

AN IDEAL DISEASE DIAGNOSTIC LABORATORY SET UP

ESSENTIAL COMPONENTS

- | | | | |
|----|--|----|--|
| 1 | <i>General Reception Counter</i> | 15 | <i>Training Hall</i> |
| 2 | <i>Sample Reception Counter</i> | 16 | <i>Conference Room</i> |
| 3 | <i>Sample Repository Unit</i> | 17 | <i>Central Store</i> |
| 4 | <i>Post-Mortem Room</i> | 18 | <i>Data Processing and Bio-informatics</i> |
| 5 | <i>Cleaning and Washing Room</i> | 19 | <i>Office Room</i> |
| 6 | <i>Sterilization Room</i> | 20 | <i>Waste Management Unit</i> |
| 7 | <i>Preparation Room</i> | | |
| 8 | <i>Bacteriological Lab</i> | | |
| 9 | <i>Virology Lab</i> | | |
| 10 | <i>Molecular Lab</i> | | |
| 11 | <i>Serological Lab</i> | | |
| 12 | <i>Clinical and Histopathology Lab</i> | | |
| 13 | <i>Clinical Parasitology Lab</i> | | |
| 14 | <i>BSL-3 Lab</i> | | |



A view of a serology lab

INSTRUMENTS IN DIFFERENT LABORATORIES

<u>BACTERIOLOGICAL LAB:</u>		<u>MOLECULAR BIOLOGY LAB:</u>	
1	Laminar Air Flow	1	RT-PCR and Conventional PCR
2	Biosafety Cabinet	2	Refrigerated Centrifuge
3	Bacteriological Incubator	3	Spinner
4	Shaker Incubator	4	Bio Spectrometer
5	Refrigerator	5	Dry Block Heat
6	Microscope	6	Gel Electrophoresis System
7	Staining facility	7	Refrigerator
8	Rotatory Evaporator	8	Gel Logic Imaging System (Transilluminator)
9	Sonicator	9	Pipettes
10	Hot plate	10	Western Blotting Machine
		11	Deep Fridge
	<u>ANAEROBIC BACTERIOLOGICAL LAB:</u>		
1	Anaerobic work station		<u>SEROLOGY LAB:</u>
2	Anaerobic Jar	1	ELISA Reader System
		2	Vortex Mixture
	<u>VIROLOGY LAB:</u>	3	Pipettes
1	CO ₂ Incubator	4	Water Bath
2	Bio-Safety Cabinet	5	Refrigerator
3	Refrigerated Centrifuge Machine	6	Deep Fridge
4	Inverted Microscope		
5	Lyophilizer		<u>CLINICAL PATHOLOGY & PARASITOLOGY LAB</u>
6	Refrigerator	1	Refrigerator
7	Deep Fridge	2	Microscope
8	Ultra Deep Fridge	3	Staining facility
9	Magnetic Stirrer	4	Auto analyzer
10	Walk-in Incubator		

<u>MEDIA PREPARATION ROOM</u>		<u>STERILIZATION ROOM</u>	
	Electronic weighing balance	1	Autoclave
	Distilled water plant	2	Hot air Oven
	Microwave oven	3	Shaking Water Bath
	pH Meter		

