

Project-II

Instrumentation for Medical Diagnostic laboratories

Ajay



Home

Approach

- Got a requirement –**project idea** .

- Developing understanding about the domain. [Process](#)

- Is project **Relevant?**

]

Opinion : Experts, User, manufacturers, suppliers

[Expert's Quote](#)

[Survey chart](#)

Problem area with Industrial Design potential?

[Process](#)

- Availability of **Similar products** Line [Products](#)

- Product Brief [Product Brief](#)

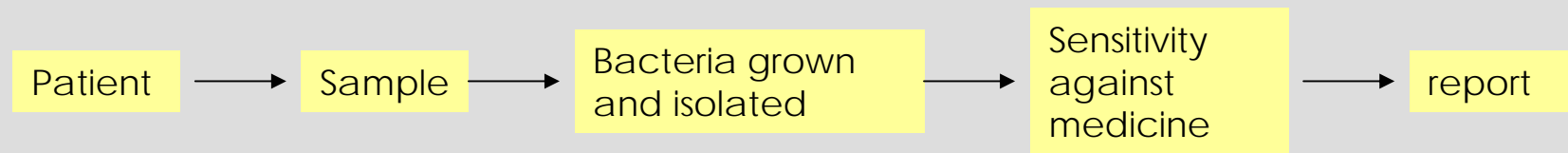
- [Concepts](#)

Antibiotic Sensitivity Test

- A test to determine the effectiveness of antibiotic therapy against microorganisms that have been isolated from patients samples.

The test determines the effectiveness of each antibiotic against the particular organism.

process



ANTIMICROBIAL SENSITIVITY TESTING (Solid Phase)

Sample collection

- Different container for different type of samples

Registration

Sample Preparation

- Organism should be alive in the process

Inoculation

- Thin spread
- Protection from environmental contamination
- Worker's safety

Isolation

- Standard soln. Of barium chloride for comparison

Incubation

Reading

- Reading Diameter of inhibition area of the colony grown around Antibiotic disk

Plating

- Uniform distribution
- Holding the petri dish during plating
- Holding test tube, sterilizing loop, swabs
- Contamination from environment and worker

Conclusion

Comparison

- Reading of inhibition area and comparing it with standard value

Placing

- Dispensing from cartridge
- Placing manually one by one by fork

Antibiotic Selection

- Selection of antibiotic disk to put
- Cartridge or by fork

Report

Incineration

Sterilization

User Survey

		Registration	Plate Preparation	Plating	Disk Dispensing	Laminar Flow / Hood	Colony Reading	Turbidity meter	incubator	Holders for tubes, Dishes
Dr.Tripathi	BPL.			y	Y	y		y		y
Dr.Natrajan	KEM			y	y					y
Dr.Baweja	KEM							y		y
Dr.Mehta	KEM							y		
Dr. Nagendra	AFMC		Y	y	y	y	y			
Dr.Chunber	AFMC		Y	y	y	y	y			
Dr.Sawhney	AFMC					y	y			
Dr.Jain	LONI				y		y	y		
Dr.Biswas	TATA				y					
Dr.R.Viswnathan	Bom.han			y	y	y				
Dr.Chitnis	INDR			y	y			y		
Dr.Bapat	powai									
Mrs.Majumdar	Somaya	y			y			y		
Mrs.Seema	Somya				y			y		
Dr. shivlekar	iiit									
Dr.Mehta	lit,hos.									
Mrs.Chunekar	dwipl		y					y		
Mr.Patil	Himed									
Prof.Mukharji	CSRE									

Expert's Quotes

- "If you can do that nothing like it."
- *Dr. Roopa Vishwanathan, Bombay hospitals, Mumbai*
- "Yes it will be useful you can give attachments for settings for different methods."
- *Dr. Natrajan, KEM Hospital, mumbai*
- "We are using turn table, you can design some hood to protect user."
- *Dr, chumber, AFMC, Pune*
- "It is not convenient to work with the existing mini laminar flow."
- *Dr. sawhany, AFMC, PUNE*
- "High tech look built confidence among patients and workers."
- *Dr. Mahajan, DELTA, Bhopal*
- "Every laboratory would like to purchase if it less then 1lac rupees."
- *Dr. Tripathi, microbiologist, Bhopal*
- "Such an workstation would be very helpful for us"
- *Mrs. Seema, Dept. of microbiology, somaya college, mumbai"*
- " using turntable is useful but presently we are working on it outside the hood"
-*Dr. Chitnis, Chithram Hosp. & Research centre, Indore*
- " There are issues in zone reading, laminar flow, media pouring, sterilization which requires design expertise but turn table is very simple machine"
- " Dispensing systems for disk, dishes,& zone reader are the potential area to work on."
-*DR.Nagendra, HOD, Dept. of Microbiology, AFMC, Pune*



Equipments

- Hood with Laminar flow- workstation
- Antibiotic Disk dispensing
- Rack and organizer for:
 - Petri Dish
 - Test tube
 - Sterilizing loop, wire
- Turn Table

Insights

- Thirst to look **High tech**.
- **Foot print** of the workstation.
- Instruments mostly are **imported** and **expensive**.
- User don't hold petri dish horizontal it is in some angle.
- No availability of organizing devices for during working and transportation.
- Fill the gap of **users safety**.
- Disciplined way of working through design.

Product Brief

- Design of a **table top workstation** for **control environment** for **work** and **workers safety**.
- **Turn table** for Petri dish plating.
- **Rack and organizing devices** for various devices like Petri dish, test tube, sterilizing wires.
- Antibiotic Disk **dispensing system**.

- Design for:

- Ergonomics :

most of the equipments are imported and not designed for **Indian conditions**.

