

Environmental Health Monitoring Making the Transition

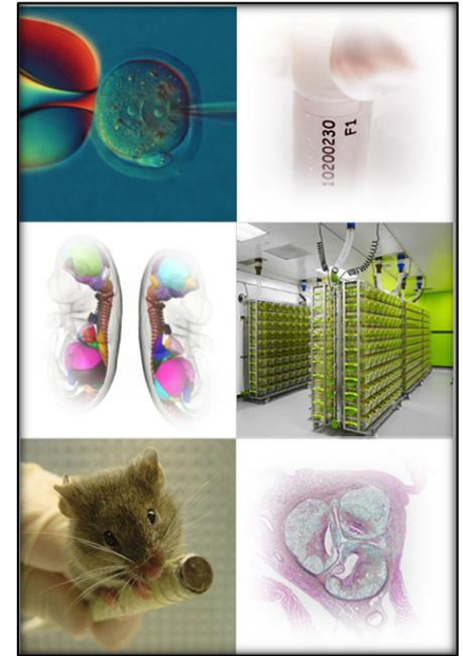


The North American 3Rs Collaborative

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The Centre for Phenogenomics

TCP Facility

- Centralized research facility
- Mouse models of human disease
- Model Production, Phenotyping, Imaging & Pathology
- Purpose built in 2007; 120,000 ft2
- Collaboration between 2 Toronto hospitals

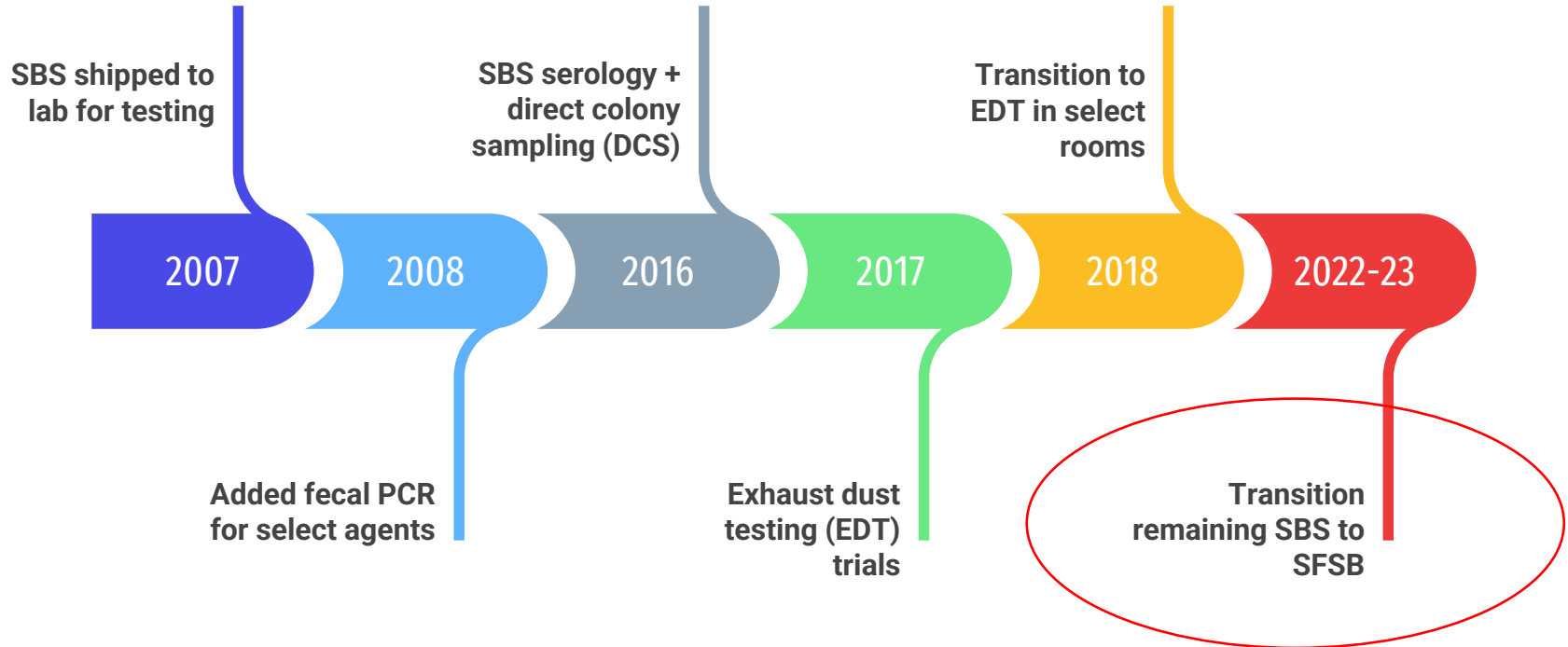


TCP Animal Resources

- Spread over 2 floors
- ~ 13,000 cages of SPF mice
- ~ 300 racks, single and double
- 9 racks per room
- Tecniplast GM500 IVCs
- Centralized ventilation