CONSUMABLES REQUIRED FOR AN IDEAL LABORATORY

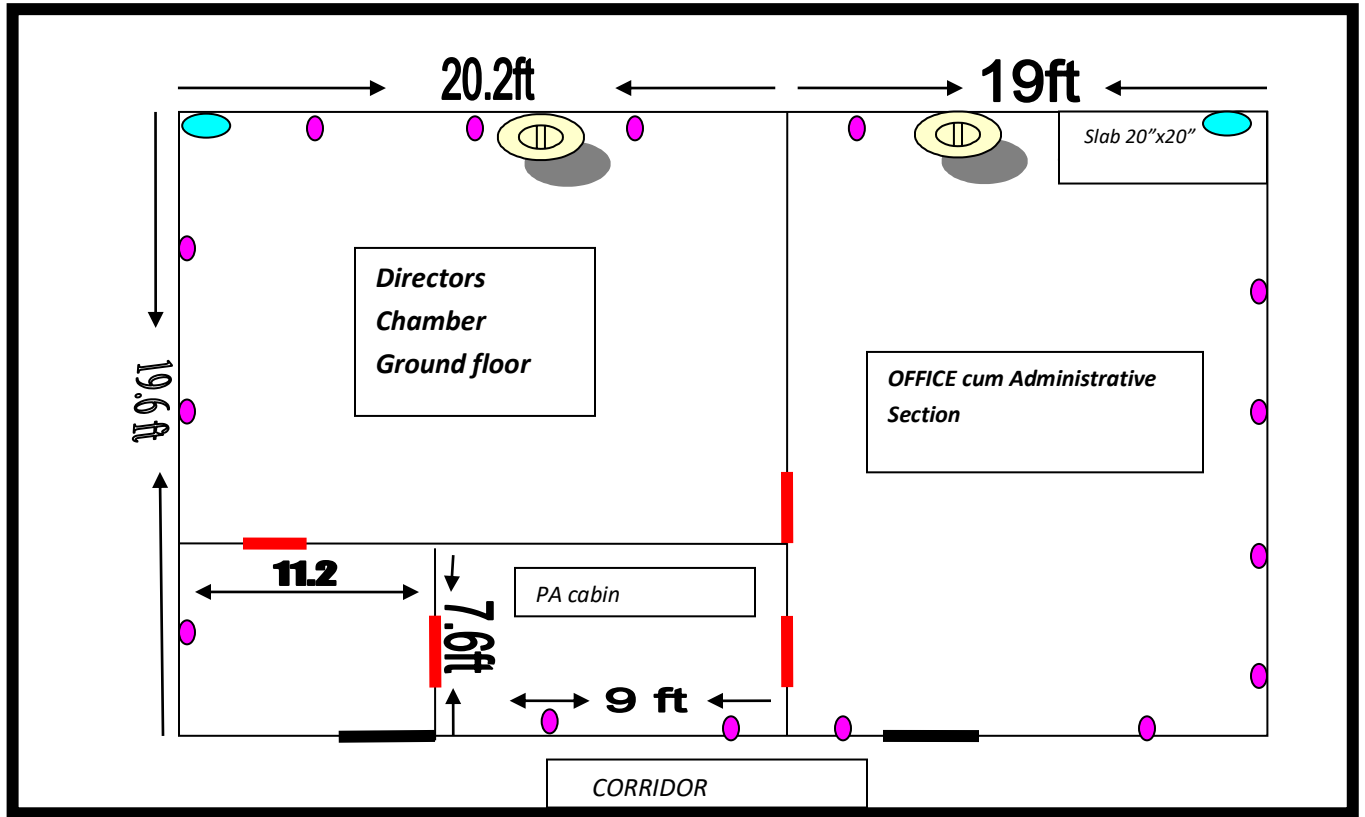
S. No.	Description	S. No.	Description
1	Potassium Chloride	29	Cupric sulphate
2	Acetic acid	30	Dimethyl aminobenzaldehyde (dmab)
3	Di-Sodium Hydrogen Phosphate	31	Diphenyl solution
4	Magnesium Chloride	32	Disodium phenyl-phosphate
5	Barium hydroxide	33	Enzyme (0.20%w/v-200 mg/100 ml soln), ndri paper strip test
6	Boric acid	34	Ethyl alcohol
7	Bromocresol green	35	Methyl alcohol
8	Concentrated hydrochloric acid	36	Ferric chloride
9	Copper sulfate solution	37	Gerber tube
10	Glycerine	38	Resorcinol, ndri test kit
11	Glycerol	39	Rosaniline acetate
12	Iodine solution,	40	Rosolic acid
13	Ionic strength adjustor (isa)	41	Sample bottles 500 ml
14	Iso-amyl alcohol	42	Silver nitrate,
15	Lactic acid solution	43	Sodium chloride
16	Methyl red indicator solution	44	Sodium hydroxide
17	Methylene blue test	45	Sodium hydroxide solution
18	Nesler's reagent	46	Sodium metaborate
19	Nitrazine-Yellow	47	Sodium/potassium standards
20	Phenolphthalein indicator	48	Standard phenol solution
21	Phospho molybdic acid	49	Sulphuric acid
22	Potassium chromate,	50	Vanadium pentoxide
23	Potassium ferrocyanide	51	Zinc sulphate
24	Potassium iodide	52	Zinc-copper protein precipitant
25	Potassium sulphate	53	Hand sanitizer
26	Staining reagents	54	McFarland solution
27	Biochemical reagents		
28	Antibiotic disc		
			Any other as per requirement
Media			
1	Nutrient Broth	25	MRS agar
2	Nutrient Agar	26	PCA agar
3	McConkeys Agar	27	BEA agar
4	Mannitol salt agar	28	LB broth

