PRIMARY CONTAINMENT
ARCHITECTURAL RENOVATIONS
ISOLATION ENVIRONMENT
QUARANTINE ENVIRONMENTS
BIOSAFETY LEVELS 3 & 4

bioBUBBLE

CONTROLLED ENVIRONMENTS | CUSTOM SOLUTIONS

CLEAN ROOMS
CIEA TESTING DATA

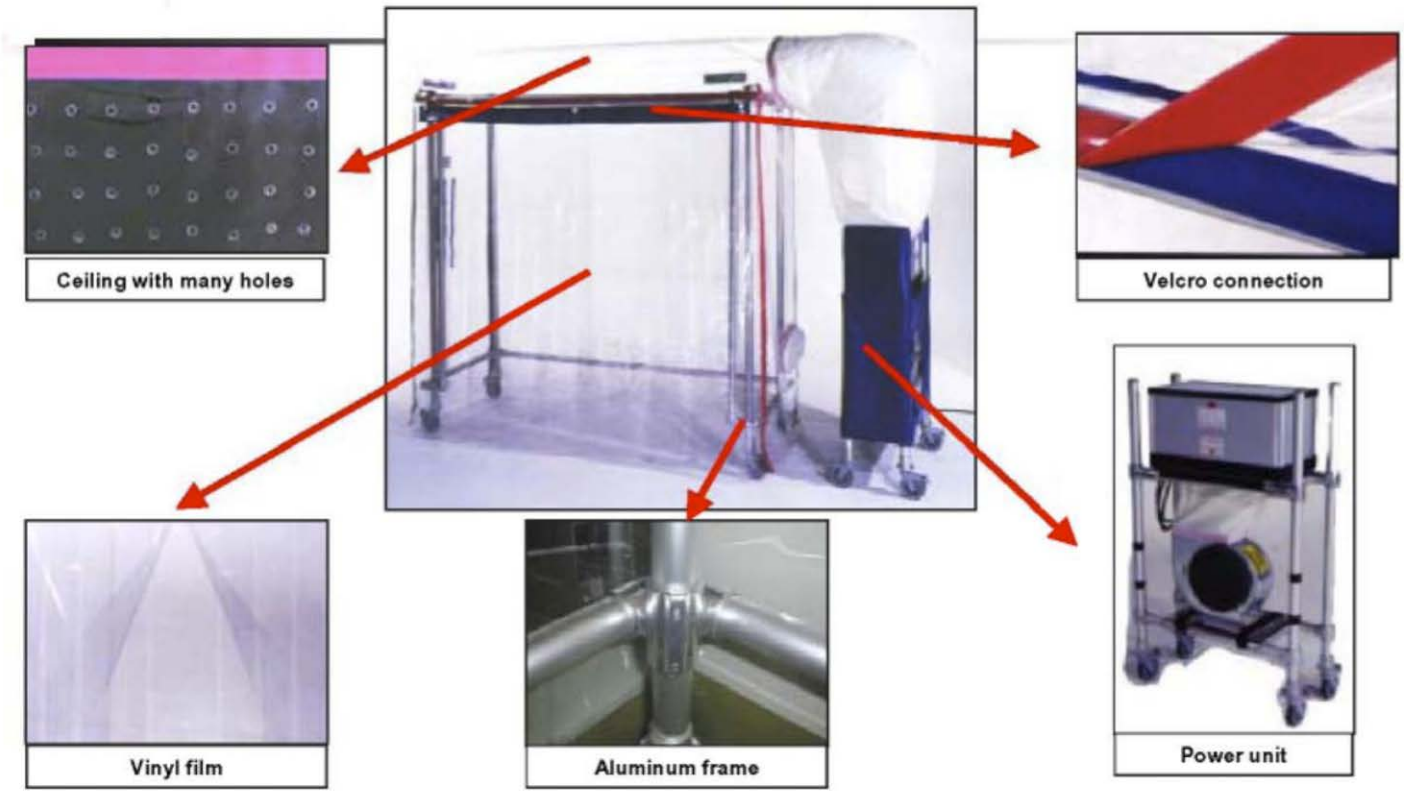
AIRLOCKS/AIRSHOWERS
BEDDING DISPOSAL UNITS
ENVIRONMENTAL SEPARATION
TRANSPORT CARTS

