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Taelyn mcgivern  
Science fair

log book 2024

Does the Favourite Flavour  
Have The Dirtiest Handle?!

- Removable ruled sheets
- Feuilles détachables lignées

**120**

Pages

26.6 cm x 20.3 cm

**I SUBJECT • I SUJET**

*wireless* **NEATBOOK®**

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Dec 9<sup>th</sup> - Bought log book  
- created sections in log book.  
- Brain storm project idea.  
- Went on cuse websight to find log book information and printed out.

Dec 14<sup>th</sup> - Completed project proposal and did my ~~h~~ hypothesis in my log book

Dec 26<sup>th</sup> - Made project timeline  
Dec 29<sup>th</sup> - Made list of ~~materials~~ materials  
- order steril swabs and petri dishes with per-poured agar

- watched video on how to swab properly and rub it on the agar in ~~petri~~ petri dish

Jan 3<sup>rd</sup> - printed out forms: 20 Ethics and due care ac informed consent  
- called hawkwood 7-11 talked to employee about project she said she would ~~take~~ talk to manager and call us back.

- ~~emailed~~ emailed Ms. McGrath to ask about project tytle ideas.

Jan 4<sup>th</sup> - 7-11 employee said manager didnt give aproval.

Jan 7<sup>th</sup> emailed ms. McGrath because I was worried that my project wouldn't work out because I couldn't get approval from ~~any~~ any 7-11.

- Jan 5<sup>th</sup> - Ms. McGrath replied that if I need to change projects that was alright.
- Jan 10 - Called Hidden valley 7-11 to ask about my experiment they said no.
- Called Simons valley 7-11 to ask about my experiment. Talked to manager of 7-11 Hashish he said he needed to ask his manager and would call us back.
- Jan 11<sup>th</sup> - Gave ms. McGrath 2c informed consent to ~~sign~~ sign.
- ~~Hashish from 7-11~~ We called Hashish back to find out if my science project was approved he said yes. scheduled to swab tomorrow.
- wrote procedure and variables in log book
- prepared materials for experiment and put in box.
- Jan 12 - experiment today but weather too cold. called Hashish & said we could come any time of the week Jun 15-19 but not wendsday.
- Jan 18<sup>th</sup> - planned to ~~go~~ go to 7-11 today but still too cold.
- emailed Ms. McGrath to see if I need form 2A. email ~~to~~ 2c form and survey and 2A form to science fair people and ms. McGrath.
- Jan 19 - picked up trifold
- Ms. McGrath emailed me back and reminded me to do the form 2A online.
- Filled out 2c

Jan 20<sup>th</sup> Ms. McGrath emailed me and said that ~~at once~~ once the ~~online~~ online 2A form was approved the science fair people would tell me.

Jan 21<sup>st</sup> - phoned 7-11 to ask Hushish what time was good to come that week. He was not there but a worker said he would be there tomorrow.

Jan 22 - went to simons valley 7-11 to do my experiment. collected my sample took ~~petri~~ pictures. - took starting pictures of petri dish samples.

Jan 23<sup>rd</sup> Reserch how long it take for a petri dish sample to grow ~~stere~~ ~~used~~ used [stevespangler.com](http://stevespangler.com) - ALSO read how to properly dispose of petri dish after experiment. - took day 1 photo and wrote ~~sample~~ observation

Jan 24<sup>th</sup> - Took day 2 photo and wrote observations - surveyed people. - sorted letters for trifold, heading, and words.

Jan 25<sup>th</sup> - took day 3 photo and wrote observations - surveyed people.

ple and ms. McGrath

Jan 26<sup>th</sup> - took day 4 photo did observations - Went to science fair meeting - surveyed people.

Jan 26<sup>th</sup>

- cleared space in basement to work on tri fold.
- started planning tri fold design
- worked on recommendation section in log book.

~~27<sup>th</sup>~~ Jan 27<sup>th</sup>

- Took photos wrote observations
- survey final people
- added to recommendation section in log book
- found bar graph template and tally chart template printed out websights: [Thinkl.ca](http://www.thinkl.ca) [superteacherworksheets.com](http://www.superteacherworksheets.com)
- Reserched how to show data on a graph using [science buddies.com](http://www.sciencebuddies.com)
- counted and totaled votes
- did tally chart
- rough copy / good copy graph
- researched how to create a bar graph ~~at~~ (looked at graph pictures on google)

Jan 28<sup>th</sup>

- went to public library to print photos
- before photos were printed they were put in a google slide to be resized and have a clear table of the date and day.
- cut photos to appropriate size
- glued photos in results section in log book.
- drew and colored bar graph.
- went to walmart to buy supplies to design tri fold.

Jan 28<sup>th</sup> - filled out results and conclusion section in log book.

- looked up conclusion examples (slide share.net / jay brown 9010 / science - fair / conclusion.)

Jan 29<sup>th</sup>

- typed out all information for tri-fold  
- took photos of slurpee machine flavours.

~~Jan 30<sup>th</sup>~~

- glued tri-fold information onto coloured construction paper.

- ~~glued~~ laid out all required tri-fold info papers and pic out.

Jan 30<sup>th</sup>

- ~~printed~~ typed and printed recommendation background research and conclusion out.

- glued and finalized tri-fold design.