5	<i>Hekton Enteric agar</i>	29	<i>VRBL agar</i>
6	<i>Brilliant green agar</i>	30	<i>Hugh and Leifson media</i>
7	<i>Baird Parker agar</i>	31	<i>Thyoglycollate broth</i>
8	<i>Triple Sugar Iron agar</i>	32	<i>Brucella agar</i>
9	<i>XLD agar</i>	33	<i>EMB agar</i>
10	<i>Trypticase soy agar</i>	34	<i>Edwards media</i>
11	<i>DNase test agar</i>	35	<i>Thiosulphate Citrate Bile Salts- Sucrose Agar (TCBS)</i>
12	<i>Bile Esculin Agar</i>	36	<i>Blood Agar</i>
13	<i>Brain Heart Infusion Broth</i>	37	<i>Castaneda Medium</i>
14	<i>Crystal violet blood agar</i>	38	<i>Ellinghausen-McCullough-Johnson- Harris (EMJH) Media</i>
15	<i>Chocolate Agar</i>	39	<i>Lowenstein-Jensen Medium</i>
16	<i>Glycerol Saline Transport Medium</i>	40	<i>Middlebrook Media</i>
17	<i>MacConkey Bile Salt Lactose Agar</i>	41	<i>Leifson's Deoxycholate-Citrate Agar (DCA)</i>
18	<i>Salmonella Shigella agar (SS agar)</i>	42	<i>Potato Dextrose agar</i>
19	<i>PALCAM Listeria agar</i>	43	<i>Sabouraud dextrose agar</i>
20	<i>Amies Transport media</i>	44	<i>Dermatophyte test medium (DTM)</i>
21	<i>Viral transport medium</i>	45	<i>YEPD agar</i>
22	<i>Universal transport medium</i>		
23	<i>Peptone water</i>		
24	<i>Normal saline</i>		
25	<i>PBS</i>		<i>Other media as per requirement</i>
Diagnostics			
1	<i>Tuberculin PPD</i>	7	<i>Bacteriological Identification reagents/kits</i>
2	<i>Brucella identification reagent kit</i>	8	<i>Anitibiotic sensitivity testing discs</i>
3	<i>ELISA kits for PPR, CSF, ASF, PRRS, PCV, EEHV,LSD, Pox, Brucella, Leptospira etc.</i>	9	<i>PCR & RT-PCR kits for PPR, CSF, ASF, PRRS, PCV, EEHV,LSD, Pox, Brucella, Leptospira etc.</i>
4	<i>Salmonella identification kit</i>		
5	<i>Mastitis detection kits</i>		
6	<i>Haemoprotozoa staining kit</i>		<i>Others as per requirement</i>
Glass/ Plastic wares			