Evolution of the TCP HM Program



Challenges with our HM Program

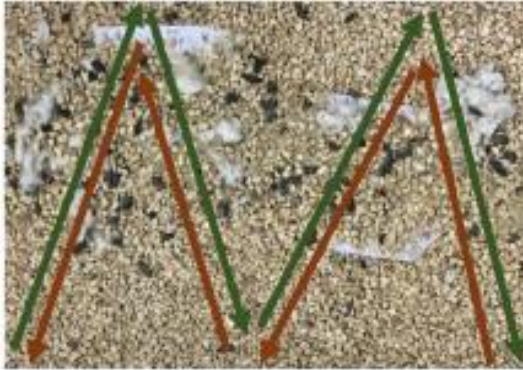
- Centralized ventilation system that requires a custom plenum attachment for EDT (\$200,000); will take time to procure and implement facility wide
- Despite addition of EDT in select rooms, continue to use about 500 sentinels per year
- Several functional areas with unique requirements for HM



Needed a solution to eliminate sentinels while transitioning the facility to EDT.

Sentinel Free Soiled Bedding Methods

- Increasing number of publications with good evidence supporting these methods
- Soiled bedding from each cage on a rack is collected and exposed to media (swabs or filters) which is submitted for PCR testing



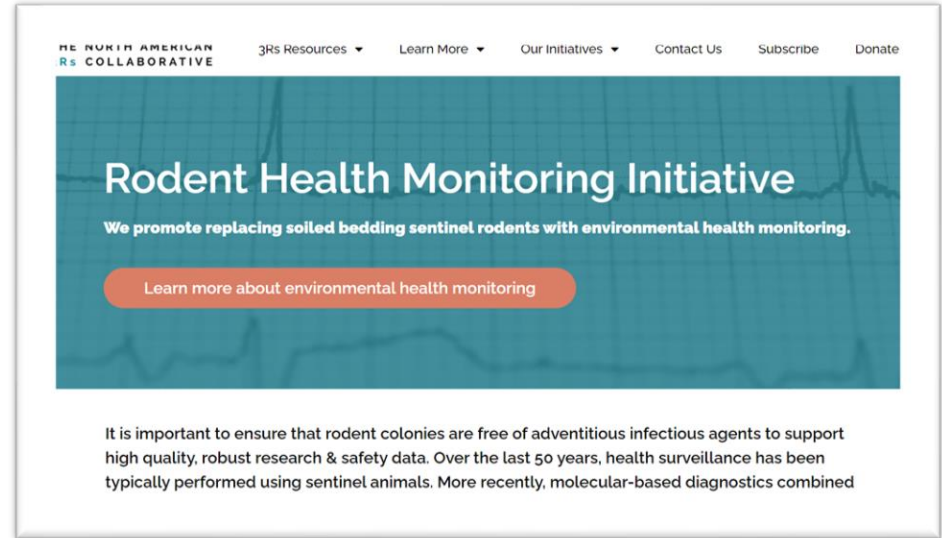
O'Connell et al, 2021



Hanson et al., 2021

Change Management - Making the Switch

- Buy in from Senior Leadership
- Training materials
 - NA3RSC website
 - Develop new SOPs & revise existing
- Map out the process
 - Cold Turkey! No pilots
 - Start in General Housing area
 - Establish a SFSB cage when live sentinels due to be replaced
 - Timeline to switch ~ 1 year



Change Management - Making the Switch

- Engage staff
 - Animal care attendants changing cages and seeding SFSB cages
 - Dedicated Veterinary Technician exposing media and doing submissions
- Communicate with research staff
- Relay results, challenges and successes
- Gradually expand program to other areas of TCP