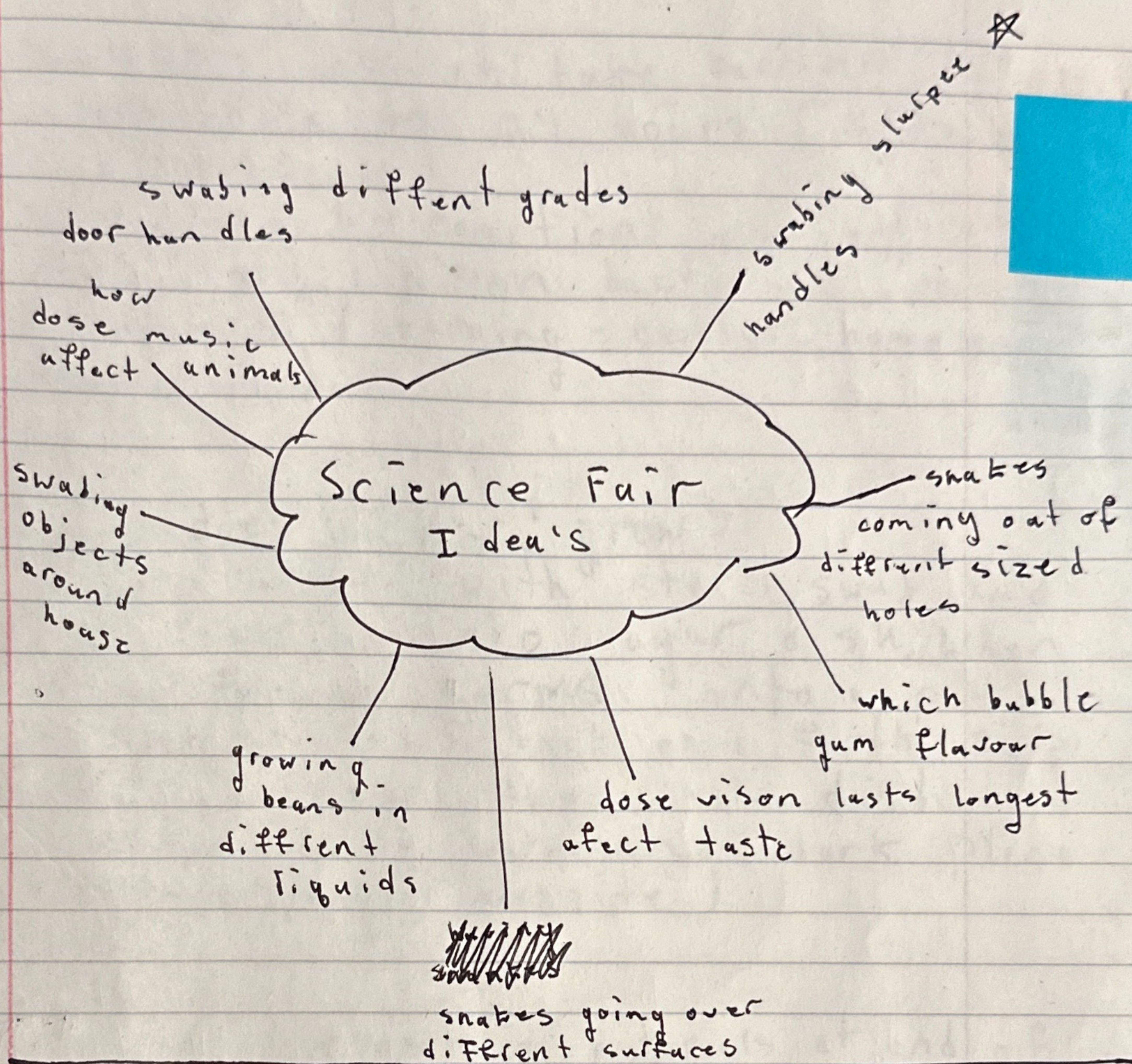
- stuck stickers on tri-fold.

- finished tri-fold  
practised presenting

Jan 31<sup>st</sup>

# TIMETABLE

- Dec 10<sup>th</sup>  
Dec 15<sup>th</sup>  
Dec 20  
~~Jan 1-5~~  
Jan 1-5  
Jan 1-5  
Jan 1-5  
Jan 5<sup>th</sup>  
Jan 6<sup>th</sup>  
Jan 6<sup>th</sup>  
Jan 7<sup>th</sup>  
Jan 8-12  
Jan 14<sup>th</sup>  
Jan 14<sup>th</sup>  
Jan 14<sup>th</sup>-19  
Jan 20  
Jan 20-28  
Jan 28  
Feb. 1
- Finalize Project idea.
  - Submit project proposal.
  - print out and complete any ethics forms that are required.
  - contact convenience store to see if this experiment is possible
  - Make ~~shopping~~ supply list and ~~purchase~~ order everything. Pick up a trifold.
  - schedule a day for sample collection
  - prepare and organize materials in a box.
  - go to 7-11 to collect samples
  - put samples in a location to grow. Take photos of bacteria growth each day.
  - Create survey, and print out.
  - Ask people the survey question.
  - Make bar graph to represent the favourite slurpee flavour.
  - Mapping out the Trifold
  - put all the letters, pictures, and information onto trifold.
  - ~~gather~~ Gather the final results
  - complete the ~~right~~ ~~up~~ write up
  - confirm log book is complete
  - assemble trifold
  - prepare everything for science fair
  - science fair



Topic: swabbing slurpee handles to see which has most germs.

Why: I chose this topic because I like to drink slurpees and lots of people I know also enjoy drinking ~~swabbing~~ slurpees I also think it would be interesting to ~~research~~ find out which slurpee handle is dirtiest v.s. which slurpee flavour is the most favourite. I ~~like~~ think the handle that will be the dirtiest will be the most favourite flavour.



# Background Research

1. How long does it take bacteria to grow?
  - as little as 24 hours (kids.britannica.com 2024).
  - in perfect conditions one bacterium can turn into 1 billion bacteria in 10 hours. (learning-center.homescience.com)
2. How does bacteria grow?
  - Swab surface with steril swab and transfer into agar dish. When transferring germs into a petri dish use a back and forth swiping motion over the whole dish.
  - store in a warm and dark place (Steve Spangler website)
3. How to dispose of materials at end of experiment
  - seal in a plastic bag and dispose (homescience website)
  - put in a large zip lock bag with a few drops of bleach and put in trash. (Steve Spangler website)

## Testable Question

Does the favourite slurpee flavour have the most germs on its slurpee machine handle?

Does The Favourite Slurpee Flavour Have The Dirtiest Handle?

hypothesis

I think that the most favourite slurpee flavour will have the dirtiest handle.

Testable  
Purpose

# MATERIALS

- gloves (one pair)
- 500ml distilled water
- 1 Sharpies
- sanitizing wipes (10)
- shelf / desk to store
- 8 Petri dishes with agar
- q-tips (steril swabs)
- tape (1 roll Scotch)
- device to take ~~photos~~ with pictures

## Samples

- container to transport items to the store to get samples
- pen & note book for recording

notes

- garbage bag for disposal
- slurpee handles for swabbing (get permission!)

# PROCEDURE

Does The favourite slurpee flavour  
Have the Dirtiest Handle?

Title

Hypothesis

My hypothesis is that the most liked slurpee flavour has the most microorganisms on its handle.

1. Call 7-11 to get approval for your experiment.
  2. Make a list of all the materials you will need for your experiment and gather them up.
  3. Travel to a 7-11 to collect your samples.
  4. confirm with manager once you arrive.
  5. using a sharpie write 1 slurpee flavour on each petri dish.
  6. put on gloves
  7. Remove lid of first petri dish.
  8. Take one sterile swab, and <sup>wet with distilled water</sup> rub it back and forth on the surface of the first slurpee flavour handle while twirling it to ensure that the whole sterile swab is covered.
- ~~Repeat steps 7-8 with each slurpee flavour.~~

# PROCEDURE

9. Swipe the germ covered swab back and forth <sup>top to bottom</sup> across the agar petri dish while rolling the swab.
10. Rotate the petri dish 90 degrees and repeat step 9.
11. Dispose of the used swab in the garbage.
12. Put the lid on the petri dish and wrap tape around the edge of the petri dish to seal it.
13. Repeat steps 7-12 for each of the slurpee flavours.
14. Disinfect all the slurpee flavour handles used in the experiment with a lysol disinfecting wipe. Dispose of gloves in garbage can.
15. Store samples in a warm safe place.
16. Take day zero photo.
17. Each day take a photo and record observation.
18. Create survey on the computer asking people their favourite slurpee flavour from the list of flavours used in the experiment.
19. Compare results of survey to petri dish results.