FORT COLLINS CO | **T** 970 224 4262 | sales@bio**BUBBLE**.com | www.bio**BUBBLE**.com

FEATURES :

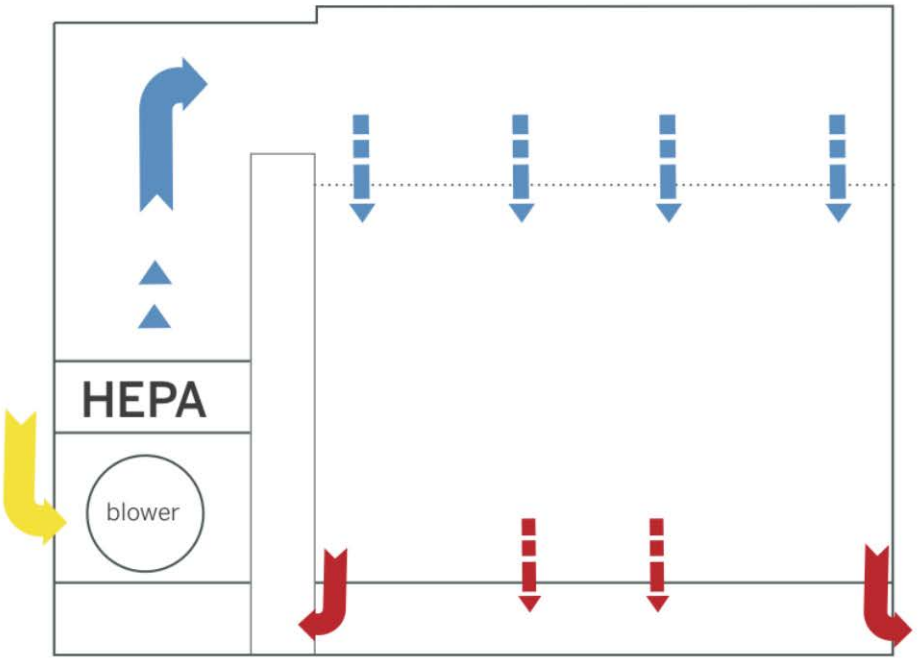
free plan ···→	completely custom made
simple structure ···→	aluminum tube, vinyl, power unit
high performance ···→	HEPA filter / 100 changes/hr.
positive/negative pressure ···→	selectable/convertible between positive/negative pressures available
clear skin ···→	additional lights unnecessary / easy management / claustrophobic feeling minimum
installation/dismantling ···→	3/16" allen wrench only / special construction unnecessary
maintenance ···→	prefilters and HEPA filters easily changed because power unit is placed outside of Clean Room
economic factors ···→	large-scale construction unnecessary / energy saving blower

STRUCTURE :

