

RESEARCH ADVISORY BOARD (RAB)
May 14, 2019 8:30-10:00 a.m.
Medical Sciences Building: Conference Room S-30 &
Zoom: 1-669-900-6833 Meeting ID: 914 749 821 <https://ucsf.zoom.us/j/914749821>

AGENDA

Topic	Presenter	Time
1. Freezer Infrastructure Update	Jim Hine Chief Procurement Officer Supply Chain Management	8:30 – 9:00am
2. Intellectual Property Theft	Nicholas Shenkin Special Agent Director, Strategic Technology Taskforce Federal Bureau of Investigation San Francisco Field Office	9:00 – 10:00 am

2019 Meetings: 2nd Tuesday of each month

- *May 14*
- *June 11*
- *July 9*
- *August 13*
- *September 10*
- *October 8*
- *November 12*
- *December 10*

RESEARCH ADVISORY BOARD (RAB)

May 14, 2019 8:30-10:00 a.m.

Medical Sciences Building: Conference Room S-30 & Zoom

Attending: Jolene Johnson, Paul Volberding, Brian Smith, Lindsey Criswell, Jim Kiriakis, Matt Springer, Michael Nordberg, Synthia Mellon, Wallace Marshall, John Ellis, Georgina Lopez, James Sorensen, Theresa Moeller, Suzanne Murphy, Winona Ward*, Marguerita Lightfoot*, Gretchen Kiser*. Irene Broderick (staff) (*=on phone);

Guests: Jim Hine, Nicholas Shenkin, Pat Phelan

MEETING NOTES

1. Freezer Infrastructure Update** Jim Hine - Chief Procurement Officer Supply Chain Management

The Ultra-low Temperature Storage Program project was initiated to inventory and assess ultralow (-80° freezers at UCSF). Supply Chain Management (SCM) met with several individuals (including building managers, Environment, Health and Safety staff, and principal investigators) and visited 45 buildings over a three month period to capture information on freezer specifications, locations, risks, and ownership. SCM partnered with the Sustainability group for this project. The Program Management Office is building an Asset Tracking Database that will house much of the information obtained in this project, the BIOS Program is working with SCM to catalog freezer contents.

Project findings include:

- The average freezer is 9 years old; half of all freezers exceed their 15 year useful life estimate.
- Operating costs for these older freezers is in excess of \$3 million per year; older machines require more power and take lots of space. By using to Energy Star machines UCSF could save 75% of existing costs.
- The real value of the freezers lies in their contents which is hundreds of millions of dollars of intellectual property (IP). There is a risk that this IP could be lost in the event of a widespread power failure.

SCM will pilot with the School of Pharmacy (SoP) on a freezer replacement program; the pilot will decrease total number of freezers by 15% and replace some units with Energy Star models that handle both energy and temperature monitoring. Select models will run at -70°. If projections are correct, the SoP's investment payback will be realized in 3 years.

There are immediate and long-term needs to both relocate existing ULT freezers and proactively expand biorepository space to accommodate increases in both clinical and research activity. The UCSF transplant lab is moving from Laurel Heights to the Vitalant building (formerly Blood Centers of the Pacific). There is an opportunity for UCSF to also house the ultralow temperature biorepository and liquid nitrogen freezers in the Vitalant building, however a substantial capital investment is required. If the capacity at Vitalant were exceeded, commercial storage options would be required.

ACTION:

- Brian Smith will check whether an inventory of UCSF red plugs exists.
- Jim Hine will check into 'freezer cozies'

Intellectual Property Theft

Nicholas Shenkin - Special Agent
Director, Strategic Technology Taskforce, FBI SF Field Office

Special Agent Shenkin's unit focuses on cyber security where threats to intellectual property may come from a number of countries such as Russia, Saudi Arabia, Iran, North Korea, and others.

The most valued intellectual property is in biotechnology and nanotechnology; foreign autocracies target this information and exploit their vulnerable citizens into providing them with information. US companies and academic institutions should focus their security efforts on what could be exposed (high value intellectual property). Foreign countries build intelligence based on information provided by their compromised citizens; they recruit citizens to build networks and relationships of obligation. Targeted intellectual property is based upon existing projects in the foreign country.

Grant boards and hiring processes are vulnerable to autocracies. Compromised employees may seem anxious and under stress; in these cases, employers should try to build loyalty, offer assistance, and engage the employee rather than being punitive. Integration of the human resources and security functions is effective.