# Controlled variables

sterile swabs

petri dishes with pre-poured agar  
conditions that the samples are stored in

presser you swab with

how many swabs you do

same swabbing technique to deposit onto agar in petri  
dish. All samples taken on same day same place same time  
standardised survey question delivered in the same order

---

## Manipulated variable

- bundle of slurpee flavour that was swabbed
  - asking a variety of people
- 

## Responding variable

- bacteria growth (amount that grows)
- different types of microorganisms
- number of votes for each flavour



Day 3

Jan 25<sup>th</sup> 2024

Today's observation was similar to yesterday. a new spot grew in Pepsi and Grape, Mug root beer, Razzleberry, and Brisk lemonade were starting to grow ~~as~~ ~~micro~~ microorganisms. Grape, and Razzleberry peach tea were ~~at~~ looking like pink grapefruit lemonade with little ~~microorganisms~~ ~~growing~~ growing in tiny dots. In the petri dish for Mug Root beer there was one single dot. as well as one in Brisk lemonade.

Day 4

Jan 26<sup>th</sup>

Today when I looked at the petri dishes I saw that the spot in Mug Root Beer was larger and smaller dots were around it. Grape, Peach Dragon fruit, Razzleberry peach tea, had lots of little dots scattered all over in different sections but the thing I noticed most was that ~~the~~ ~~microorganisms~~ pink Grapefruit + lemonade Slurpee had tons and tons of microorganisms growing in big patches all over in sizes of small, medium, and ~~and~~ a little bigger than medium.



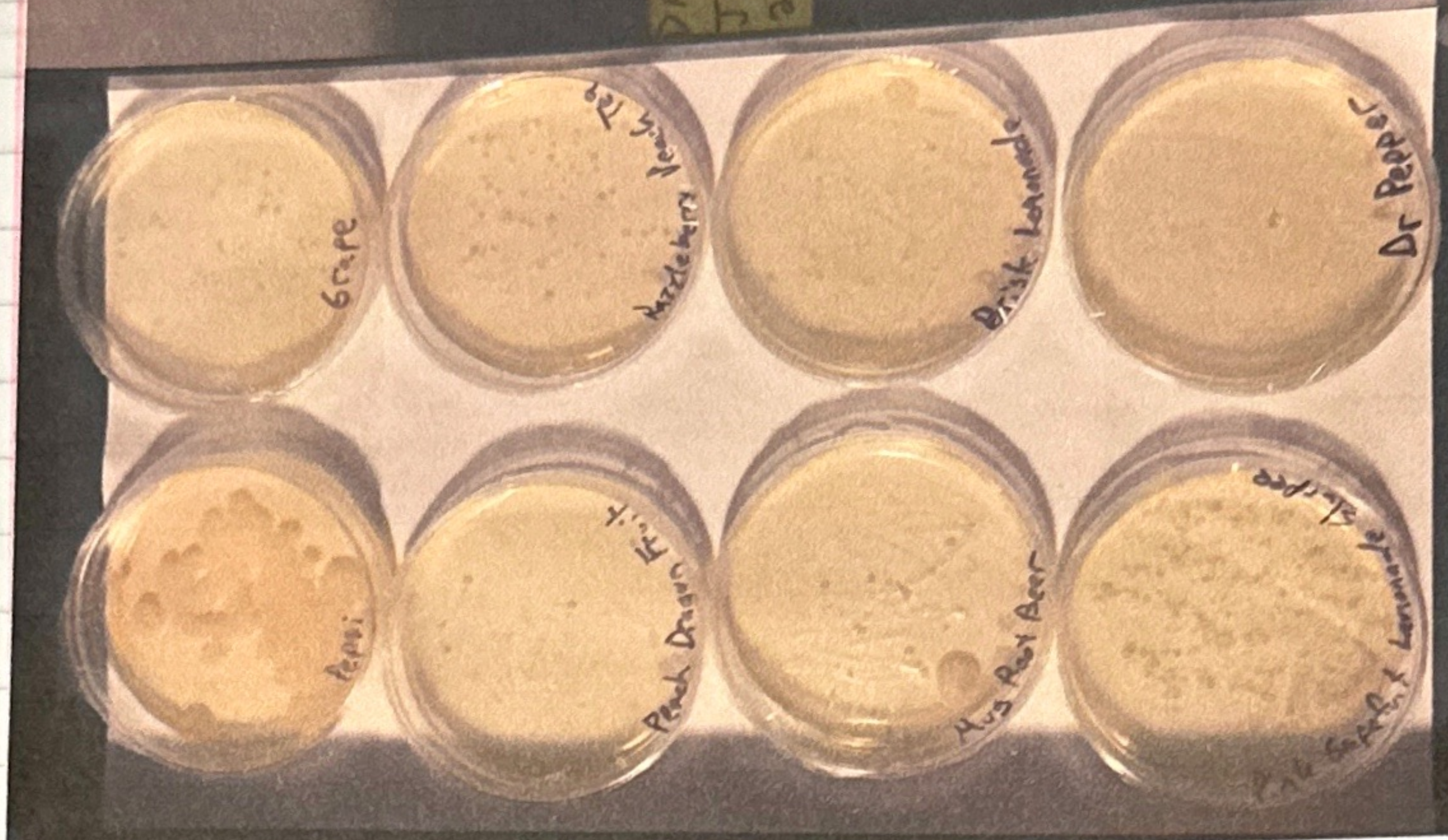
Day 5

Jan 27<sup>th</sup> 2024

Today is my last day of observation not much has changed but there have been some small changes. pink Grapefruit + Lemonade slarpee got a few more dots and some of them had come together to form bigger spots that were more yellow colored than normal. The big spot in Mug Root Beer had spread it's self out more and a few small dots were around it. Grape looked almost no different except more little spots of microorganisms and that a few areas had joined dots. Razzleberry peach Tea had small spots just like Grape but one of the spots was more yellow than the rest of them. In the petri dishes for peach Dragon Fruit and Brisk Lemonade only a few spots of microorganisms had grown most small some middam. As for Dr. Pepper not a single spot of microorganisms had grown the petri dish was empty except for the agar. Pepsi had tons of microorganism growth a new spot was there and all the microorganisms looked like they were wet.