1	<i>Flasks- 100 ml – 1000 ml</i>	16	<i>Zip bag</i>
2	<i>Beaker- 50 ml – 1000 ml</i>	17	<i>Biohazard bags</i>
3	<i>Measuring cylinder 50 ml-500 ml</i>	18	<i>Blood collection set</i>
4	<i>Test tubes – 18x150 mm</i>	19	<i>Burette- 50 ml</i>
5	<i>Test tubes with lid 18x150 mm</i>	20	<i>Burette stands</i>

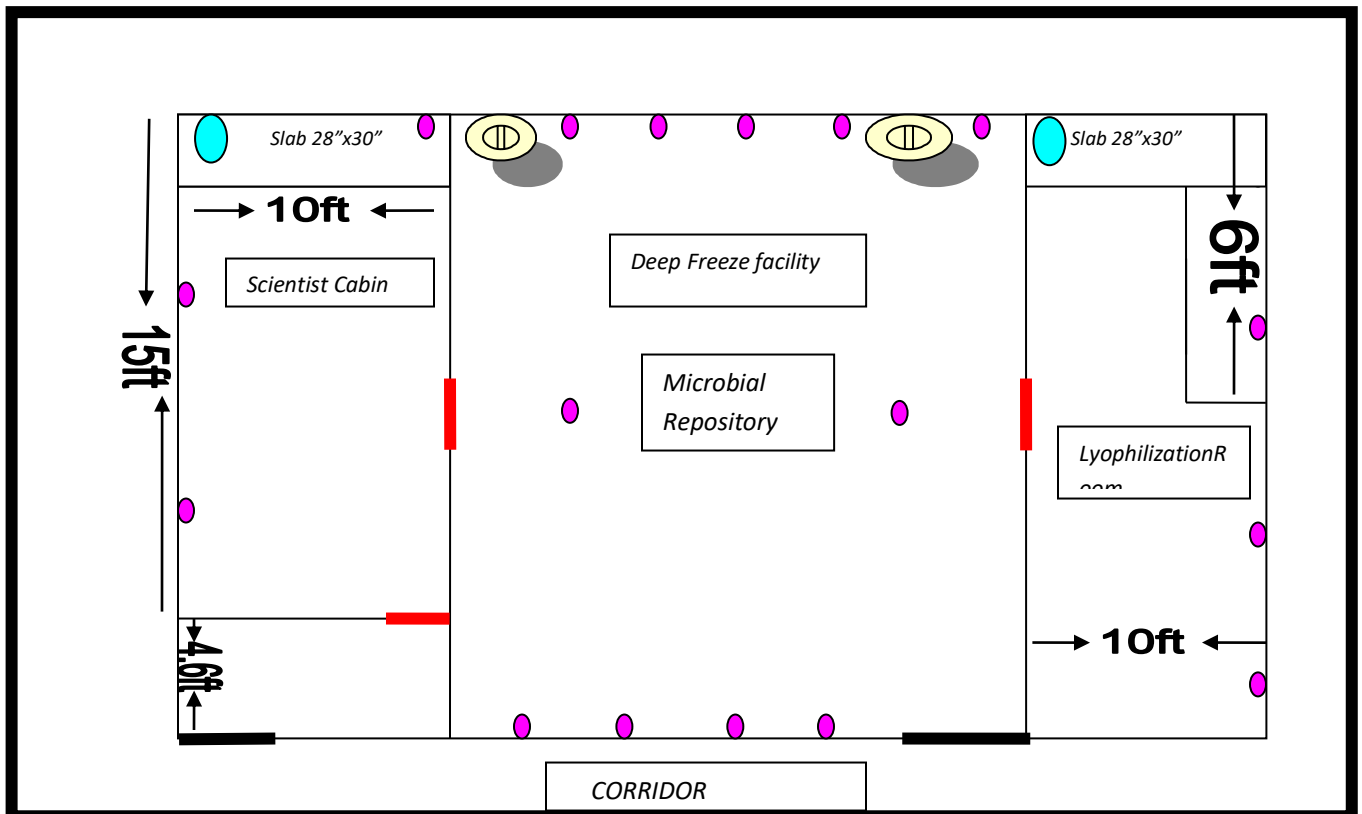
6	<i>Pasteur pipette</i>	21	<i>Pipette tips- 200 ul, 1000 ul</i>
7	<i>Pestle & mortar</i>	22	<i>Petri plates (glass/plastic)</i>
8	<i>Sample collection vials</i>	23	<i>Micro tip rack</i>
9	<i>Sample storage vials</i>	24	<i>Test tube- 6 ml</i>
10	<i>Swabs in transport broth</i>	25	<i>Centrifuge tube 1.8 ml & 15 ml</i>
11	<i>Syringe with needle</i>	26	<i>Gerber tube</i>
12	<i>Pasteur pipette</i>	27	<i>Litmus paper.</i>
13	<i>Rubber teat</i>	28	<i>Pipette: 1, 5 and 10 ml capacity.</i>
14	<i>Cotton</i>	29	<i>porcelain basins</i>
15	<i>Wrapping foil</i>	30	<i>Thermometer</i>
31	<i>Apron, cap etc.</i>	43	<i>Disposable gloves</i>
32	<i>PPE</i>	44	<i>Disposable mask</i>
33	<i>Field sample collection bag</i>	45	<i>Disposable needle & syringe</i>
34	<i>Burrete</i>	46	<i>Single channel automatic micro pipette</i>
35	<i>8 channel automatic micro pipette</i>	47	<i>Pipette rack</i>
36	<i>Tips for micro pipette (.2 to 200 micro lit)</i>	48	<i>wash bottle (200 & 500 ml)</i>
37	<i>Test tube stand</i>	49	<i>Tuberculin syringe</i>
38	<i>Shallow flat bottomed dishes of aluminum alloy, nickel, stainless steel, porcelain or silica, 7 to 8 cm diameter, about 1.5 cm in height and provided with easily removable but closely fitting lids</i>	50	<i>Slide calipers</i>
39	<i>Cool box, thermos flask, thermos-cool box</i>	51	<i>Sugar tube</i>
40	<i>Ice pack</i>	52	<i>Post Mortem set (Large & Small animal)</i>
41	<i>Marker, registrar, cello tape, pencil etc.</i>	53	<i>Durham's tube</i>
42	<i>Vacutainers</i>		