The FBI can assist in determining whether certain programs or individuals may be compromised or associated with compromised programs. The majority of intellectual property theft is via information transferred person to person; the highest value is in implementation / production in the home country where the intellectual property can be indigenized.

The NIH has advised they will take into consideration whether an institution has addressed concerns related to intellectual property theft in their funding decisions to ensure US research funds are used as intended by the granting agency (NIH).

The FBI provides a full insider security threat briefing on IT.

**Contains excerpts from PowerPoint; see PowerPoint for detail.

Update on Ultra-low Temperature Storage Program

RAB

May 14, 2019

Supply Chain Management

Overview

- Freezer inventory project and findings
- Assessment and improvement projects
- Disaster readiness
- School of Pharmacy/SOM Pilot
- Capacity expansion opportunities
- Next steps

ULT Freezer Inventory Project Overview

Project length: 3 months

Buildings Visited: ~45

Over 35 individuals from the following areas enabled the completion of the freezer inventory:

- Building Managers
- Campus Life Services
- EH&S
- Facilities teams
- Building mail room teams
- Lab Managers
- Principal Investigators
- Researchers
- SFPD
- UCSF Logistics

Data captured	
Unit information	Make
	Model
	Serial Number
	Electrical Specifications: Volts, Amps, Watts
	Date of manufacture
Location Information	Building Name
	Building Address
	Floor
	Room Number
	Lab Number
Risk information	Connected to emergency power (Red outlet)
	Temperature monitoring accessory
	Presence of backup cooling: Liquid Nitrogen or CO2
Owner Information	Lab/PI Name
	Finance Number (Asset Tag): HHMI or UCSF

Buildings Visited	
VAMC area	SF VAMC 4150 Clement St
Mt. Zion & Laurel Heights	Laurel Heights
	1701 Divisadero
	Bldg. A
	Bldg. B
	Bldg. C
	Bldg. E
	Mount Zion Cancer Research
Davies area	CPMC Ralph K. Davies Castro St.
Parnassus Area	Parnassus UC Hall
	Health Sciences East
	Health Sciences West
	Koret Vision Care & Research
	Langley Porter LPPI
	Medical Sciences Building
	Nursing
	Proctor Foundation
	PSSRB Animal Care
	Stem Cell Research
	Moffitt Hospital
Mission Bay area	China Basin 185 Berry Street
	1700 Owens
	499 Illinois Street
	654 Minnesota
	Cardiovascular Research
	Byers Hall
	Genentech Hall
Helen Diller Cancer Research	
Neurosciences	
	Rock Hall
Mission Center Area	Mission Center Building
	3130 20th Street
General Hospital	SFGH 625 Potrero Avenue
	SFGH Building 1
	SFGH Building 3
	SFGH Building 5
	SFGH Building 9
	SFGH Building 10
	SFGH Building 30
	SFGH Building 40
	SFGH Building 100
	Hunters Point Animal Care
	260 Newhall Street
Remote Locations	870 Dubuque Avenue, So. S.F.
	Oyster Point, So. S.F.

Freezer Inventory: Key Findings

Unit information

- ~1,200 units
- Average unit age is 9 years, with over 50% older than the 15 year useful life estimate
- 35 units have no discernable owner

Disaster-readiness

- 35% are not on emergency backup power
- 61% are without temperature monitoring
- 98% do not have a backup cooling system installed
- 54% are not seismically braced
- 19% of ULT freezers are completely vulnerable to power outages:
 - no backup power, no alarm system, no backup cooling

Implications

- Current freezer related energy costs of approx. \$3.1MM/year (direct and HVAC)
 - Could be reduced by 75% by transition to modern energy efficient models
- Hundreds of millions of dollars of IP/content value is vulnerable. Many samples are simply irreplaceable
- Significant safety risk of unbraced units
- Freezer inventory occupying substantial on campus research space