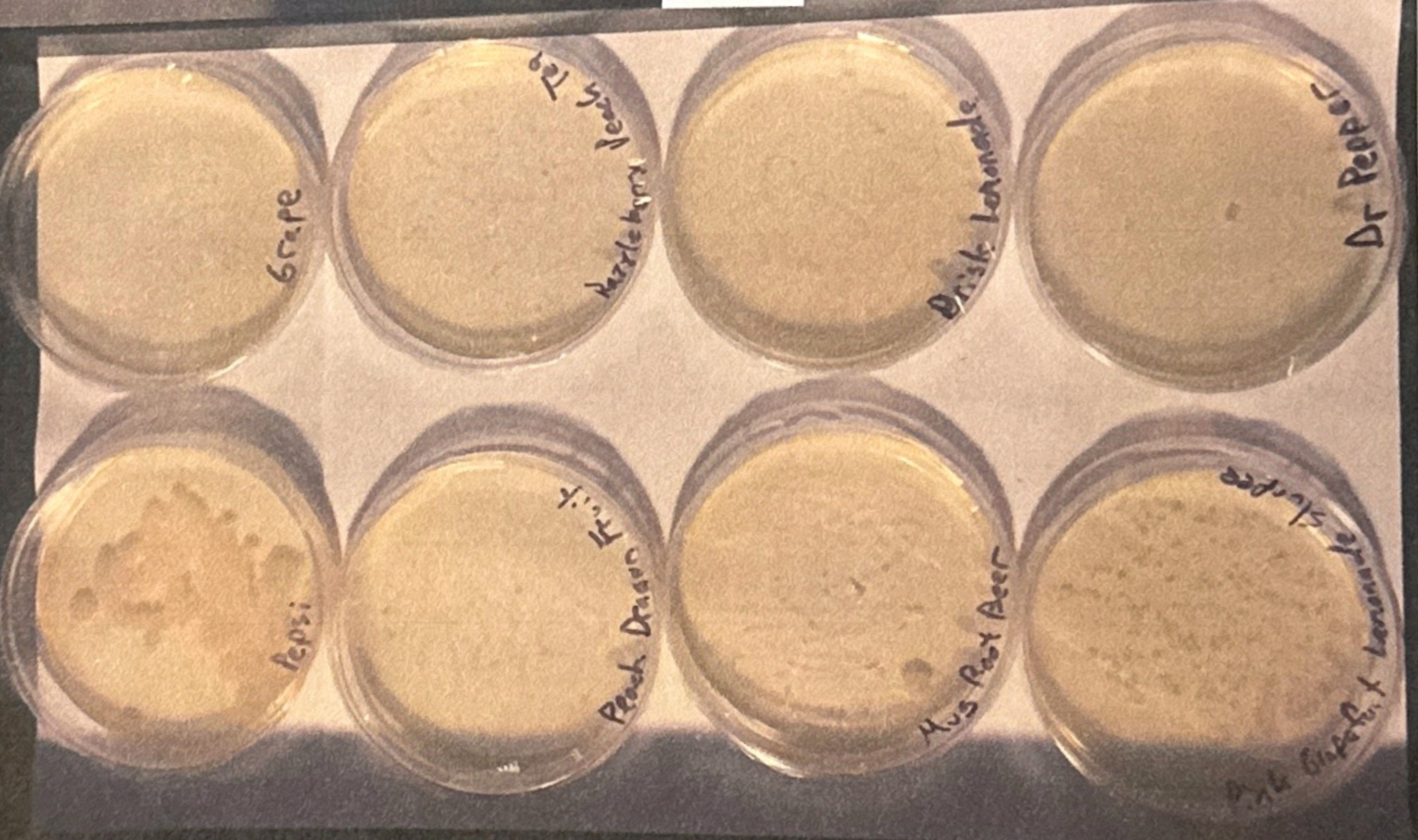
# Microorganisms' Growth





DAY 3  
JAN 25  
2024

Day 3

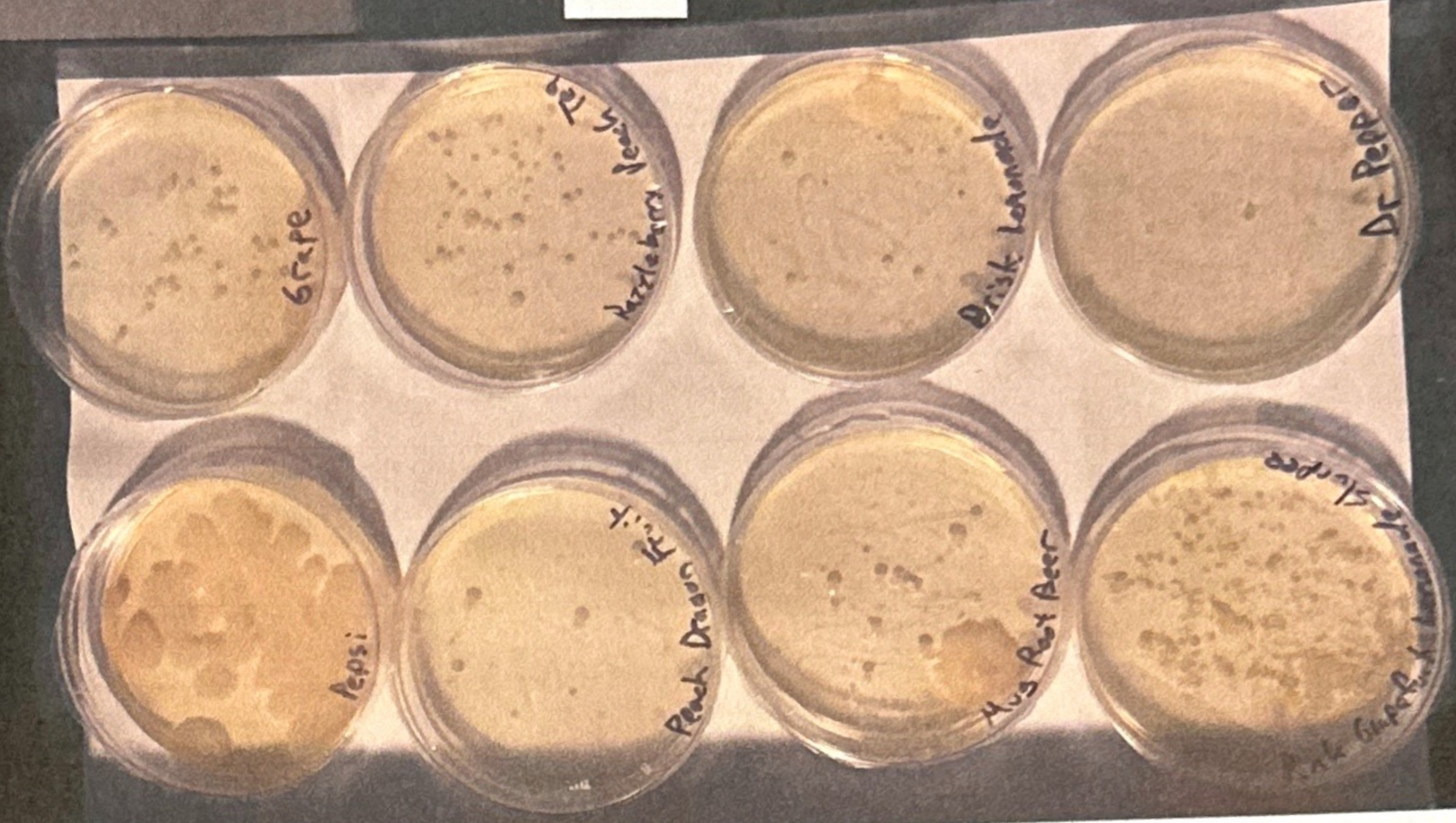


DAY 2  
JAN 24,  
2024

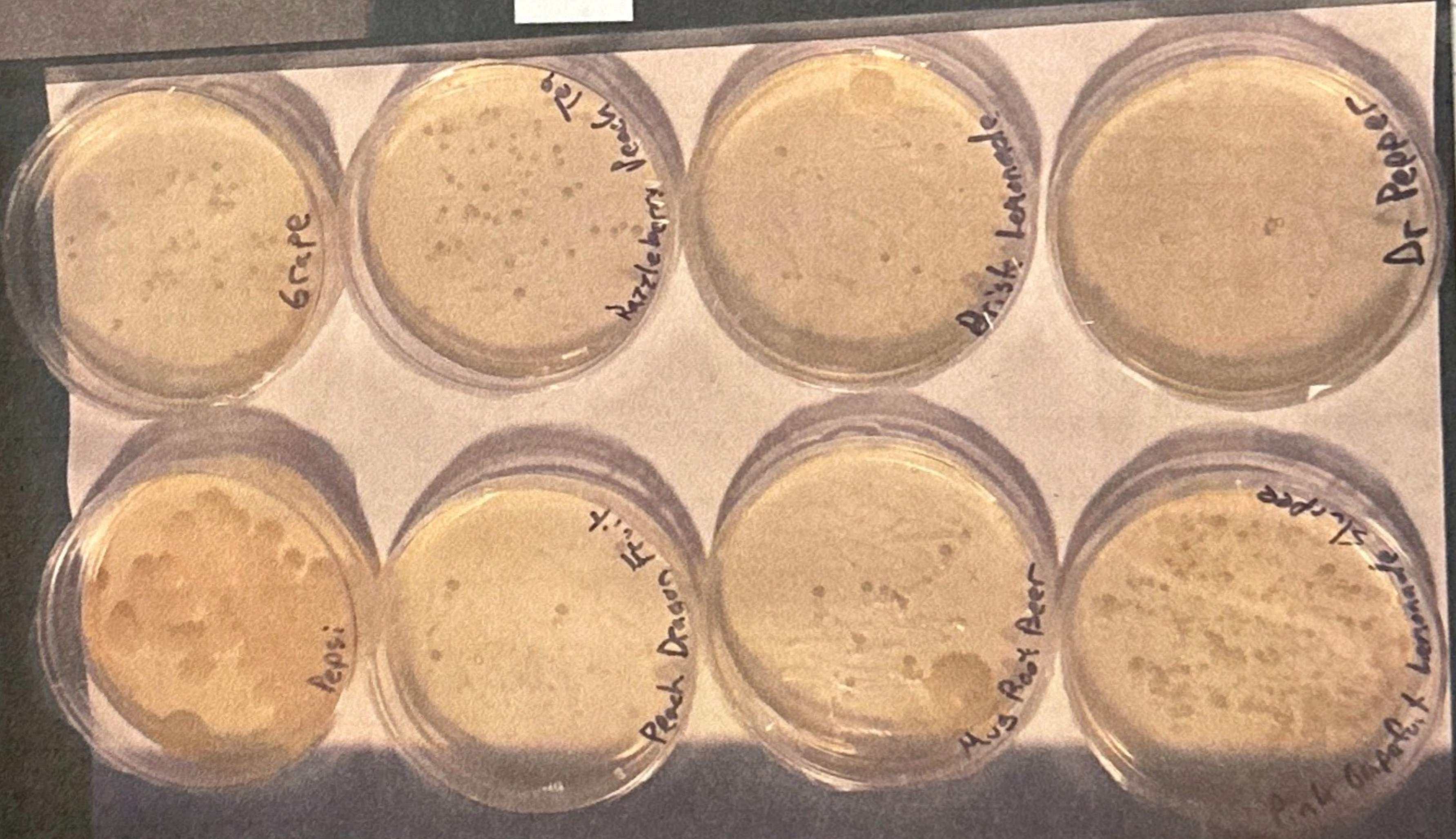
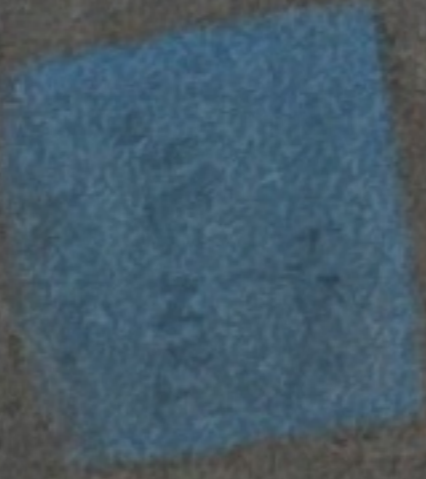
Day 2

# Day 5

DAY 5  
JAN 27<sup>th</sup>  
2014



# Day 4



most  
2M 75P

75000  
2M 75P

10x10 to  
10x10 to  
10x10

10x10  
10x10

# Final Germ Growth Results

After 5 days of growth here are the petri dishes in order of most germs to least germs:

most germs

pepsi  
pink Grapefruit + Lemonade Slurpee  
Grape  
Mug Root Beer  
Razzleberry peach Tea  
Brisk Lemonade  
peach dragon fruit  
Dr. pepper

Least germs

The slurpee flavour handle with the most germs was pepsii.