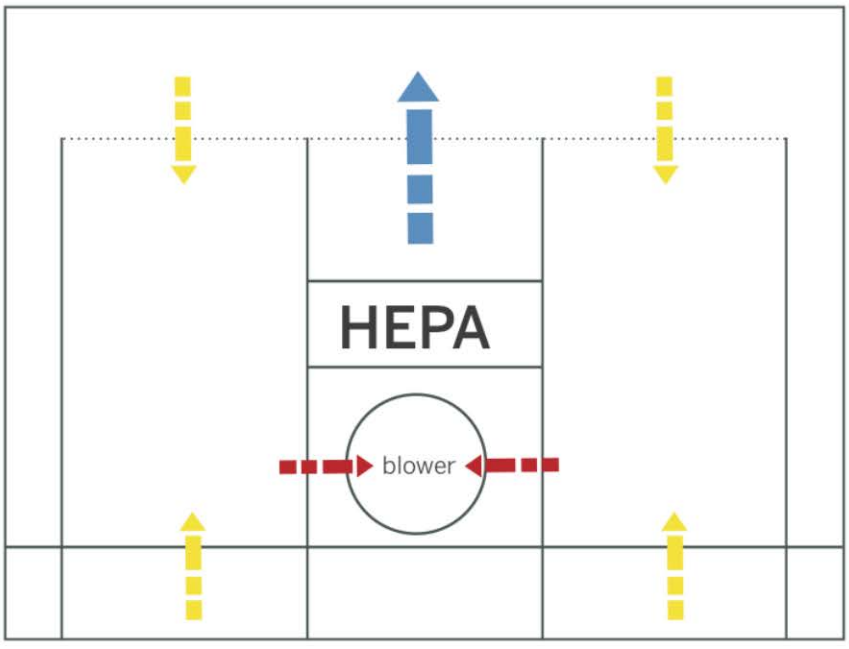

Ceiling with many holes
Velcro connection
Vinyl film
Aluminum frame
Power unit

AIRFLOW :