Women is the **majority staff** in labs.

- cost

- Aesthetics : **high tech look**

- Material : Can it be **autoclaved** for **sterility**



Similar Products and concepts

[Turn Table](#)

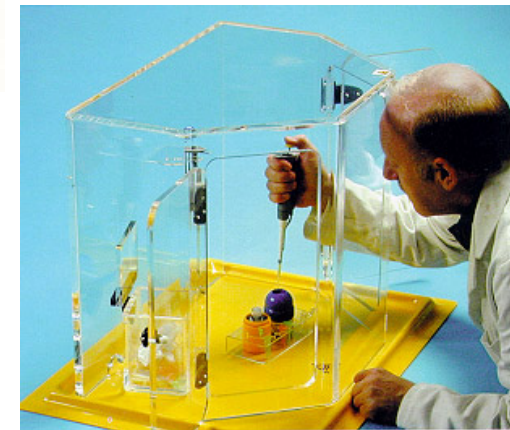
[Workstation](#)

[Racks / Organizer](#)

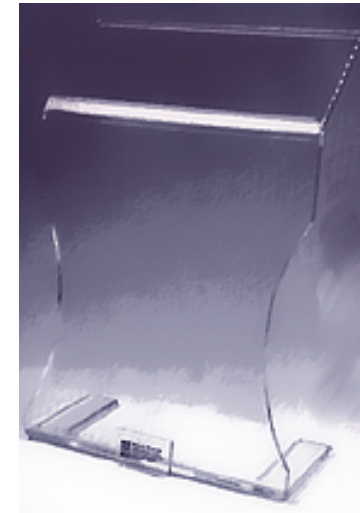
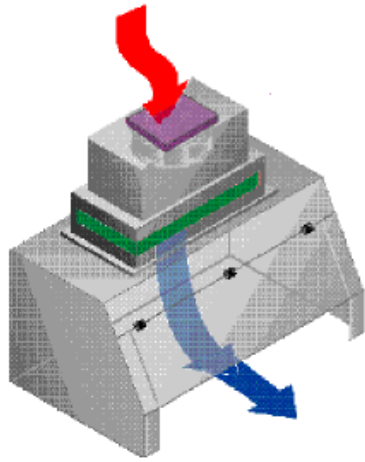
[Disk Dispensing](#)

[Home](#)

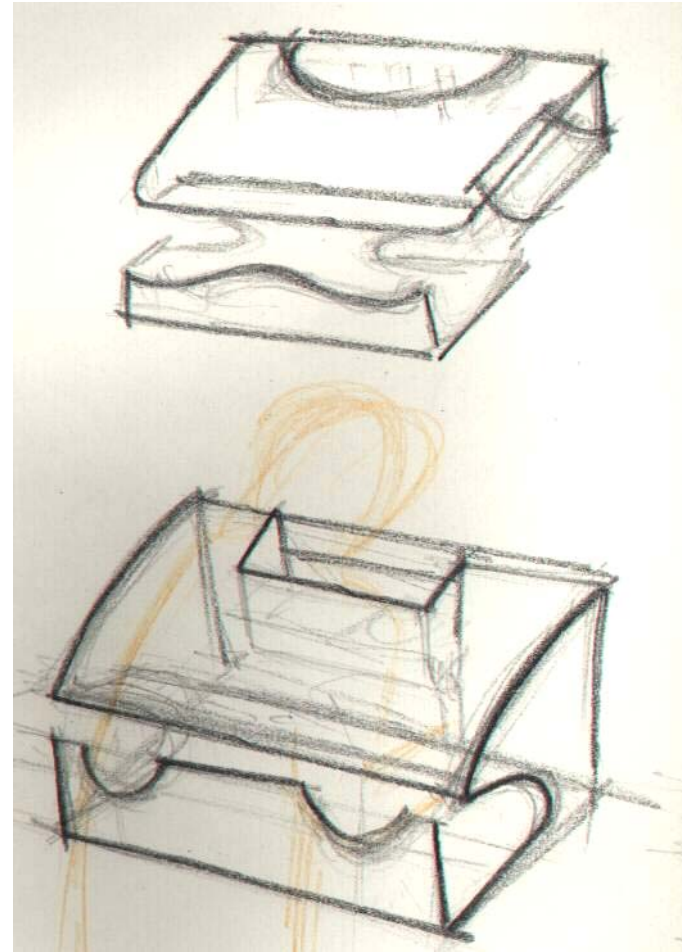
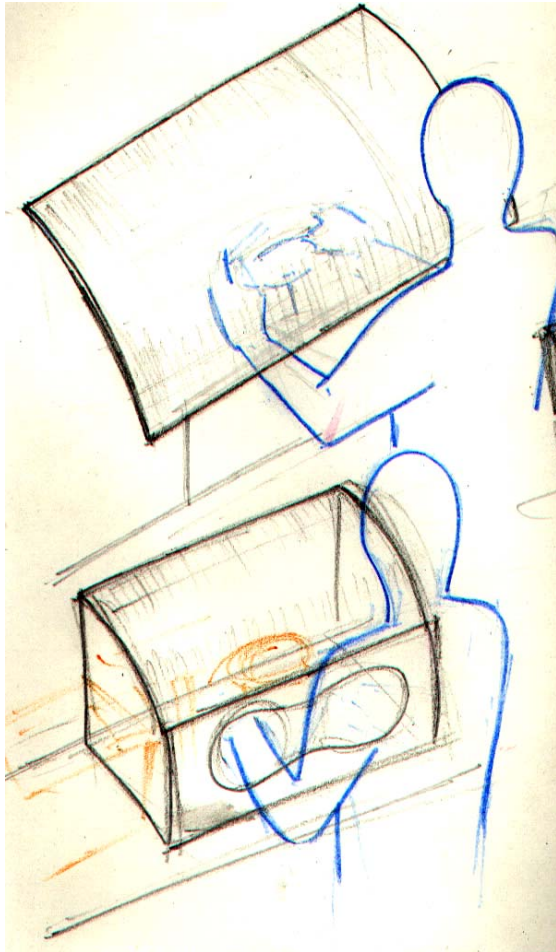
Workstation