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## Favourite Slurpee Flavour Survey Results

most favourite

Dr. pepper  
Grape and pink grapefruit + lemonade slurpee  
peach dragon fruit  
Brisk lemonade

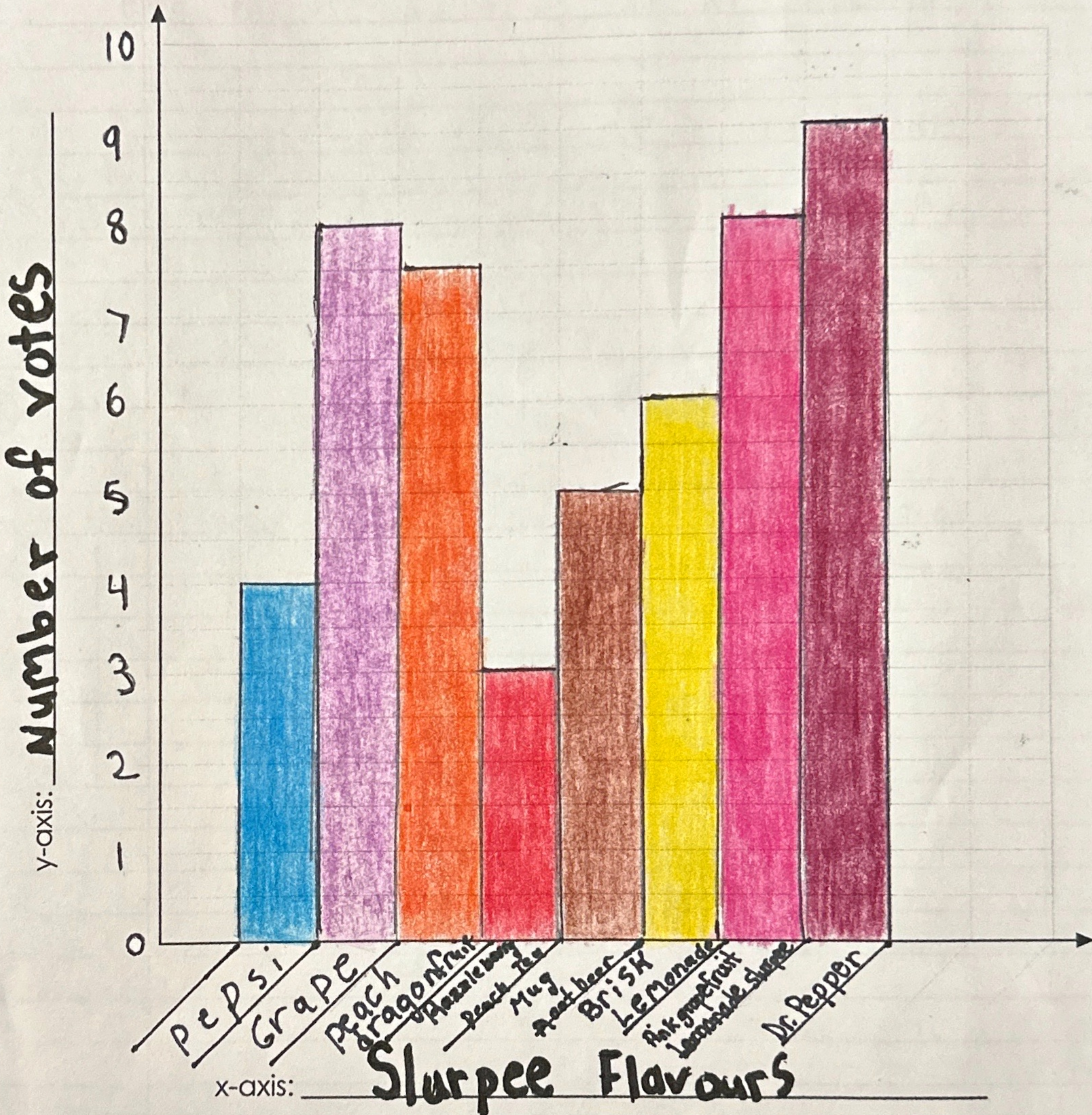
least favourite

Mug Root beer  
pepsi  
Razzle berry

After surveying 50 people the most favourite slurpee flavour was Dr. pepper.

# Bar Graph

Title: Favourite Slurpee Flavour

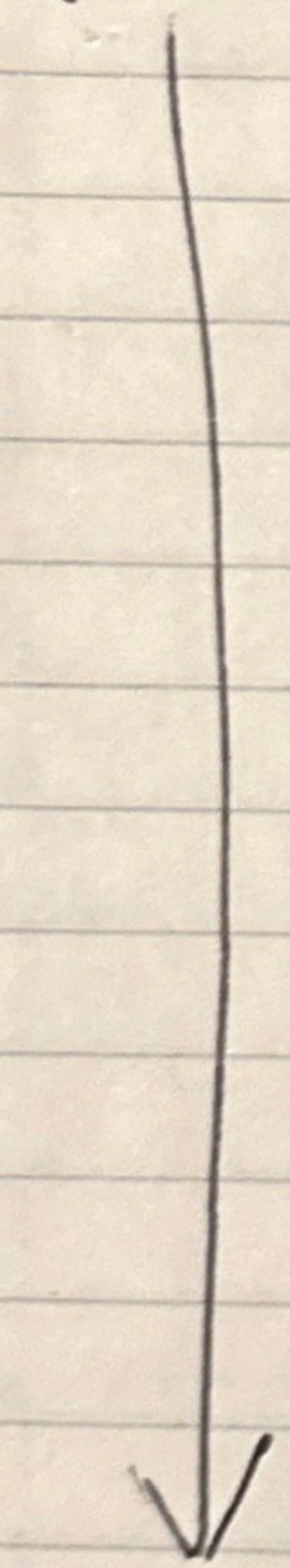


one odd thing I noticed in my experiment was that the favourite slurpee flavour had no microorganisms growing in the petri dish at all

The petri dish that grew the most microorganisms was pepsii. The petri dish that grew the least microorganisms was Dr. pepper.