POSITIVE PRESSURE



NEGATIVE PRESSURE



room air clean air contaminated air

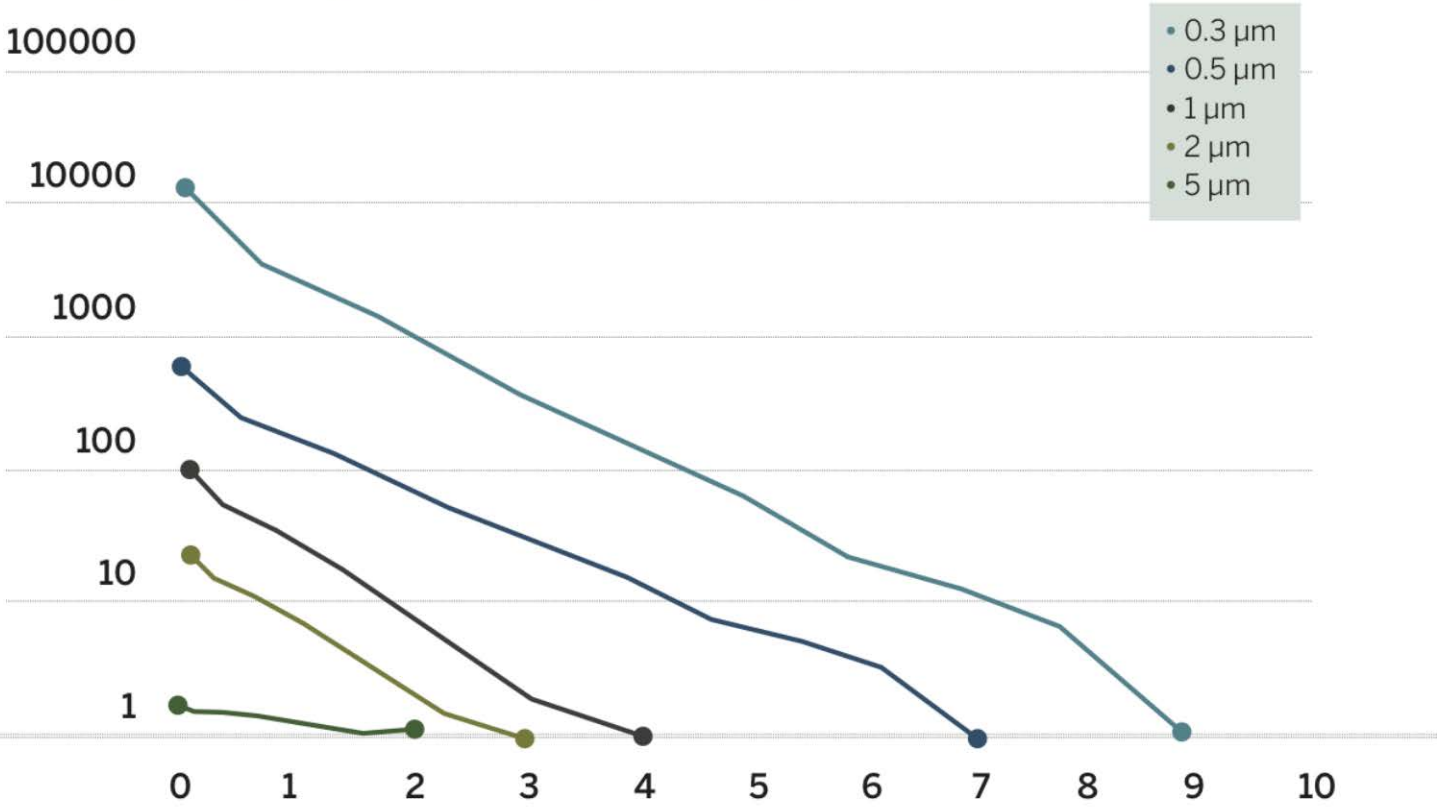
PARTICLE COUNTS : **METHOD**

	TEST	MEASURING INSTRUMENT	POINTS MEASURED
1	particle counts while running Power Unit	particle counter KC-01 produced by RION Co, Ltd.	at 300, 800 & 1800mm heights 20 points at each height
2	particle counts after running Power Unit	particle counter KC-01 produced by RION Co, Ltd	center of Clean Room at 1000mm height One point
3	smoking test	particle counter KC-01 produced by RION Co, Ltd	under vinyl wall, and at 200 & 400mm inside and outside of Clean Room five points at each interval

PARTICLE COUNTS DURING RUNNING POWER UNIT : **RESULTS**

PARTICLE SIZE HEIGHT	0.3 µm	0.5 µm	1 µm	2 µm	5 µm
1800mm	0.19	0.03	0.01	0.00	0.00
1300mm	0.24	0.03	0.02	0.01	0.00
800mm	1.67	0.13	0.07	0.03	0.00
300mm	1.67	0.74	0.45	0.13	0.00
OUTSIDE OF CLEAN ROOM	46918.23	5748.10	230.28	22.7	0.67

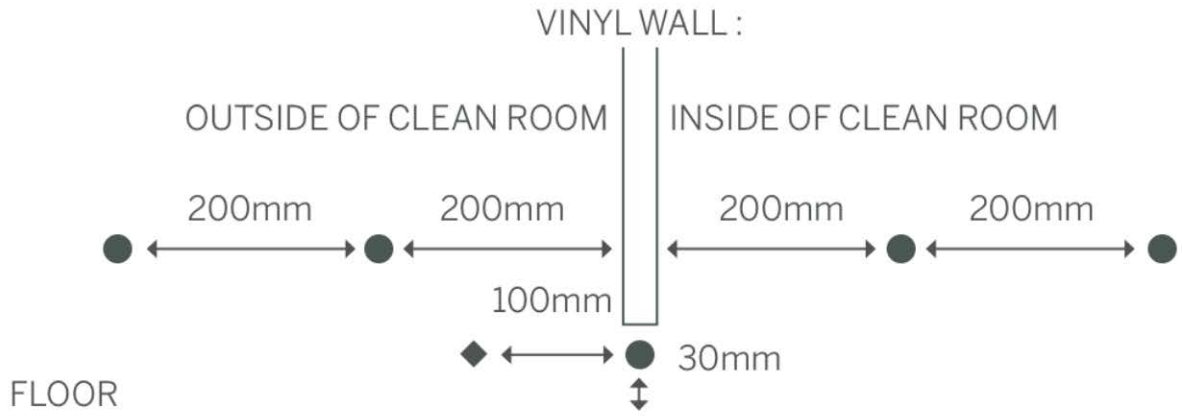
PARTICLE COUNTS AFTER RUNNING POWER UNIT : **RESULTS**



SMOKING TEST : **RESULTS**

PARTICLE SIZE	—400mm	—200mm	0mm	200mm	400mm
0.3µm	92,555	30,828	51	0	0
0.5µm	40,708	3,057	2.5	0	0
1µm	602	181	0.2	0	0
2µm	77	17	0.1	0	0
5µm	0.3	0.3	0	0	0

METHOD :



AIR CHANGE — ILLUMINATION — NOISE **METHOD**

TEST	MEASURING INSTRUMENT	POINTS MEASURED
1 air change	Anemometer produced by Japan Kanomax	30 points under holes on the ceiling
2 illumination	Illuminometer LX-105 produced by Custom	one point at the center of Clean Room at 1300mm height
3 noise	noise meter NA-24 produced by RION	4 points at 1000mm height