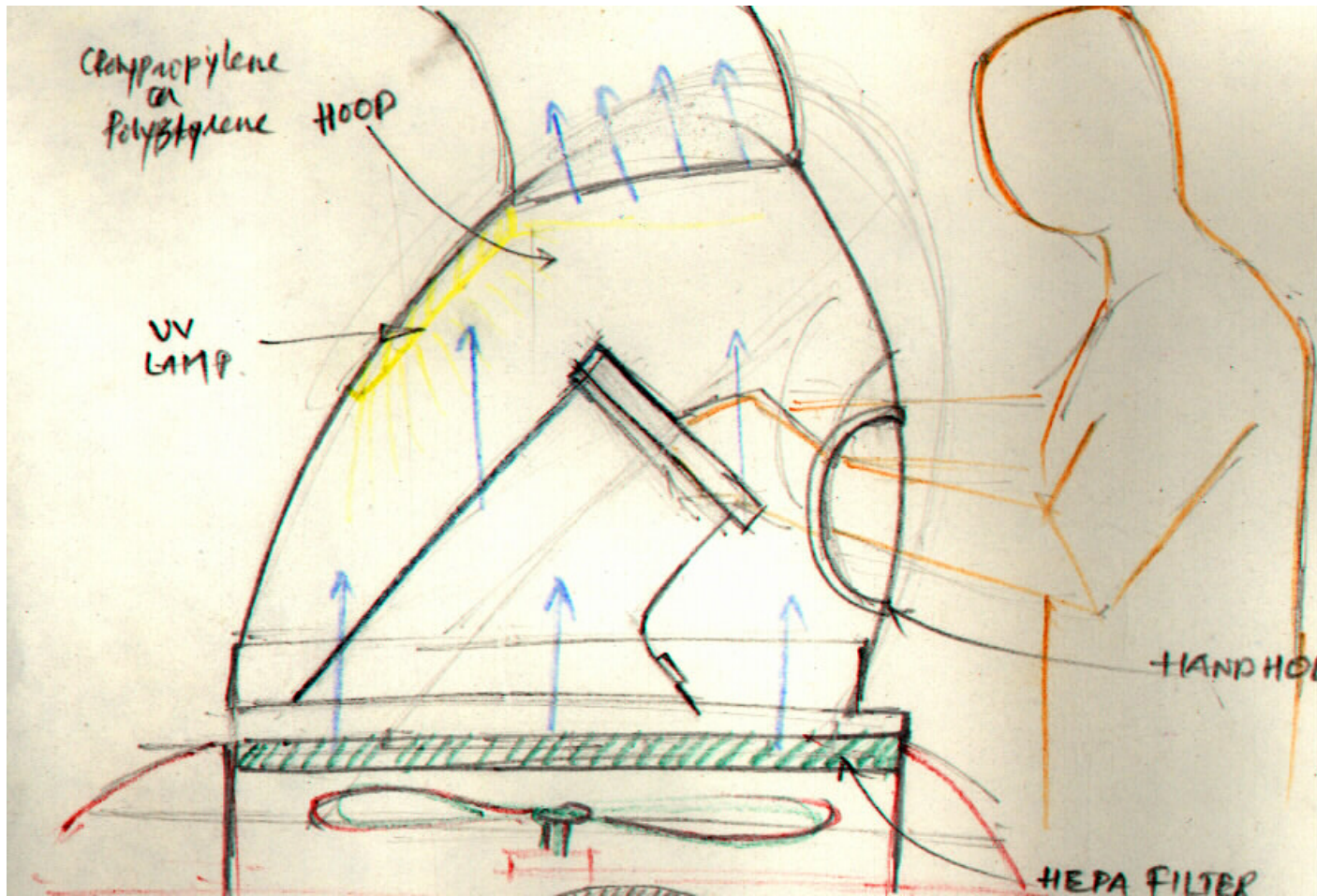
Workstation /Hood



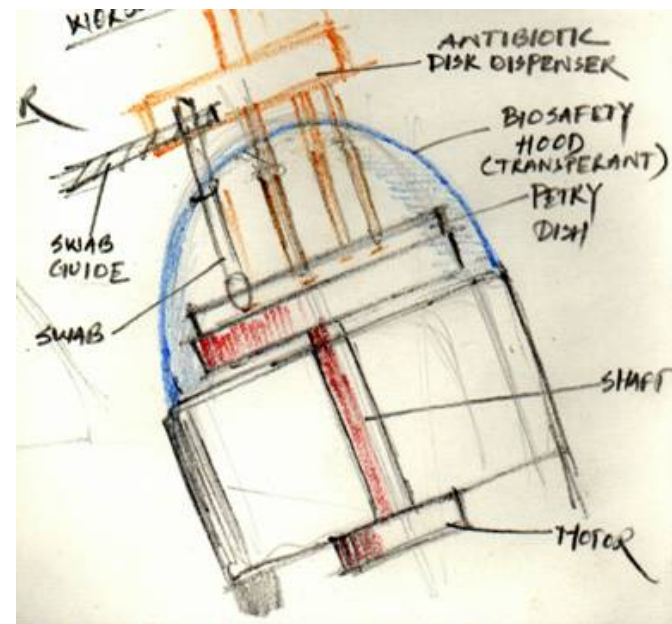
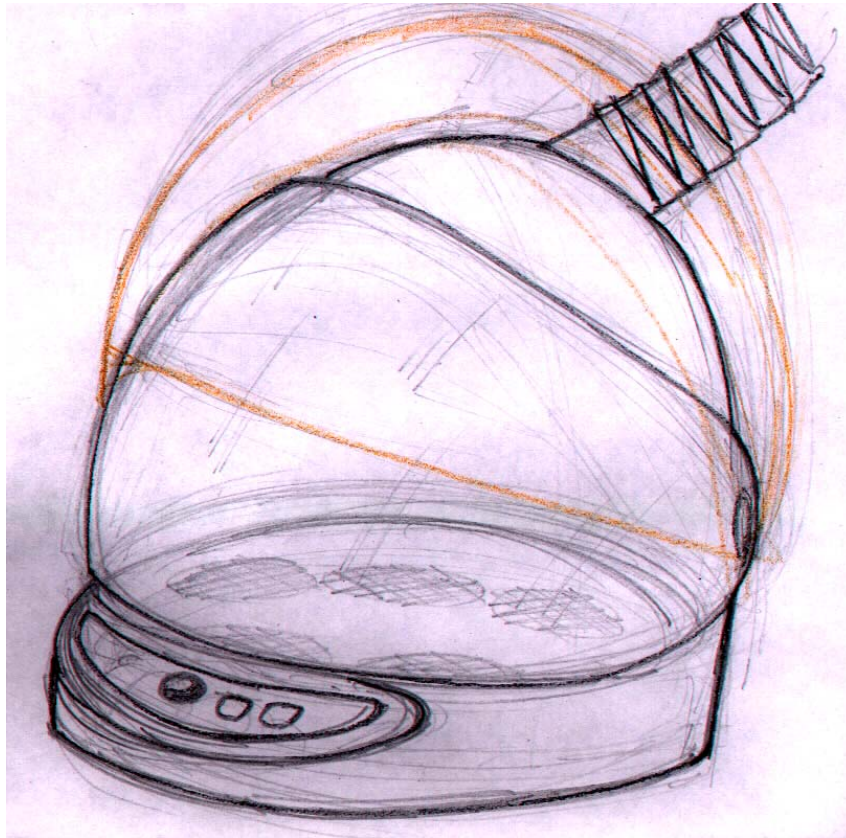