Project overview and countermeasures

	Countermeasures	Description	Lead	Support	
Data Collection	Campus-wide ULT freezer Inventory	Quantity, location & information on each one	Dean Shehu (SCM)	MHS Associates (Contractor)	✓
	Freezer contents analysis	What is inside our ULT freezers?	Dean Shehu	BIOS Team	
	Fusion™ freezer beta test	Evaluate new technology	UCSF AIDS Specimen Bank	Dean Shehu	✓
	Backup power assessment	Back-up power capacity by building?	Facilities Team	Dean Shehu	
	Temperature monitoring system	Which solution is best for UCSF?	Facilities Team	Dean Shehu	✓
Initiatives	Freezer cleaning pilot	Pilot of freezer cleaning service	Dean Shehu	Facilities Team	Ongoing
	ULT storage expansion	Seek to expand biorepository space	Jim Hine	Dean Shehu	
	Biorepository data systems	Integration with LabVantage and RedCap software	BIOS Team	Dean Shehu	
	Freezer Replacement	Replace energy inefficient freezers	Sustainability Team	Dean Shehu	

Inventory highlighted need for disaster readiness improvement

Goal: Initiatives to improve on disaster readiness of ULT freezers. Leverage findings of ULT freezer inventory to guide efforts.

Proposed initiatives

- Red plugs build out
- Seismic bracing
- Populate CAM database important information of each known ULT
 - Back up power status
 - Seismic bracing status
 - Presence of biospecimens logged in BIOS databases
- Emergency response team/protocol for ULT failures
 - Create and pilot an emergency response protocol modeled on that at the VA hospital

School of Pharmacy/SOM Integrated Pilot

Objective: Conduct a scale proof of concept pilot addressing multiple elements on ~70 SOP/SOM (and a couple SOD) units primarily at Genentech and Byers

- Freezer cleaning and consolidation- Targeting ~15% reduction in units
 - Aged unit replacement- Targeting replacement of ~20 old energy inefficient units with new Energy Star models
 - Temperature- selective modification of freezer temperatures to -70
 - Monitoring- Implementation of both energy and temperature monitoring
 - Red Plugs- Installing red plug power for ~ 20 units currently without
 - Seismic- Reinforcing ~40 units currently not secured
 - Preventive/Predictive Maintenance- Ensure all units covered by agreements with SLA's based on criticality
- Payback on the energy related portions of the program look to be as quick as 3 years
 - Working on funding majority of the program via Strategic Energy Partnership grants and FIN
 - Once results confirm hypotheses, will look to expand program

ULT storage expansion- internal

Current State: There are immediate and long-term needs to both relocate existing ULT freezers and expand biorepository space proactively to accommodate increases in both clinical and research demands.

Vitalant Opportunity- (formerly Blood Centers of the Pacific) 270 Masonic Ave at Turk Street, San Francisco.

- UCSF has signed a lease primarily to accommodate move by the ITL from Laurel Heights
- An additional~10,000 square feet of basement space is available for use for a UCSF ULT Biorepository
 - Would accommodate ~150 ULT and 25 LN freezers.
 - Would share infrastructure with existing Vitalant freezer core of ~60 minus 80's and 10 LNs, as well as ~ 10-15 ITL units
 - The space is expected to be ready in the summer of 2020.
- Preliminary design ("programming/test fit) and build out cost estimating is currently underway
- Discussion pending on capital and operating funding and business models
- Capacity would come on line in mid 2020

Oyster Point- 7 miles south of San Francisco

- Currently at capacity of 70 minus 80s and several LN's
- Additional space would required capital expansion and a transition of operations to a research focused core

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ULT storage expansion- external

Commercial Storage

It is assumed that UCSF will reach a limit in expansion of biorepository space within the city of San Francisco. Thereafter UCSF will have to leverage commercial options for storage of biomaterials, for capacity as well as risk management (e.g. getting backup samples out of primary earthquake zones)

Feedback from lab managers has been that they are open to this idea but want SCM to vet the options for commercial storage.

Supplier	Location	Pricing	Facilities Visit
Fisher	Vacaville, CA	In discussions	Complete
EPL (VWR)	Ohio	In discussions	Not Visited
Brooks	Fresno, CA	In discussions	Not Visited

Next steps

- Pilot freezer contents analysis at SOP/SOM pilot and existing biorepositories
- Complete back up power assessment
- Finalize temperature monitoring platform
- Launch freezer cleaning in SOP/SOM pilot and at ZSFG
- Launch SOP/SOM pilot
- Vitalant space
 - Complete preliminary design and build out estimates
 - Confirm funding and business model
 - If go, initiate build out and operating model development
- Decide whether to initiate Oyster Point expansion and transition
- Conduct further research on commercial storage options

UCSF Finance