LABORATOR SET UP BLUE PRINT

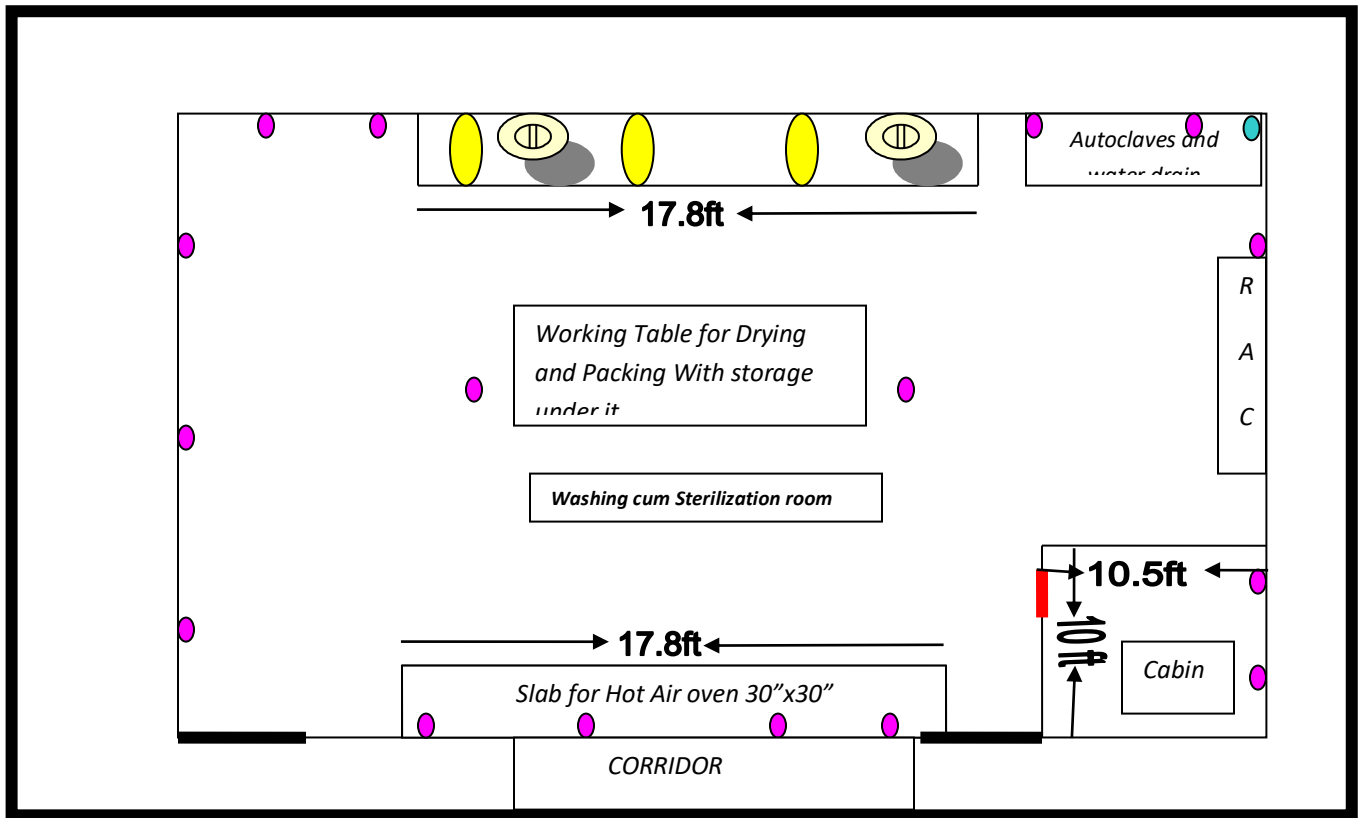
ROOM NO 1: OFFICE CUM ADMINISTRATION



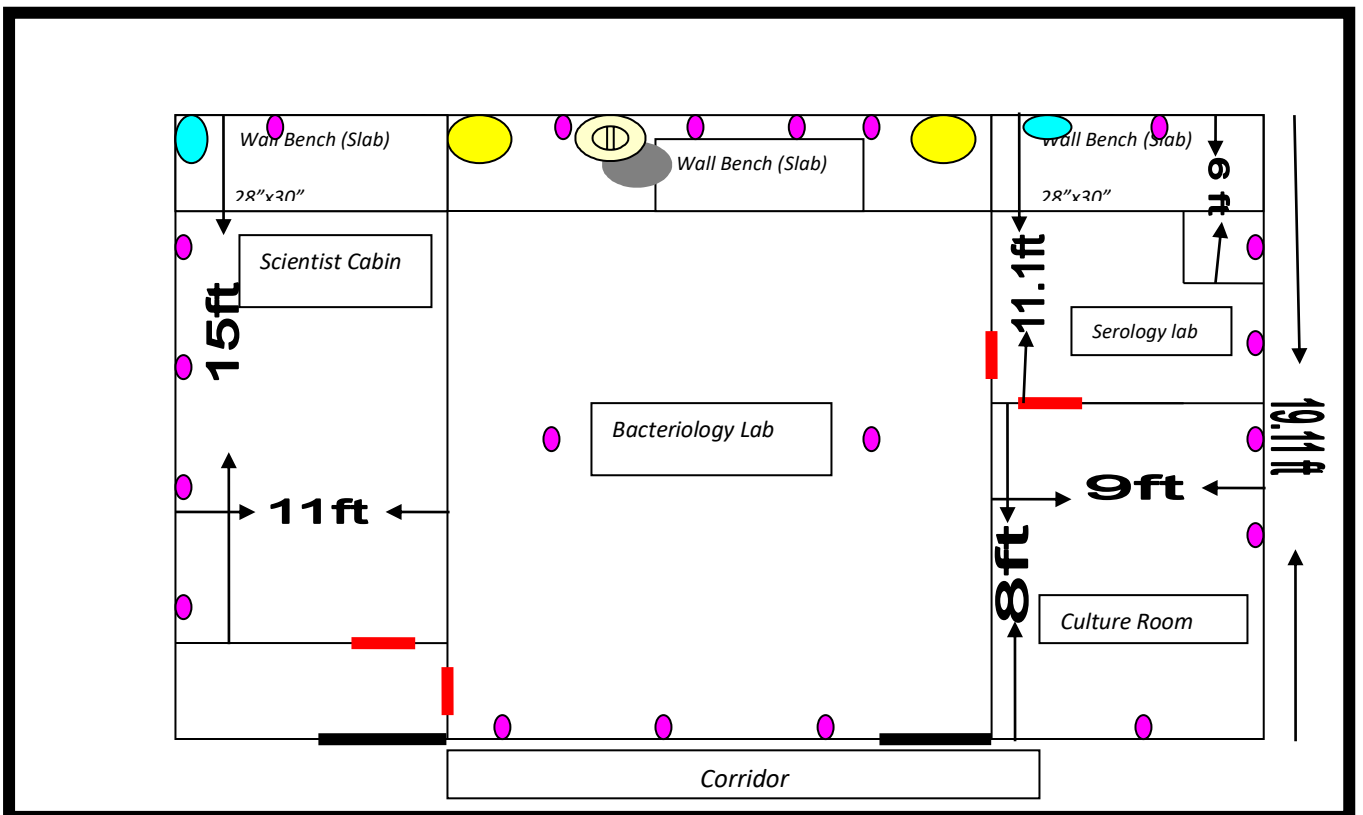