Hood- concept generations



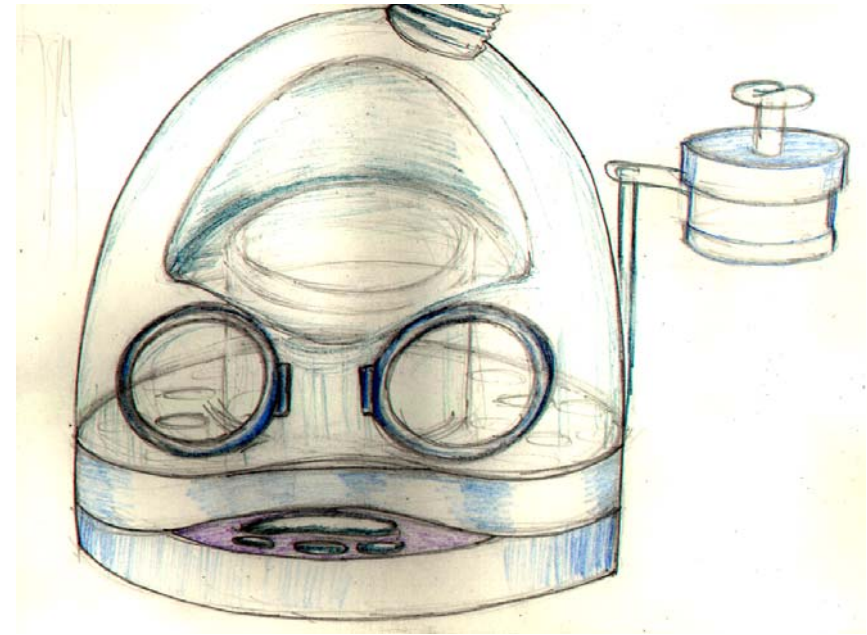
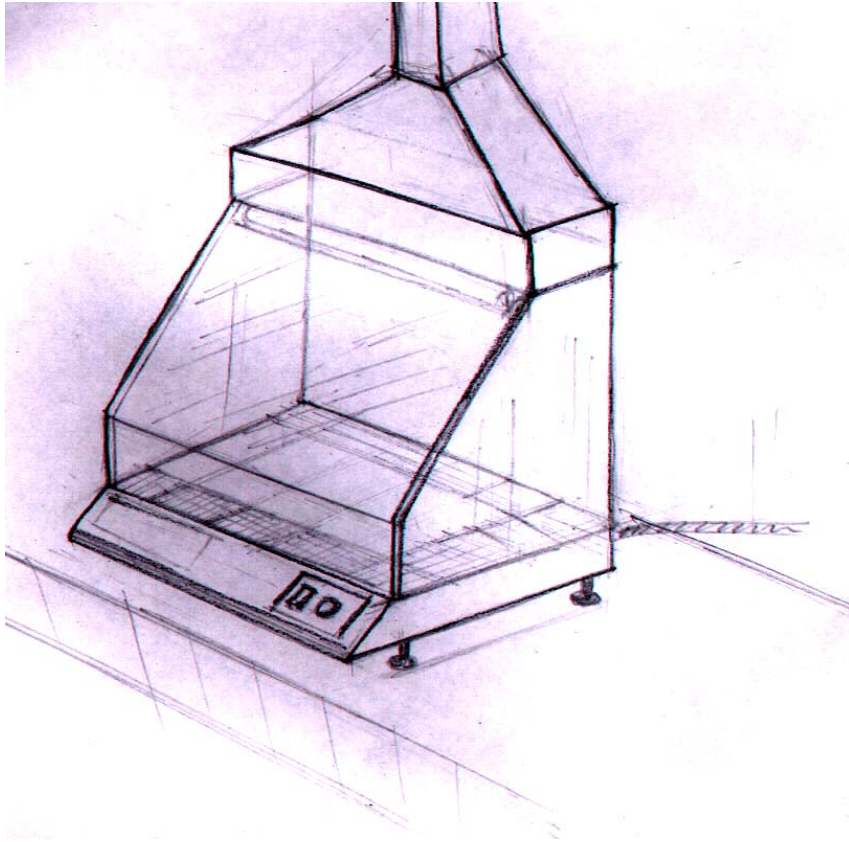
Workstation - concepts



