into this room but cannot be returned to the admin area unless housed in trash and/or biohazard bags that are closed and decontaminated (20% Bleach on outside surface) prior to exit
 - ii. Any instrument, pipette or other equipment that is intended to be removed from this room must be decontaminated prior to physical transportation into the admin area
 - f. This room has been constructed to have negative pressure, ensuring air flows into the ID lab and does not flow back into the Admin room, further restricting potential contamination

Remote Space

- 10. Intermountain Forensics will utilize remote staff wherever possible. To that end, many of the laboratory staff will be working from remote locations and require access to common files and software. This is accomplished by a Microsoft Azure cloud-based server structure for more secure and accessible storage.
 - a. Access to laboratory server is limited to only those individuals who have an IMF login
 - i. Access is granted and maintained by the Lab Director (or designee)
 - b. Login to the IMF server will be restricted to only personal or secure private networks.
 - i. Public WiFi and non-secure networks are not allowed to access
 - c. Intermountain Forensics server houses all SOP's, Validation, Case Files, Training Records, Proficiency documentation and all other files needed for laboratory analysis and reporting for remote employees

Physical Security:

- 11. Building Security
 - a. The building has security policies to help restrict access to the laboratory location
 - i. Outer doors lock overnight and on weekend
 - ii. Keypad access allows access during lock down
 - iii. Security cameras throughout the building monitor movement
- 12. Laboratory Security
 - a. The external door into the Admin area as well as all 4 of the inner rooms are locked and restricted access
 - i. Electronic swipe cards are issued to all employees to access electronic lock doors
 - ii. Security is maintained by software restricting or allowing access with the swipe cards
 - iii. All laboratory staff will have equal and unrestricted access to all 5 electronic lock doors
 - iv. All electronic swipes are registered and auditable via the software



Intermountain Forensics

SOP #

ADM-101

Revision #

01

Forensic DNA Technical Leader Approval

Issue Date

5/6/2020

- b. Two copies of the master key (allows access to the doors when electrical locks are not functioning) will be maintained and kept on the below listed approved lab staff. These keys will be secured at all times and a documented check will occur annually as per DNA Technical Leader annual audit.
 - i. Laboratory Director (or designee)
 - ii. Laboratory Manager (or designee)
- c. One copy of the master key and one copy of the lock removal key (allows the lock cylinder to be removed) will be maintained in a specified area of the Evidence Lock Up room. These key locations will be documented during DNA Technical Leader annual audit.
- d. Video monitoring
 - i. There are three cameras located within the laboratory with 24/7 monitoring access
 1. One is dedicated to Evidence Lock Up
 - ii. The cameras are able to view into each of the rooms in the space and will record any movement that is detected
 - iii. Access to the security footage is restricted to the Laboratory Director (or Designee)
- e. Non-lab personnel access
 - i. A camera and doorbell is located outside of the main laboratory space for non-staff access
 - ii. A monitor (Lab room) and restricted iOS or Android app used within the lab space (on the lab WiFi) allows monitoring and unlocking of the outer door.
 - iii. Non-staff personnel should be restricted to the admin area unless absolutely required (instrument maintenance etc)
- f. Admin room doors
 - i. There are three doors that are accessible to the main laboratory that lead to other offices within the building, until a future time when the laboratory will expand to those locations, these doors will be locked and barred with a physical, no key lock that is only accessible from the IMF Admin area.

Internet Security:

13. The Intermountain Forensics laboratory utilizes a Microsoft Azure cloud-based server for data storage and application implementation
 - a. Microsoft Azure houses all laboratory data and is restricted to only IMF personnel login
 - b. Cloud-based security far exceeds physical server security and is constantly updated with security enhancements
 - c. All data is secured and backed within the Microsoft Azure server structure to ensure absolute data integrity in the event of an emergency or natural disaster
14. Instruments connected to computers are connected only through physical ethernet connections to the internet router
15. WiFi security is maintained with Comcast Business Internet
 - a. This includes "Comcast Business Security Edge" which scans WiFi network for internet security issues every 10 minutes (malware, phishing scams, botnet, ransomware etc.)

General Decontamination:

1. Laboratory doors are self-closing and should remain closed at all times when not entering or exiting the room
2. Staff should utilize the following processes to limit lab-induced contamination
 - a. Use dedicated lab coats for ID Lab (post amplification) and Admin, Prep and Lab (pre-amplification)
 - b. Use bleach pad between touching items/tubes/evidence
 - i. Replace gloves whenever they may have been contaminated
 - c. Disposable paper (Kimwipe, butcher paper) should be used to cover work areas and discarded after processing or between cases during itemization
 - d. Clean work areas with 20% bleach prior to and after use
 - e. Facemask must be used while processing pre-amplification samples
 - f. Cell phones should not be used while in laboratory areas (Prep, Lab, ID Rooms)
3. Laboratory decontamination
 - a. Common areas of the laboratory will be decontaminated with 20% bleach monthly (during monthly maintenance)
 - i. Include doorknobs, light switches, common use bench areas, instrument external handled areas, faucets, common use tools and pens, centrifuges internal and external surfaces, and vortexes

4. References

Microsoft Azure Server security details: <https://azure.microsoft.com/en-us/product-categories/security/>



Intermountain Forensics

SOP #

ADM-101

Revision #

01

Forensic DNA Technical Leader Approval

Issue Date

A handwritten signature in black ink, appearing to read "Dawn [unclear]".

5/6/2020

Comcast Business WiFi Security: <https://business.comcast.com/learn/internet/security-edge>

Swipe Card Access



Camera Monitoring





Intermountain Forensics

SOP #

ADM-101

Revision #

01

Forensic DNA Technical Leader Approval

Issue Date

5/6/2020

Doorbell/Video Monitoring



5. Definitions

Post Amplification: A room in which Polymerase Chain Reaction (PCR) amplification and/or post PCR processing occurs. This creates billions of copies of DNA which has the potential to contaminate up stream lab spaces. Also termed "dirty room".

Unidirectional processing: All processing pre amplification (PCR) will be done outside of the ID Lab. Processing then proceeds into the ID lab for PCR and post-PCR processing and does not return to upstream spaces. Unidirectional processing will always be maintained