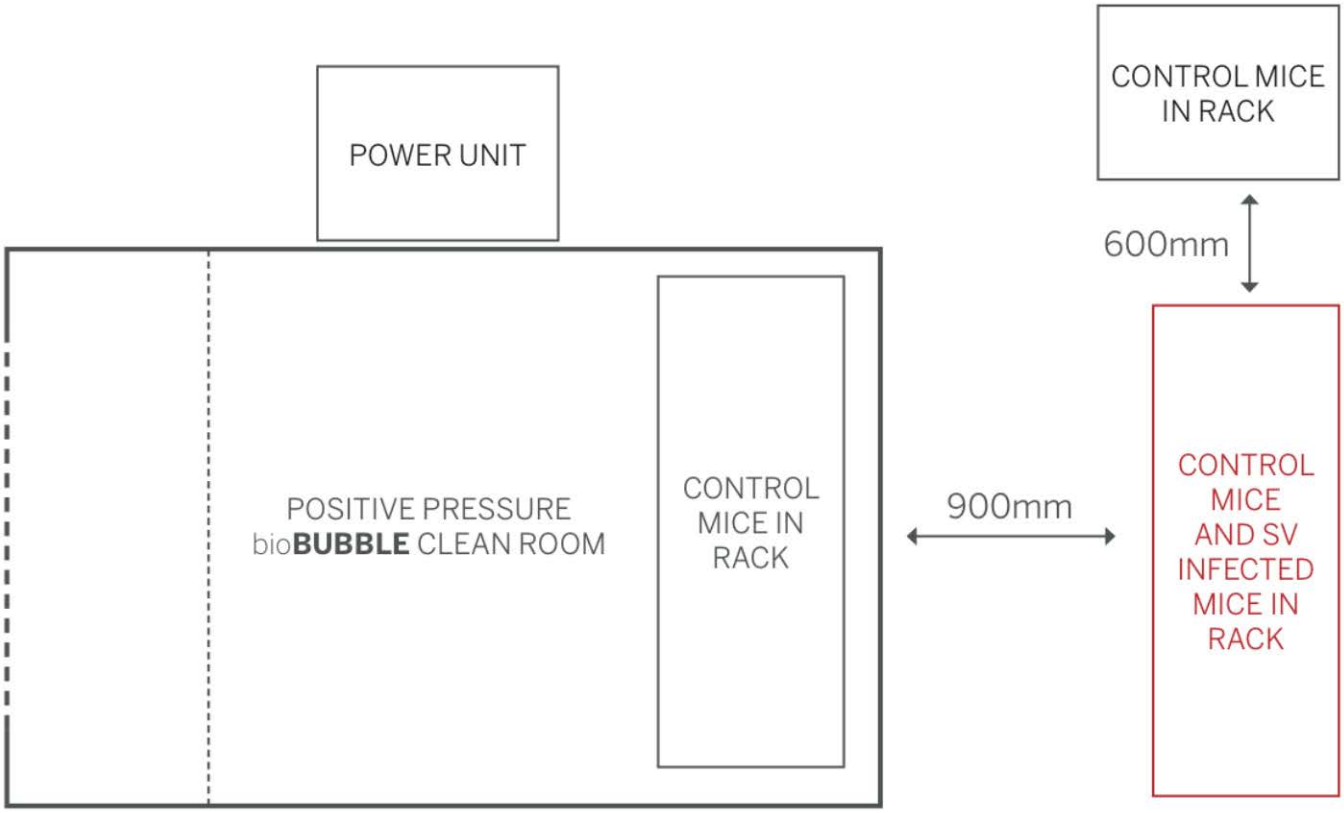
AIR CHANGE — ILLUMINATION — NOISE **RESULTS**

TEST	RESULT
1 air change	104.5 air changes/H
2 illumination	332.7 lux
3 noise	56.46 dB