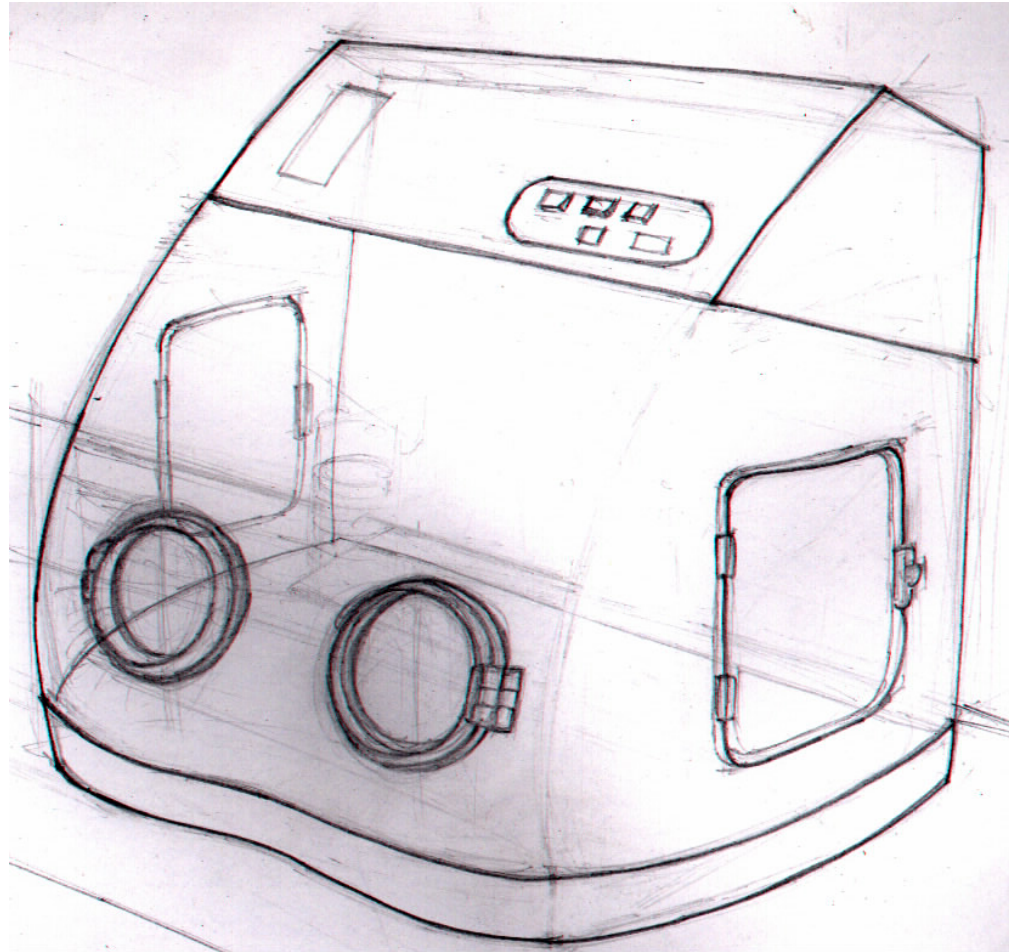
Workstation - concepts



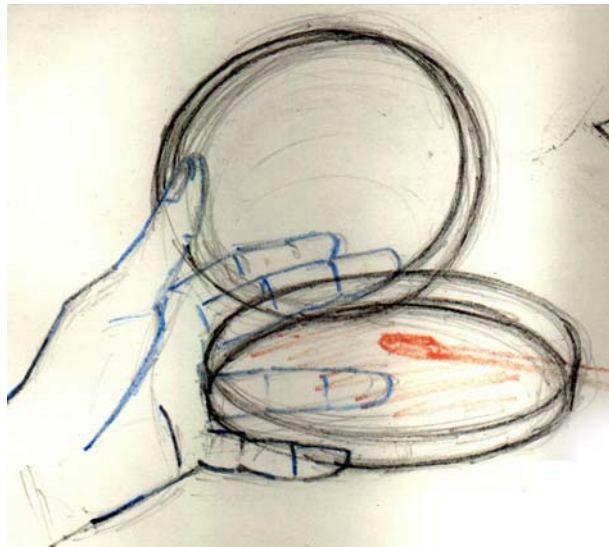
Workstation - concepts



Workstation - concepts



Plating



Turn Table

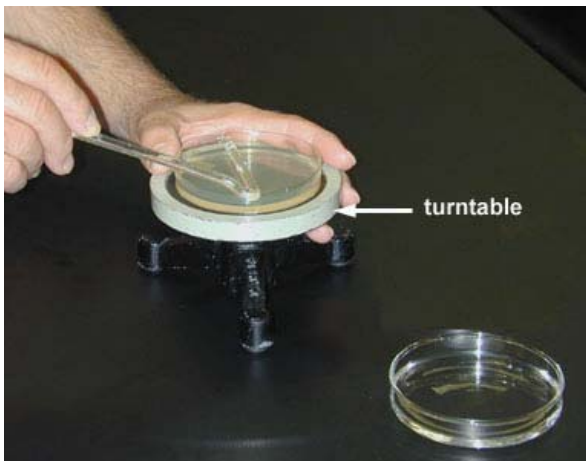