TCP THE CENTRE FOR PHENOGENOMICS
Animal Resources - Communications Update

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In This Issue

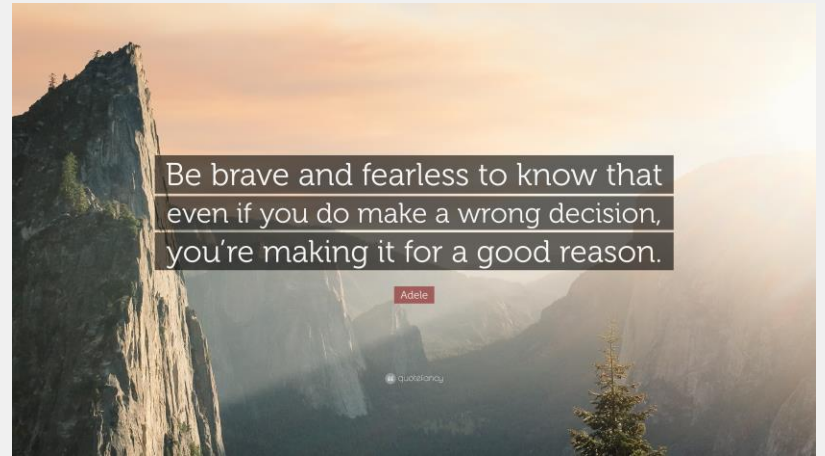
- Regulatory Reminder of the Month: Grouping Male Mice
- Notice of Per Diem Increase
- New Health Monitoring Program – Sentinel Free

Regulatory Reminder of the Month: Grouping Male Mice
Grouping of male mice can result in aggression and fighting. Incidence of fighting is increased when unfamiliar male mice are grouped in the same cage. Fighting can be severe leading to pain, injury, and death. To minimize fighting, male mice should be grouped with littermates at weaning to form a stable group. If it is necessary to group male mice from different litters, this must be done at weaning, and the litters must be the same age. Mixing of unfamiliar male mice at any other time is not permitted.

Notice of Per Diem Increase

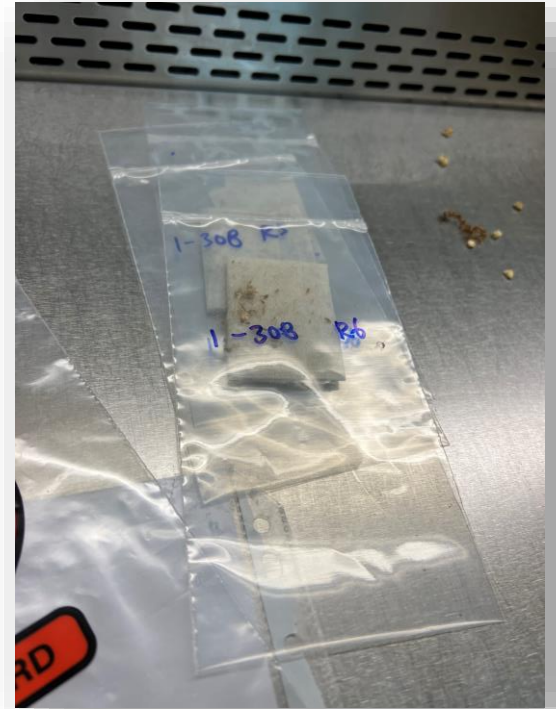
How to do SFSB testing

- NA3RsC website
- Read the papers
- Pick a method that works for your facility
- Talk to your diagnostic lab
- Be willing to change if needed



What we decided to do at TCP (so far)

- Regular IVC cages as SFSB cages
- 1 SFSB cage per single rack
- Soiled bedding transfer similar process to SBS cages (ACAs)
- Dedicated VT to perform media exposure and submissions
- Media provided by diagnostic lab
- Single exposure of media quarterly using the dredge method
- Pool 2 media in 1 submission
- Combination of small and large PCR panels
- Each rack tested 4 x per year



Tools – Excel Spreadsheets & OneDrive

	A	B	C	D	E	F	G	H	I	J
1	Room 2-103		Investigators	Date In	Test Schedule	Test Profile	SFSB Test Schedule		Comprehensive Accession #	SFSB CAGE SET UP/ LIVE SENTINEL SAC'D
3	Rack 1	1st Quarter	Taylor		FEBRUARY	T			2023-008886	NEG Feb :
4		2nd Quarter	Taylor		MAY	TCP2				5/1/2023
5		3rd Quarter	Taylor		AUGUST	T	AUGUST	MPP		
6		4th Quarter	Taylor		NOVEMBER	T	NOVEMBER	MPP		
8	Rack 2	1st Quarter	Cohn		FEBRUARY	T			2023-008886	NEG Feb :
9		2nd Quarter	Cohn		MAY	TCP2				5/1/2023
10		3rd Quarter	Cohn		AUGUST	T	AUGUST	MPP		
11		4th Quarter	Cohn		NOVEMBER	T	NOVEMBER	MPP		
13	Rack 3	1st Quarter	Cohn		FEBRUARY	T			202	
14		2nd Quarter	Cohn		MAY	T	APRIL	MPP		
15		3rd Quarter	Cohn		AUGUST	T	JULY	MPP		
16		4th Quarter	Cohn		NOVEMBER	TCP2	OCTOBER	MPP		
18	Rack 4	1st Quarter	Taylor		JANUARY	T			202	

