

**SJÖGREN'S INTERNATIONAL COLLABORATIVE CLINICAL ALLIANCE (SICCA)
BIOREPOSITORY AND DATA REGISTRY
STORAGE OF BIOSPECIMENS**

The UCSF AIDS Specimen Bank (ASB) is responsible for the storage, inventory, and dissemination of SICCA specimens. SICCA specimens were collected, processed, and stored during 2005-2012. Please see **Appendix A**, which contains the details of how specimens were processed and stored.

Cryovials containing SICCA specimens have been labeled with an ASB accession number. The exact location of each SICCA specimen has been entered into ASB's database system. Location information includes: freezer and freezer rack numbers, box number, row and column information.

ASB has ultra-low or -80°C freezers, liquid nitrogen freezers, and room temperature storage. The majority of freezers are located at UCSF's storage and distribution center, Oyster Point. Oyster Point is located 45 minutes from the Parnassus campus, near the San Francisco International Airport.

Walk-in cold room – this is used for storage of cell culture media and specimens (saliva or serum for example) waiting to be checked in and processed.

Room temperature –Paraffin blocks – there is a paraffin block filing cabinet in the lab to file the blocks by accession number. Paraffin slides (stained and unstained) are placed in numbered plastic slide boxes.

The table on the following is a list of SICCA specimen types and their storage requirements.

SPECIMEN TYPE	-80°C	LIQUID NITROGEN	ROOM TEMPERATURE	OTHER
DNA				4°C
PARAFFIN BLOCKS			X	
PARAFFIN SECTIONS			X	
PAROTID SALIVA	X			
PBMCS		X		
PLASMA	X			
RNA	X			
CONJUNCTIVAL IMPRINTS				
SALIVA	X			
Salivary Glands				
SCHIRMER STRIPS	X			
SERUM	X			
WHOLE BLOOD	X			
WHOLE SALIVA	X			

Freezer Alarm and Monitoring Protocol

ASB's freezers are monitored 24 x 7 by Opto Solutions's wireless, web-enabled alarm system. The system is comprised of a server, which receives data from a cryogate. The cryogates are located in the Parnassus laboratory and Oyster Point. The cryogate receives temperature information from the cryopoints that are attached to either an ultra-low or liquid nitrogen freezer. The cryogate sends the temperature data via the internet to ASB's alarm server that is connected to a uninterrupted power supply (UPS) system that provides up to 75 minutes of power. As per the International Society of Biological Environmental Repositories' (ISBER) (1) best practices, the UPS is tested annually to ensure proper back-up capability. To perform this, a power failure is simulated by disconnecting the power to the UPS device. Once this happens, we examine the computer connected to the UPS to see if it is still operating and wait until the battery reaches a low level, at which point a system shutdown should occur. We then restore power to the UPS device.

When an ultra-low freezer begins to warm up ASB and Oyster Point (OP) staff receive an email and text message of the event. ASB's protocol is to contact OP staff immediately and instruct them to move the contents of the damaged freezer into one of OP's five empty back up units. The empty units at OP are operational and their temperature range is from -70 to -80° C. It takes OP staff less than 20 minutes to move the contents of the damaged freezer into one of their cooled, empty back up freezers. They are trained for this task and have done it for us on more than one occasion. The backup freezer takes less than an hour to reach -70°C. OP staff are on call 24 x7 for such freezer emergencies.

If a freezer at the Parnassus lab begins to warm up, ASB staff are to respond to the emergency. The responding staff member must email or text the Co-Director and lab manager of the emergency and go online to acknowledge receipt of the alarm message. The responding staff member is responsible for moving the contents of the damaged freezer into one of ASB's empty freezers. If the emergency takes place after working hours, the responding staff member must contact campus police at 415-476-1414 and have the police escort them to the laboratory.

ASB assigns unique rack numbers for each freezer. ASB database tracks the rack number and box number that is contained in each freezer. Thus when the contents of a freezer are moved, OP/ASB staff note the rack numbers that have been moved. The next day after an emergency event, one of ASB staff members goes to OP and confirms which racks and boxes have been moved to the backup unit. Once the freezer is repaired, ASB staff members are responsible for moving the contents back into the repaired unit. The staff member verifies that the correct racks have been returned to the freezer.

Staff are responsible for recording the temperatures of freezers daily (visual inspection). This will take place in morning and then prior to leaving work. Staff are responsible for logging onto the computer system (morning and evening) and review the temperature readings of the freezers at our off-site location (Oyster Point) and note any issues with alarm sensors (cryopoints).

Battery notices from the alarm system are to be addressed. If the freezers are located on campus please change out batteries of the cryopoints. If the freezers are at Oyster Point please email Tony Meno or call him at 65907 to change out the batteries of the cryopoints.