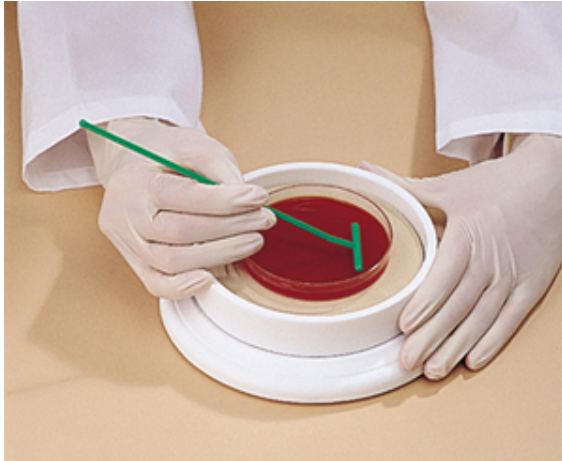
- Fixing on rotating base plate
- Streaking



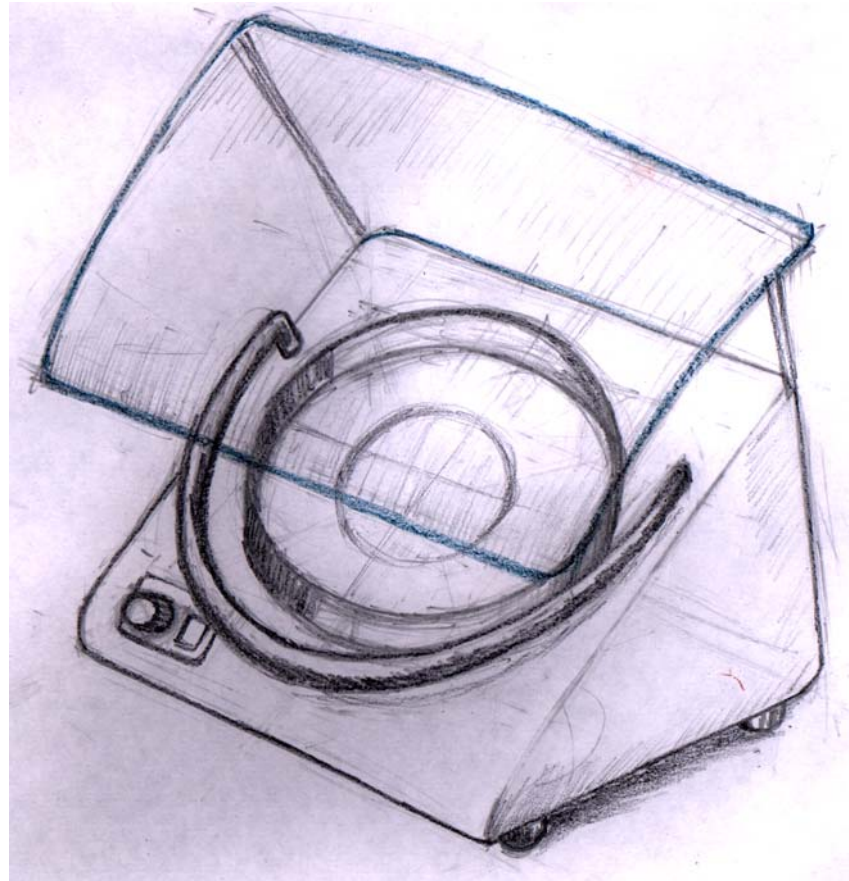
SOURCE : SOUMAYA COLLEGE

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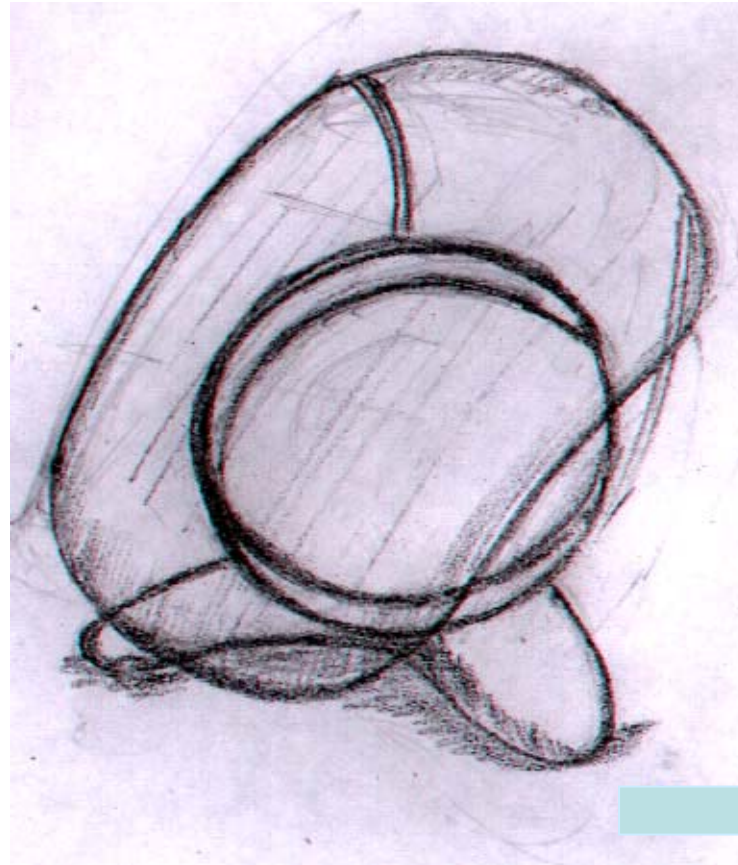
Turn Table