INFECTION TEST : **METHOD**

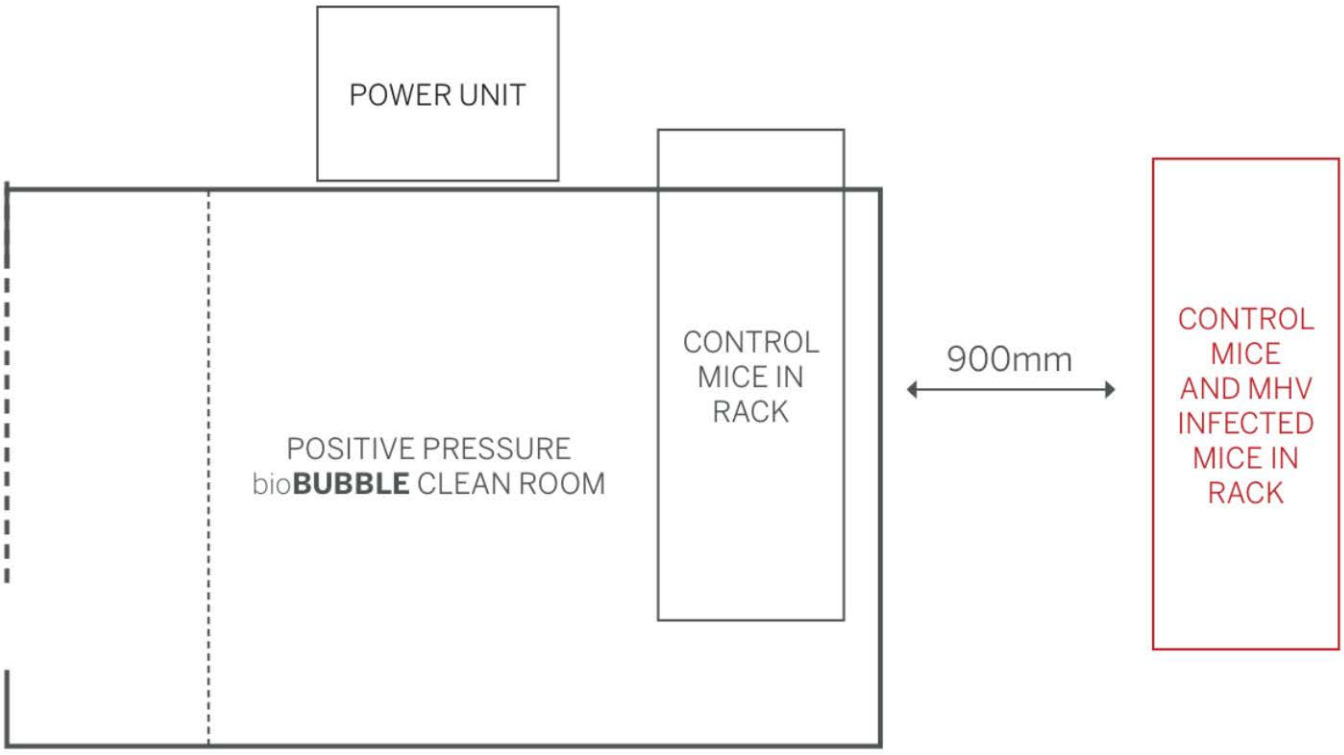
	TEST	MICROORGANISM	PERIOD TESTED
1	Infection test with SV from outside to inside of positive pressure bio**BUBBLE** Clean Room	Sendai Virus (SV)	8 weeks
2	Infection test with MHV from outside to inside of positive pressure bio**BUBBLE** Clean Room	Mouse Hepatitus Virus (MHV)	12 weeks
3	Infection test with several microorganisms in positive pressure bio**BUBBLE** Clean Room and between positive pressure bio**BUBBLE** Clean Room	Sendai Virus (SV) Mouse Hepatitus Virus (MHV) Pasteurella Pneumotropica	6 months

INFECTION TEST WITH SV FROM OUTSIDE TO INSIDE OF POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM : **FLOOR PLAN**



Sendai Virus (SV)
8 weeks

INFECTION TEST WITH MHV FROM OUTSIDE TO INSIDE OF POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM : **FLOOR PLAN**