### Comparison of germ growth v.s. favourite flavour

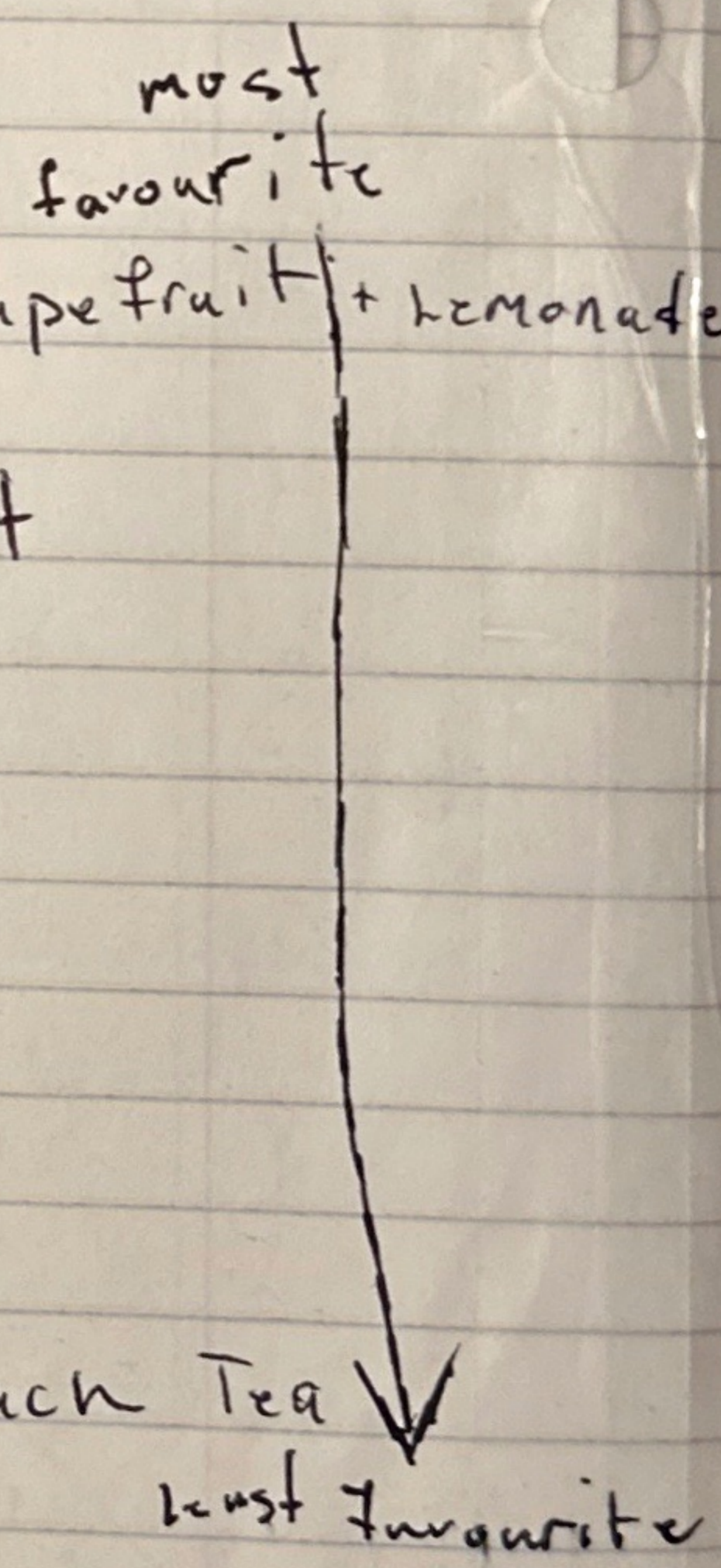
most germs



least germs

- pepsi
- pink grapefruit + Lemonade
- Grape
- Mug Rootbeer
- Razzleberry peach Tea
- Brisk Lemonade
- peach dragonfruit
- Dr. pepper

- Dr. pepper
- Grape and pink grapefruit + Lemonade
- Peach dragonfruit
- Brisk lemonade
- Mug Rootbeer
- pepsi
- Razzleberry peach Tea



least favourite









# Does The Favourite Slurpee Flavour Have The Dirtiest Handle?

Survey Question: Which slurpee flavour is your favourite?  
 an X in the box under your favourite flavour.

## Slurpee Flavours (Choose only one)

Name	Pepsi	Grape	Peach Dragon Fruit	Razzleberry Peach Tea	Mug Rootbeer	Brisk Lemonade	Pink Grapefruit + Lemonade Slurpee	Dr. Pepper
Jan 26 <sup>th</sup> Brielle	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			
Jan 26 <sup>th</sup> Audrey	<input checked="" type="checkbox"/>							
Jan 26 <sup>th</sup> Jasnoor	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
Jan 26 <sup>th</sup> Lina			<input checked="" type="checkbox"/>					
Jan 26 <sup>th</sup> Neveah			<input checked="" type="checkbox"/>					
Jan 26 <sup>th</sup> Tanvi			<input checked="" type="checkbox"/>					
Jan 26 <sup>th</sup> ANEDA			<input checked="" type="checkbox"/>					
Jan 26 <sup>th</sup> London							<input checked="" type="checkbox"/>	
Jan 26 <sup>th</sup> Elena							<input checked="" type="checkbox"/>	
Jan 26 <sup>th</sup> Niamh		<input checked="" type="checkbox"/>						
Jan 26 <sup>th</sup> Danikna				<input checked="" type="checkbox"/>				
<b>Total</b>								

# Does The Favourite Slurpee Flavour Have The Dirtiest Handle?

Does The Favourite Slurpee Flavour Have The Dirtiest Handle?

Survey Question: Which slurpee flavour is your favourite?

Put an X in the box under your favourite flavour.

Slurpee Flavours (Choose only one)

Pepsi

Grape

Peach Dragon Fruit

Razzleberry Peach Tea

Mug Rootbeer

Brisk Lemonade

Pink Grapefruit + Lemonade Slurpee

Dr. Pepper

Date

Name

Jan 26<sup>th</sup>

Jan 26<sup>th</sup>

Jan 26<sup>th</sup>

Jan 26<sup>th</sup>

Jan 27<sup>th</sup>

Jan 27<sup>th</sup>

Total

4

8

7

3

5

6

8

9

9

9

# Tally Template

Favourite Slurpee Flavour

Item	Tally	Total
Pepsi		4
Grape		8
Peach Dragonfruit		7
Razzleberry -		3
Peach Tea		5
Mug Rootbeer		6
Brisk Lemonade		8
Pink Grapefruit + Lemonade Slurpee		9
Dr. Pepper		9

# Conclusion

My hypothesis was that the favourite Slurpee flavour will have the dirtiest handle. Unfortunately my results do not support my hypothesis. The most liked slurpee was Dr. Pepper and its petri didn't appear to grow any visible germs. When I took my samples it went good however maybe I didn't swab the Dr. Pepper handle as well as the other handles. I am unsure when the handles were last cleaned and how many customers had come since. It was a week day with cold weather so not many people may have touched the machines. The area around the store was quit empty so it's possible that not many people went into the 7-11.

If I did this experiment again I would ask people there top 2 favourite flavours because people don't usaly get only one flavour in their slurpee.

Conc

# Recommendations ~~FX~~

1. - give people the choose of there top 2 flavours that are there favourite because people usuly get more than one slurpee flavour or use one flavour as a base E.g Pepsi and coke
2. - do experiment in a warmer month when people are more likly to get a slurpee E.g July, agast, may, June
3. - don't forget to put gloves on before swabing the slurpee machine handle
4. - ask staff / manager when the last time the slurpee handles were cleaned.
5. - ~~choose~~ collect samples from a convergent store that gets lot's of costumers or is near a school
6. - Remember to swab the slurpee handles the exact amount of times
7. - set an alarm to insure that photos of samples are taken at the same time
8. - having people say there least favourite flavour and favourite slurpee flavour?
9. - store petri dishes in area where lighting is good (not many shudows) so pictures turn out nicer.
10. - Hand drawn sketches with tubes
11. - store petri dish in warmer and darker places for better growth
12. - finding out which day of the week has the most people coming to purchase slurpees normally and choose that day of week to swab