ROOM NO 2: MICROBIAL REPOSITORY



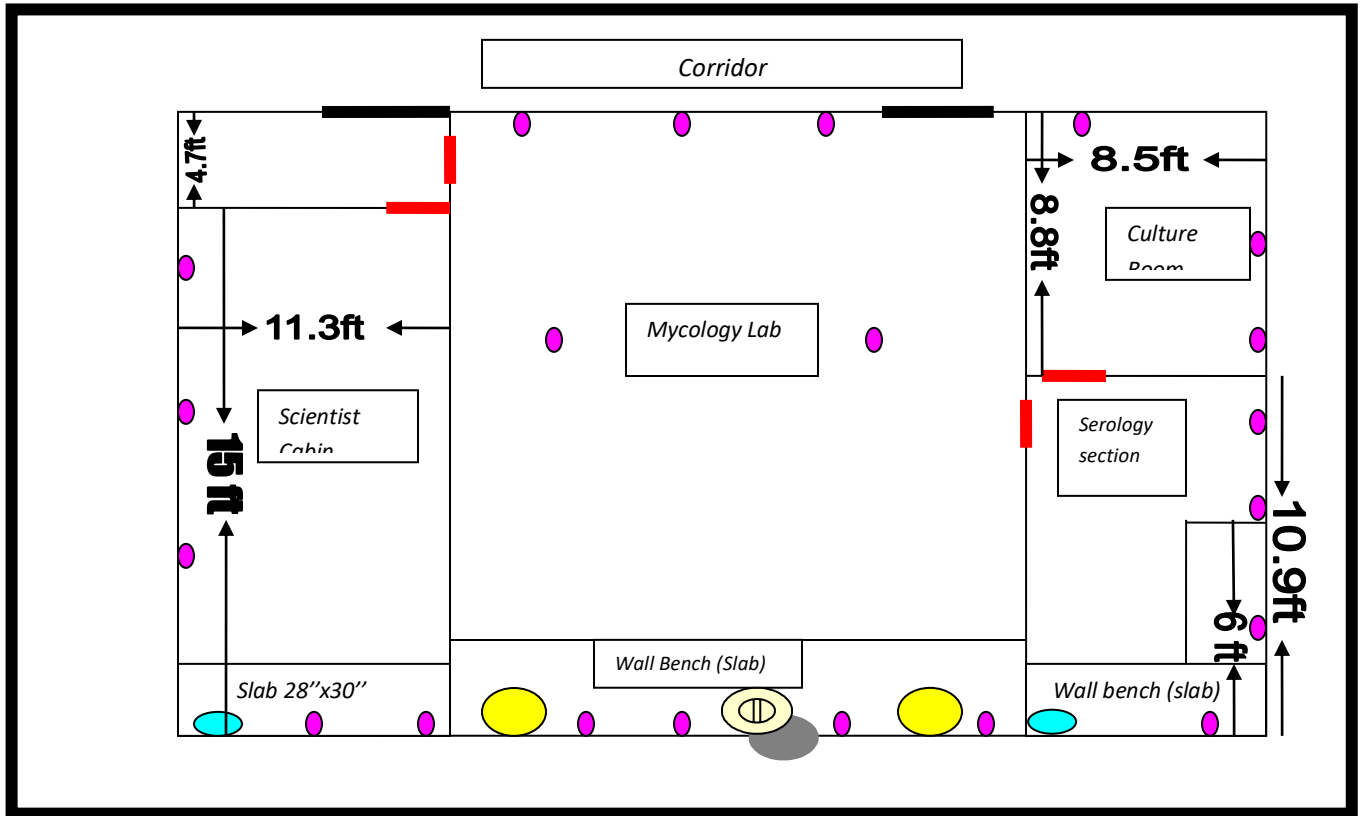
ROOM NO 3: WASHING CUM STERILIZATION



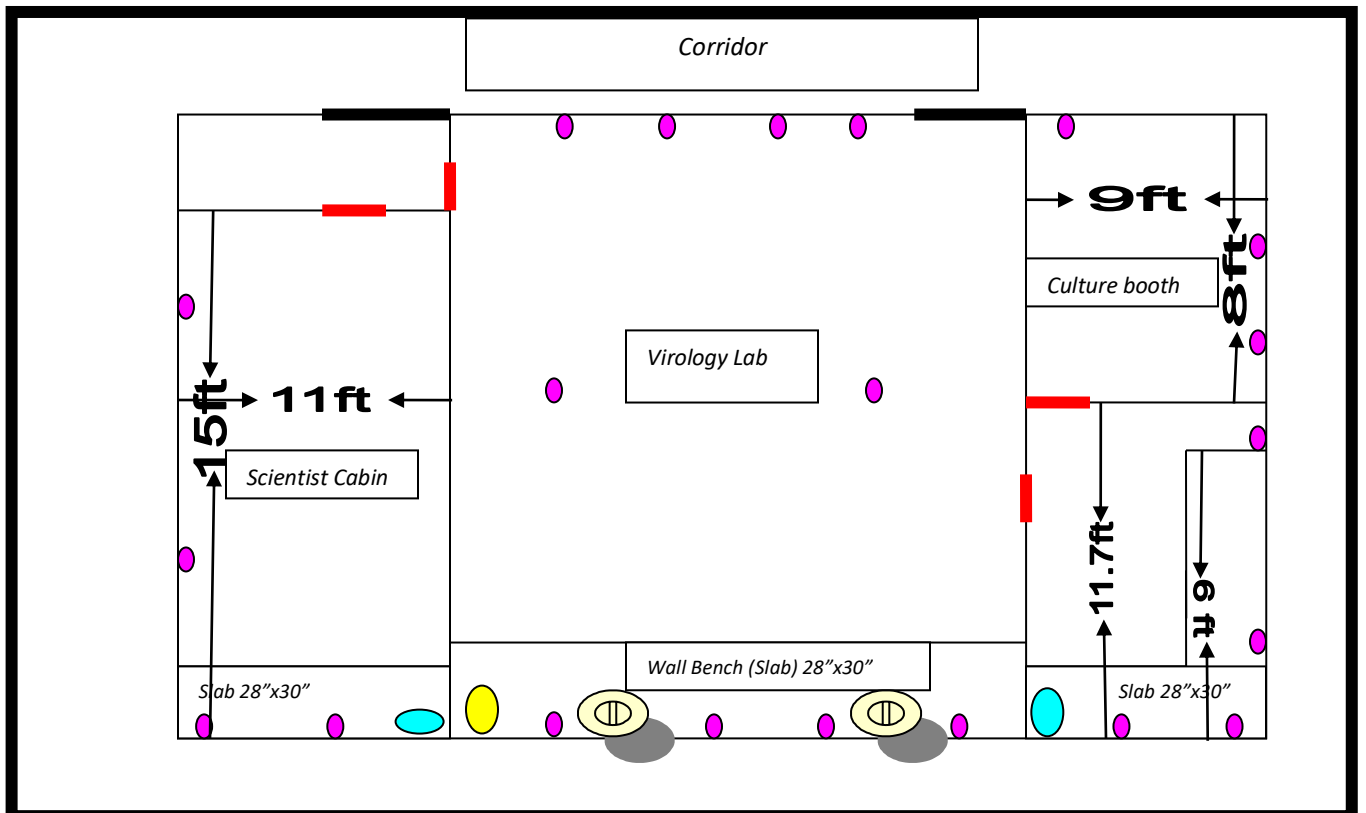