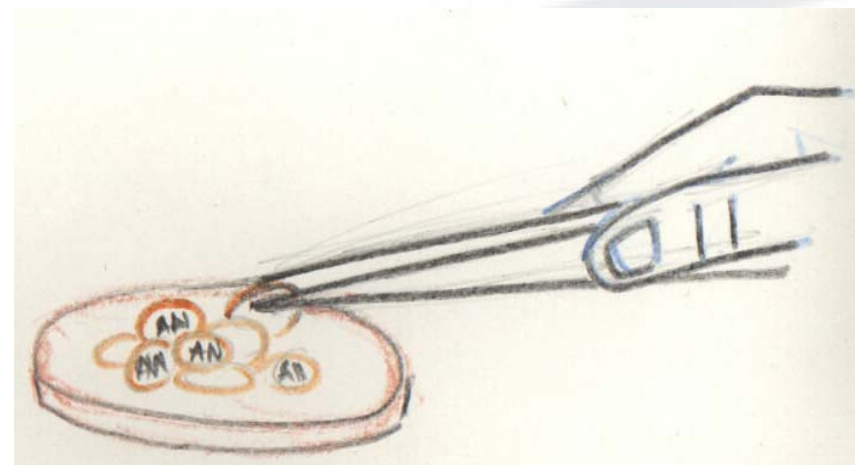
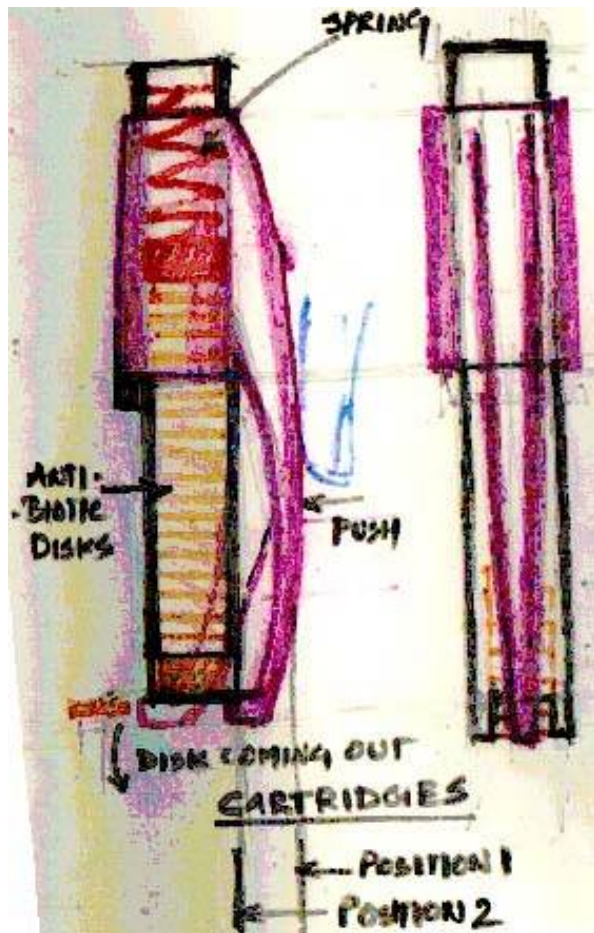
Turntable - concepts