# ETHICS AND DUE CARE FORM

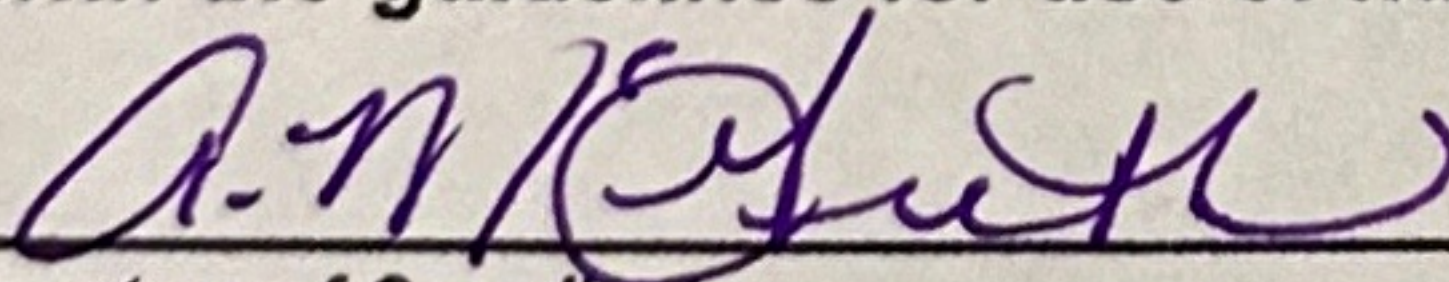
Form 2A

## CALGARY YOUTH SCIENCE FAIR

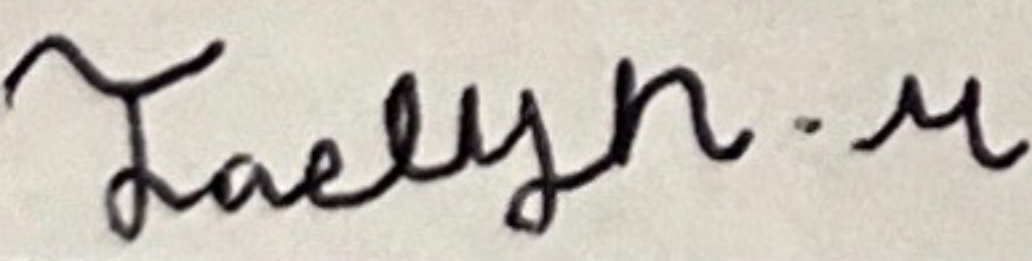
This form must be filled in for all projects that involve the use of animals or humans in any manner whatsoever. For details on use of animals and humans in a project see [www.cysf.org](http://www.cysf.org), Determination of Project Risk - your project needs to meet both our regulations and the national regulations. This form must be sent in before any experimenting begins. Entrants/Coordinator will be contacted once this form has been reviewed.

Exhibitor's Name(s)	Exhibitor 1 Taelyn McGivern	Exhibitor 2
Exhibitor's Email(s)	Taelynm1@educbc.ca	
Phone Number(s)	403-202-3692	
School	Hawkwood School	
School Phone Number	403-777-6410	
Coordinator's Name	Arlene McGrath	Coordinator's Email aemcgrath@che.ab.ca
Exhibit Title	Does the Favourite Slurpee Flavour have the Dirtiest Handle?	
Grade Level	5	Where will experiments take place? Swabs will be collected at 7-11. Bacteria will grow in petrie dishes at home.
Human participants?	<input checked="" type="radio"/> YES <input type="radio"/> NO (circle one)	Animal experiment? <input type="radio"/> YES <input checked="" type="radio"/> NO (circle one) Animal species:
<p>If you circled "yes" for human participants, you must now assess the risk factor of your project. Final determination of risk will be made by CYSF.</p> <p>Read <b>Determination of Project Risk</b> at <a href="http://www.cysf.org">www.cysf.org</a>, determine if your project is "Low" or "Significant" Risk, then circle one box below.</p>		
<input checked="" type="radio"/> <b>Low Risk</b>	<ol style="list-style-type: none"> <li>Please send this form</li> <li>Please send copy of your survey form (if applicable)</li> <li>Please send copy of your Informed Consent Form 2C (if applicable).</li> </ol>	<input type="radio"/> <b>Significant Risk</b> <ol style="list-style-type: none"> <li>Please send this form</li> <li>Please send Significant Risk Form 2B</li> <li>Please send copy of your survey form (if applicable)</li> <li>Please send copy of Informed Consent Form 2C</li> <li>Please send copy of your Letter of Information.</li> </ol>
Purpose of your experiment	To see which slurpy flavour handle has the most germs.	
Brief description of your experiment	I am going to swab the surface of each slurpy flavour handle with a q-tip and wait for bacteria to grow in a petri dish then on which flavour they like best to see if its the handle with the most bacteria.	

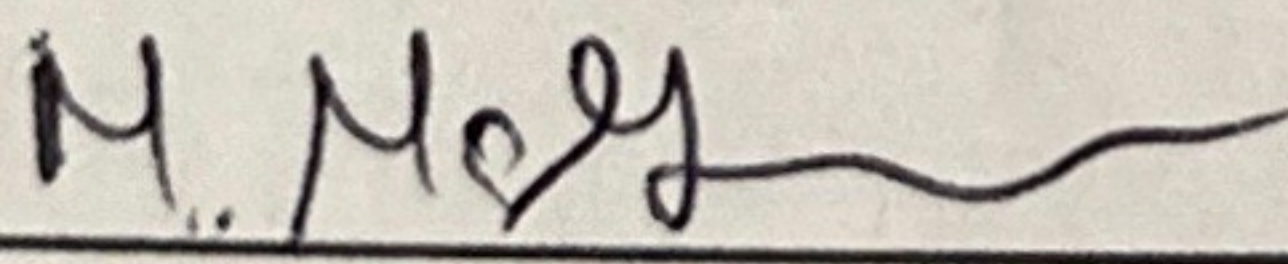
I hereby certify that the information given above is correct and to the best of my knowledge the above project complies with the guidelines for use of human subjects and animals supplied to me by the Society.

  
Signature of Coordinator

\_\_\_\_\_  
Signature of Scientific Supervisor (if applicable)

  
Signature of Exhibitor 1

\_\_\_\_\_  
Signature of Exhibitor 2

  
Signature of Parent of Exhibitor 1

\_\_\_\_\_  
Signature of Parent of Exhibitor 2

Please make sure you have all required signatures and the form is completely filled out before sending!

Email it to: [safety@cysf.org](mailto:safety@cysf.org).



Jan 4<sup>th</sup>

Hidden valley 7-11 403-274-5670  
didn't give approval.

Hlaskish 7-11 manager 403-264-0701  
2045 Simons valley parkway NW.

1. WEBSITES

- calgary youth science fair (CYSF.org)
- Steve Spangler Science.com
- Learning-center.homescience.com /  
artical/bacteria - experiment guide /
- sciencebuddies.org / science - fair -  
projects / science / fair
- Teachers pay Teachers.com