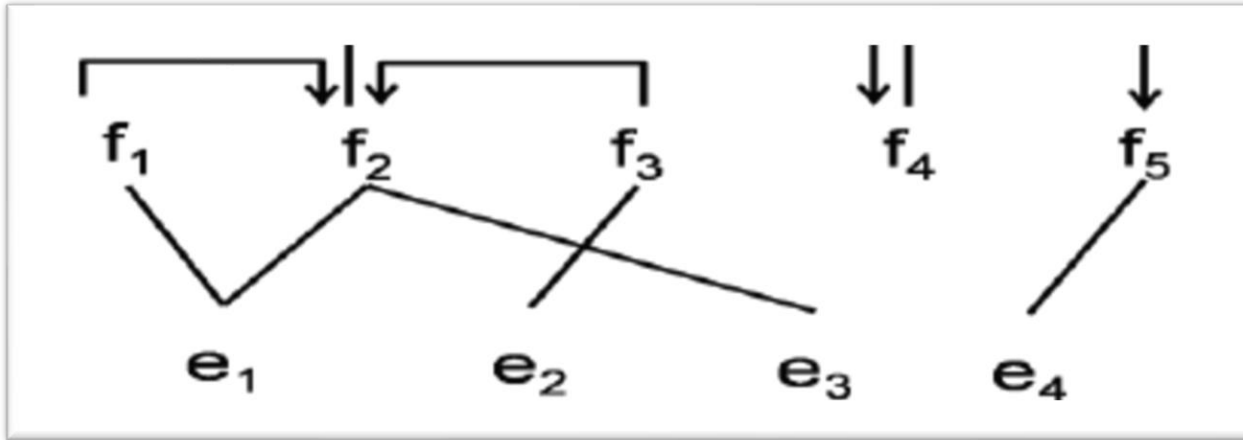
+ New
↑ Upload
🔗 Share
🔗 Copy link
🔄 Sync
↓ Download
📌 Add shortcut to My files

SOPs > Documents > SOPs Under ARC Review - General > HM SOPs

Name	Modified
Archived HM SOPs Copies only do not edit	June 2, 2022
AH002 Health Monitoring - General Housing 22-09-14.docx	October 28, 2022
AH002 Health Monitoring - General Housing NEW 23-01-19.docx	January 19
AH004 Health Monitoring - Soiled Bedding Transfer to Sentinel Cages 051617lp.docx	January 20
AH013 Excluded Murine Pathogen List 21-12-10.docx	May 25, 2022

Challenges

- Lots of documentation and training – takes time
- Switching from serology (\$) to PCR (\$\$\$) required pooling of submissions
- Aligning testing & pooling schedules for 200 racks



Challenges (and more questions we need to work through)



- For each SFSB cage, should we keep back up media for potential re-testing of positive results?
- What to do if SFSB cages become too full of bedding?
- Bedding from cages that may have chemical hazards?

Successes

- Eliminating live sentinels
 - No need to procure live sentinels and manage those cages
- Saved valuable technician time (\$\$)
 - No need to collect blood for serology
- New methods to expose media were not difficult to learn/perform
- So far, no unexpected findings in results (but early days)
- Hybrid approach (EDT + SFSB) is working well and gives us flexibility

Cost Benefit Analysis (in progress)

	A	B	C	D	E
3	Summary	Current F1	Proposed F1	Current F2	Proposed F2
4	Total Animals	-	-	-	-
5	Total Technician Time	-	-	-	-
6	Total Diagnostic Testing	-	-	-	-
7	Total Supplies	-	-	-	-
8	Total Expenses	-	-	-	-
9					
10	Check Cell	-	-	-	-
11					
12	Comparison	Current F1 v. Proposed F1		Current F2 v. Proposed F2	
13	Animals Savings/(Increase)		-		-
14	Technician Time Savings/(Increase)		-		-
15	Diagnostic Testing Savings/(Increase)		-		-
16	Supplies Savings/(Increase)		-		-
17	Savings/(Increase)		-		-
18					
19	Cost Savings Compared to Current Method				
20	Increased Cost Compared to Current Method				
21					
22					

Summary F1 SBS F1 SFSB F2 SBS F2 SFSB +

Future

- Transition other areas at TCP (TG Core) to EHM methods
- Continue to evaluate SFSB methodology based on new literature and publications: type of media, single exposure v indwelling media, dredge method
- Goal is to eventually transition to EDT throughout facility