Mouse Hepatitis Virus (MHV)
12 weeks

RESULTS

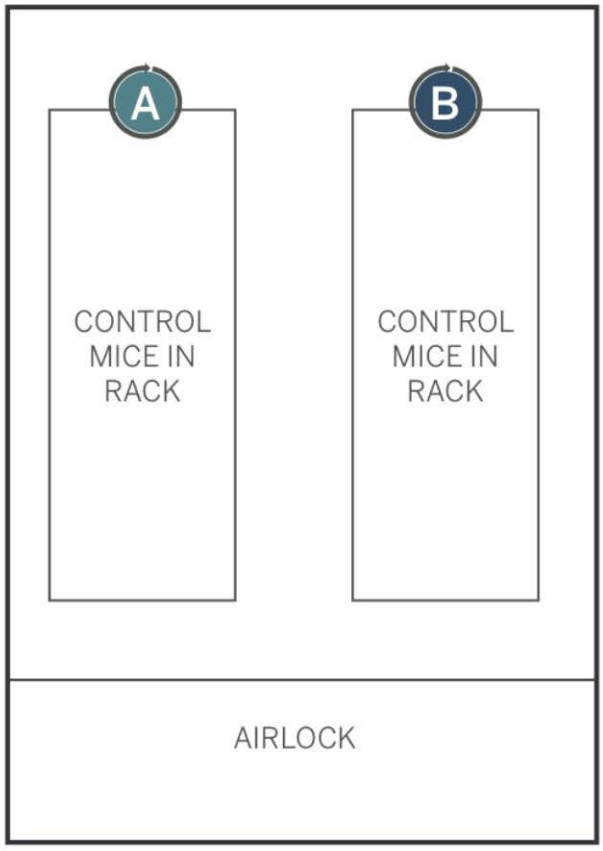
Sendai Virus (SV)

racks outside of bioBUBBLE		rack inside bioBUBBLE
control mice close to SV infected mice	control mice	control mice
INFECTED	**INFECTED**	**NOT INFECTED**

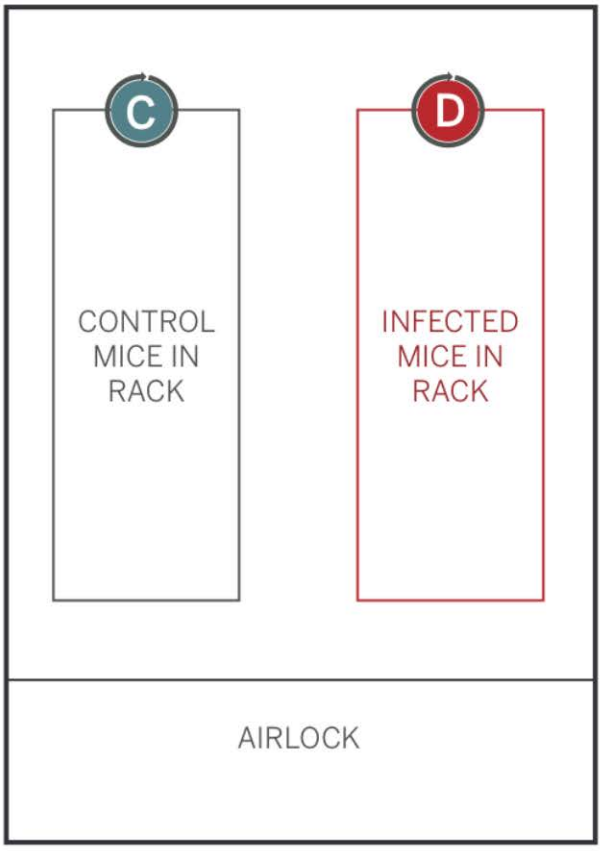
Mouse Hepatitis Virus (MHV)

racks outside of bioBUBBLE		rack inside bioBUBBLE
control mice close to MHV infected mice		control mice
INFECTED		**NOT INFECTED**

INFECTION TEST WITH SEVERAL MICROORGANISMS IN POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM AND BETWEEN POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM: **FLOOR PLAN**



CONTROL MICE IN bio**BUBBLE**



CONTROL AND INFECTED MICE IN bio**BUBBLE**

RESULTS OF INFECTION TEST IN INFECTED POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM

Sentinel Mice Rack in Infected bioBubble

1⇒	2⇒	3⇒	4⇒	5⇒
P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/2 S: 0/2 M: 0/2	P: 0/3 S: 0/3 M: 0/3
6⇒	7⇒	8⇒	9⇒	10⇒
P: 0/3 S: 1/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/2 S: 0/2 M: 0/2	P: 0/3 S: 0/3 M: 0/3
11⇒	12⇒	13⇒	14⇒	15⇒
P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 1/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3

Ⓒ

Infected Mice Rack in Infected bioBubble

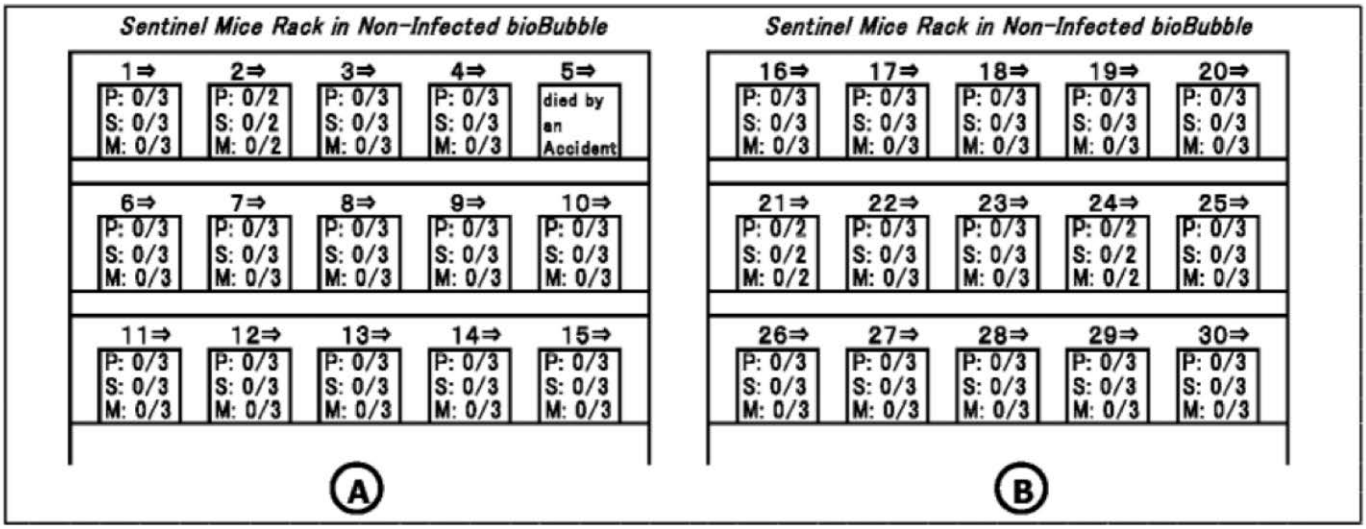
16⇒	17⇒	18⇒	19⇒	20⇒
P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 0/3 M: 0/3	P: 0/3 S: 1/3 M: 0/3	P: 0/3 S: 2/3 M: 0/3	P: 0/2 S: 2/2 M: 0/2
21⇒	22⇒	23⇒	24⇒	25⇒
P: 1/3 S: 0/3 M: 0/3	Infected Mice Cage	P: 0/3 S: 3/3 M: 3/3	Infected Mice Cage	P: 2/3 S: 1/3 M: 1/3
26⇒	27⇒	28⇒	29⇒	30⇒
Infected Mice Cage	P: 2/3 S: 3/3 M: 3/3	Infected Mice Cage	P: 1/3 S: 3/3 M: 3/3	Infected Mice Cage

Ⓓ

S: Sendai virus, M: MHV, Pp: *P. Pneumotropica*

Positive cases／tested cases, ⇒: Order and direction of cage changing

RESULTS OF INFECTION TEST IN CONTROL POSITIVE PRESSURE bio**BUBBLE** CLEAN ROOM



S: Sendai virus, M: MHV, Pp: *P. Pneumotropica*

Positive cases／tested cases, ⇒: Order and direction of cage changing