Liquid Nitrogen Freezers (LN2) – Freezers are connected to a supply system that will fill the LN2 units when the liquid nitrogen levels are low. The supply system comes in a 220 liter container and must be changed every other day. UC holidays must be taken into consideration when arranging for additional LN2 deliveries to the lab and Oyster Point.

Specimens are stored at vapor phase ($\leq -150^{\circ}\text{C}$) and not liquid phase. Vapor phase storage will maintain samples below the glass transition phase (-132°C). Thermal insulated gloves, lab gown/coat, and a face shield are required clothing for placing or removing specimens into LN2 freezers.

Ultra-low freezers are set at -75° to -80°C . ASB freezers at Oyster Point are set up with a back-up generator system. The back-up power system consists of a switchgear and two 125 Kw Caterpillar D-125-6 generators. If there is an interruption to the building's power the switchgear detects the loss of power. The switchgear isolates the freezer farm from the rest of the building and starts the generators. The generators then provide power to **only** the freezer farm. The generators require no human intervention to start this process, which is fully automatic and takes place in less than one minute.

The switchgear enables the generators to turn on and provide power to the freezers in less than a minute.

The generators have a minimum 72 hour supply of fuel on board. The generators will run for 72-100 hours unattended. Resumption in normal building power will cue the generators to stop and switch the freezer farm back over to normal PG&E-supplied power.

The generators are inspected by OP Staff each Friday for correct fluid and fuel levels, leaks and correct start settings.

Both generators are pre-programmed to self-test-start every 28 days to assess their ability to start in an emergency. To date, they have passed the self-test on every occasion. The generators are physically inspected by Peterson Power (local Caterpillar representatives) yearly. This inspection is a "discharge test". Each generator is hooked up to a load bank which provides a considerable electric "load" for the generator to power. The generators have to provide maximum power capacity during this test to assess ability to provide power in an emergency.

Freezers located on campus have limited access to back-up power. The ultra-low freezers are used for short-term storage and inventorying of recently processed specimens. Each week one of the staff will take a rack or two down to Oyster Point for long-term storage. It is ASB's protocol that we leave one or two shelves empty in each of the three freezers in case one of the units fail in the laboratory on Parnassus. The contents of the failed unit can be moved into the remaining two freezers. There is only 1 electrical outlet that is connected to the University's back-up generator (the outlet is red) in the lab and is located in the common user area, where chemicals are weighed and where we inventory our frozen specimens. In the event of a power outage one ultra-low can be plugged into the outlet. Make sure you do not open the doors of the other two freezers. They will hold temperature for a period of time. The remaining two ultra-low freezers in the lab can have dry ice placed into them to maintain temperature if the power outage lasts for 8 hours or you see that the temperature is rising. However, gas will built up so you must put a pencil or a small ruler and insert between the freezer door and the rubber gasket to allow gas to escape. The door must not be closed all the way.

Freezer and Freezer Alarm Maintenance Protocol

Ultra-low freezers must be defrosted when the ice is built up along the door gasket and on the inner doors. Be sure there is room in the other freezers to move the racks and freezer boxes into from the unit you about to defrost. When the unit is emptied, take the freezer off the alarm unit and turn the freezer off. Place plenty of lab soaker paper around the freezer to catch the water that will dripping on the floor. Be sure to inform all staff you are defrosting the freezer. If the filters located at the bottom of the freezer are clogged with dust, use the vacuum cleaner to remove the dust.

Pelco Sales and Services, 1550 Park Ave., Emeryville, CA 94608 is our preferred vendor for ultra-low freezer repair. Their phone number is 510-774-5524. We contact Pelco every six months for freezer cleaning, inspection, and calibration. Liquid nitrogen freezers rarely require repair. However, if our liquid nitrogen freezers are not holding temperature or they seem to be using more liquid nitrogen than usual, contact Steve Wines at 415-999-3655 for repairs.

The Opto-Solutions alarm system is calibrated and updated annually by Anthony Dern (President of Opto-Solutions). His contact information is 208-369-1641 or adern@opto-solutions.com. Anthony Dern will respond to emails if there are problems with our system. He has access to the alarm server and will assist us if we have problems with the server.

SICCA Specimen Inventory- Quality Control

Twice a year, the ASB data manager will select 20 SICCA specimens for Danielle Drury to locate. Danielle will confirm that the specimen is located within a specific freezer and rack, box, row and column. The selection of specimens will include those stored at -80 and liquid nitrogen.

The daily monitoring of SICCA's freezers by the alarm system and ASB staff will insure that the specimens are stored at the correct temperatures. By monitoring the temperature we can be assured the viability of SICCA's specimens will not be compromised due to increasing temperatures in storage.