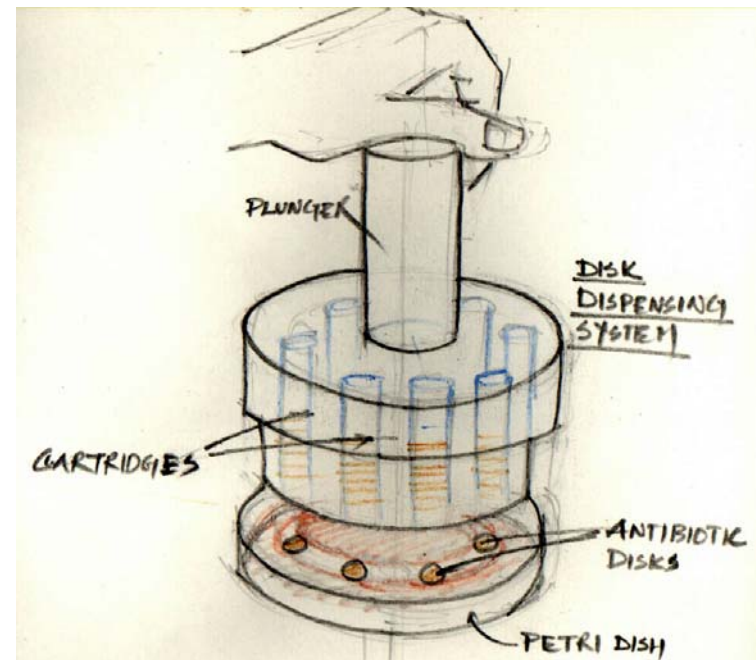
Turntable - Concepts



Antibiotic Disk Dispensing



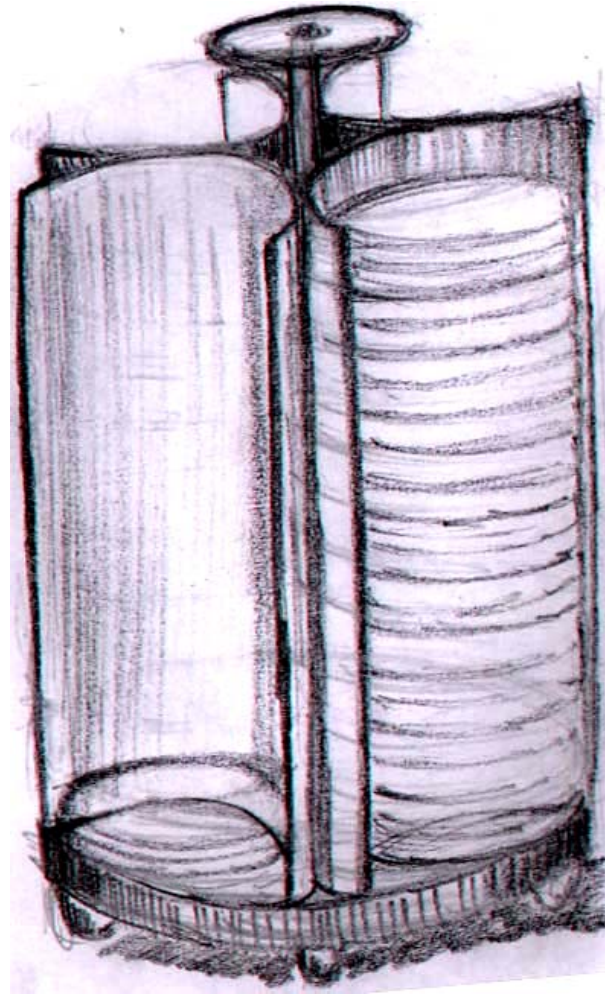
Antibiotic Disk Dispensing



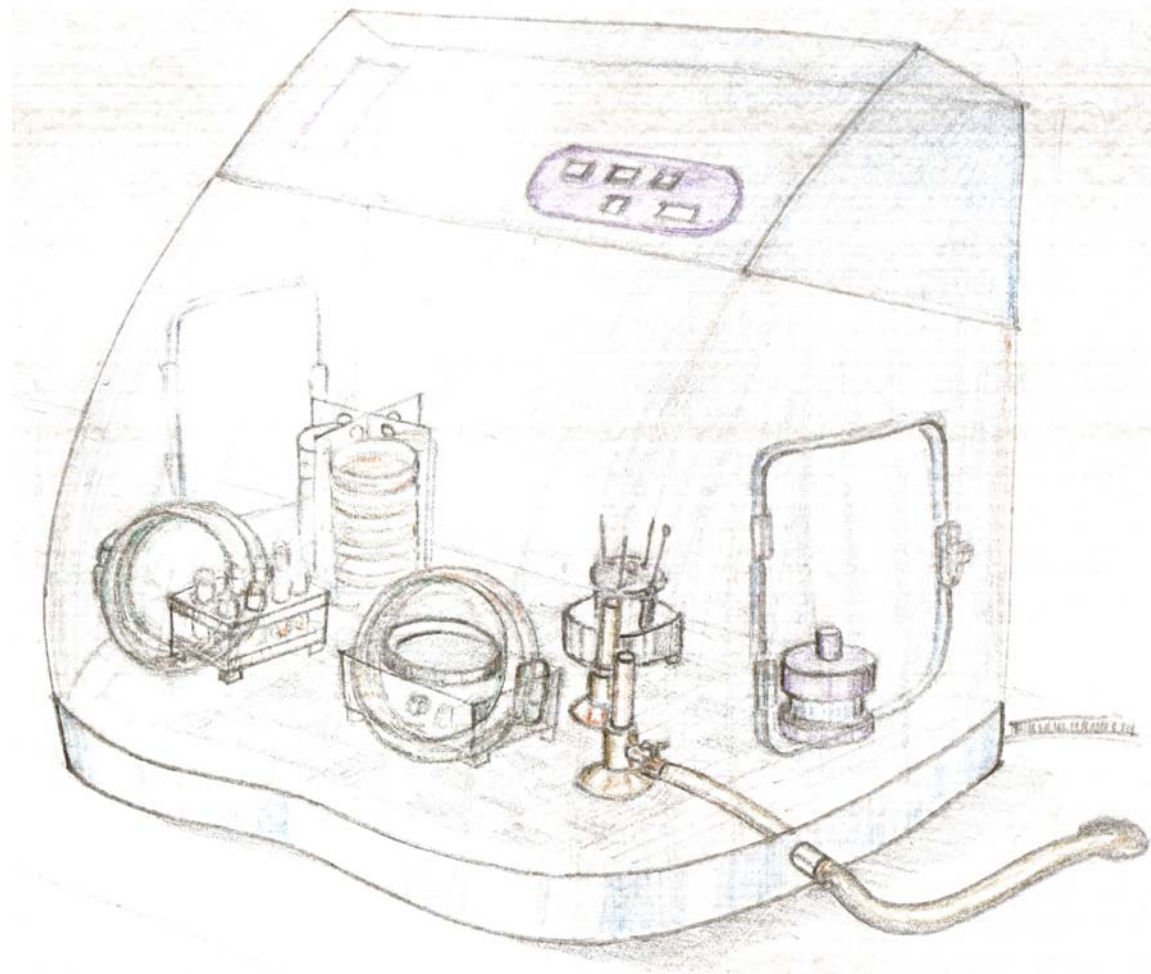
Petri Dish organizer



Concepts



Workstation





Thank you