ROOM NO4: BACTERIOLOGY LAB



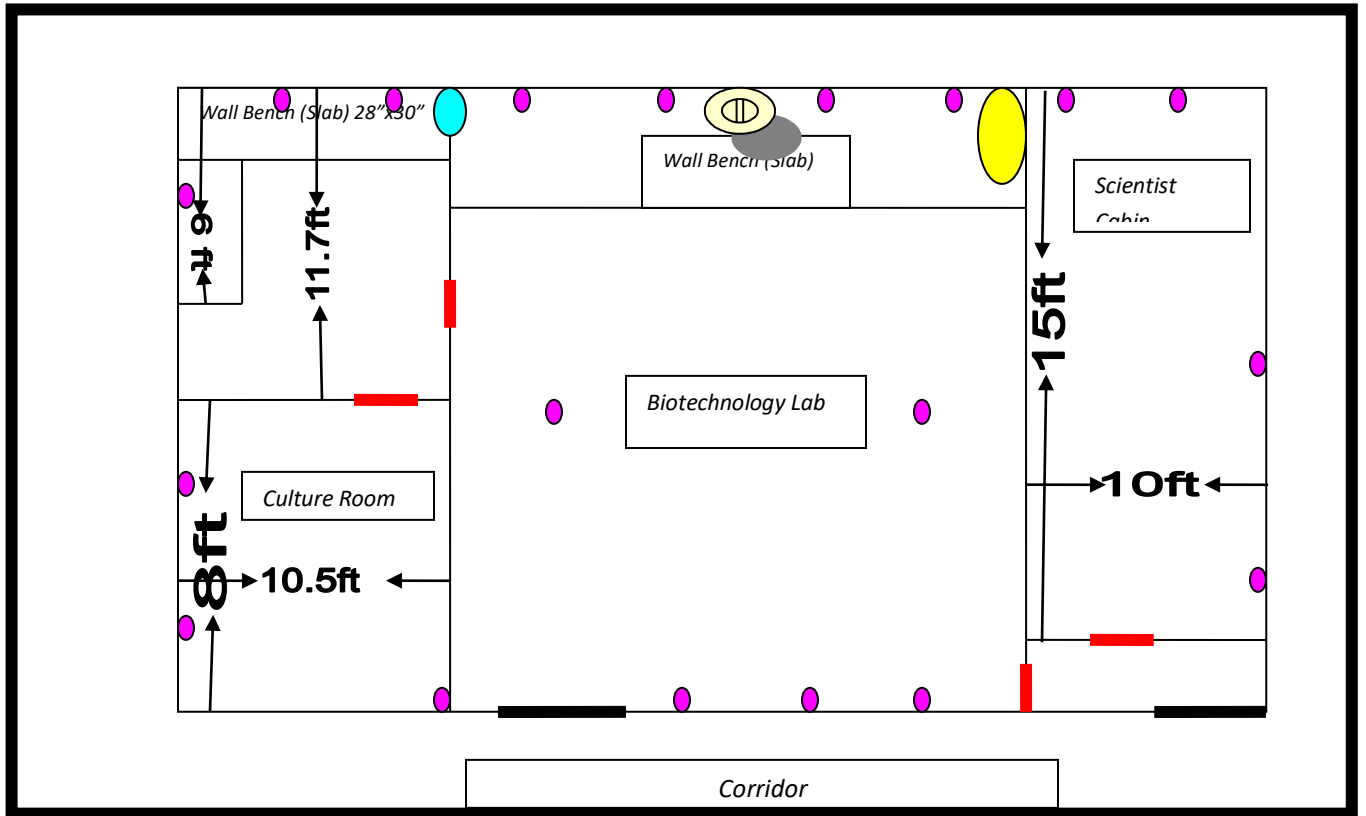
ROOM NO 5: MYCOLOGY LAB



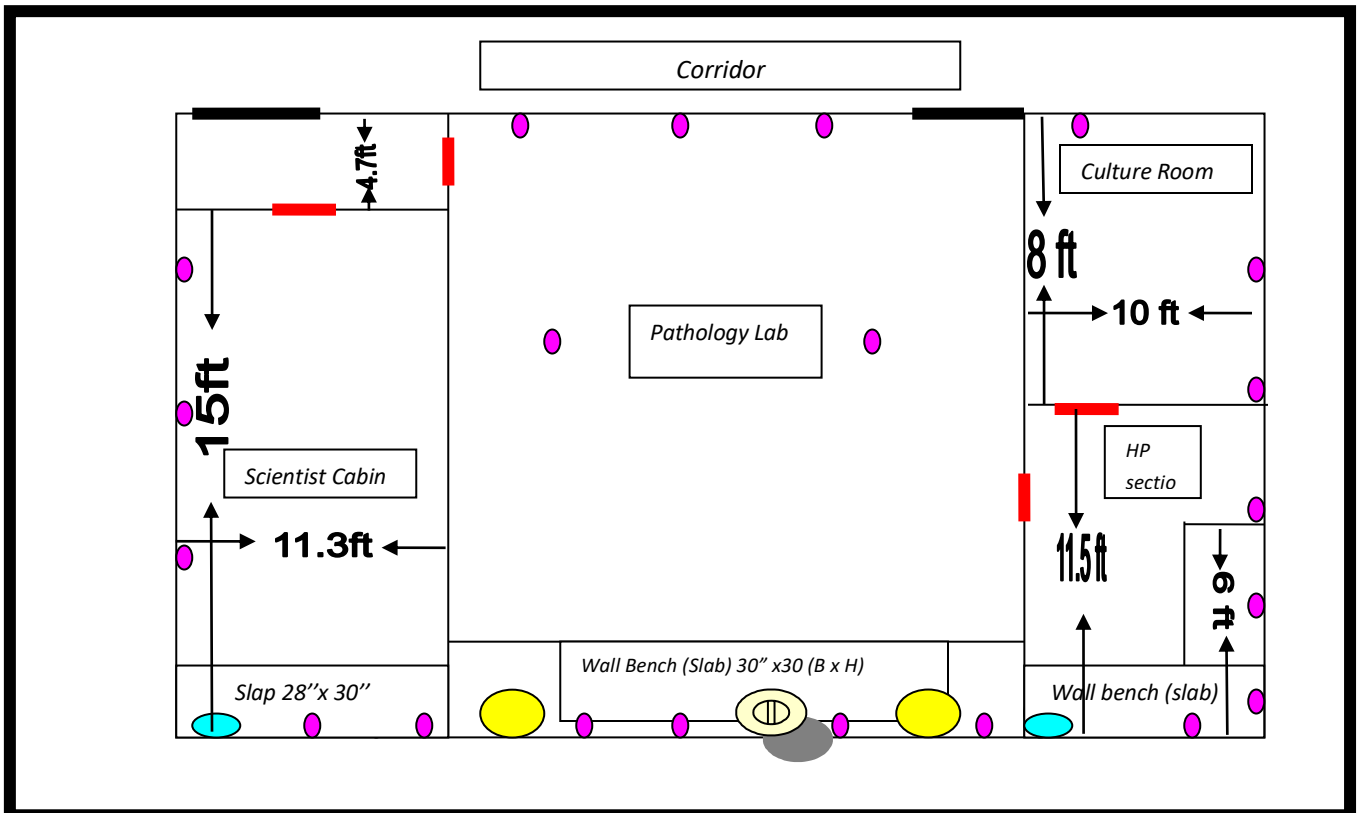
ROOM NO 6: VIROLOGY LAB




ROOM NO 7: MOLECULAR LAB




ROOM NO 8: PATHOLOGY LAB



 → *Electric point*

 → *Small sink*

 → *Larger sink*

 → *Exhaust Fan (1 feet diameter)*

 → *Proposed doors*