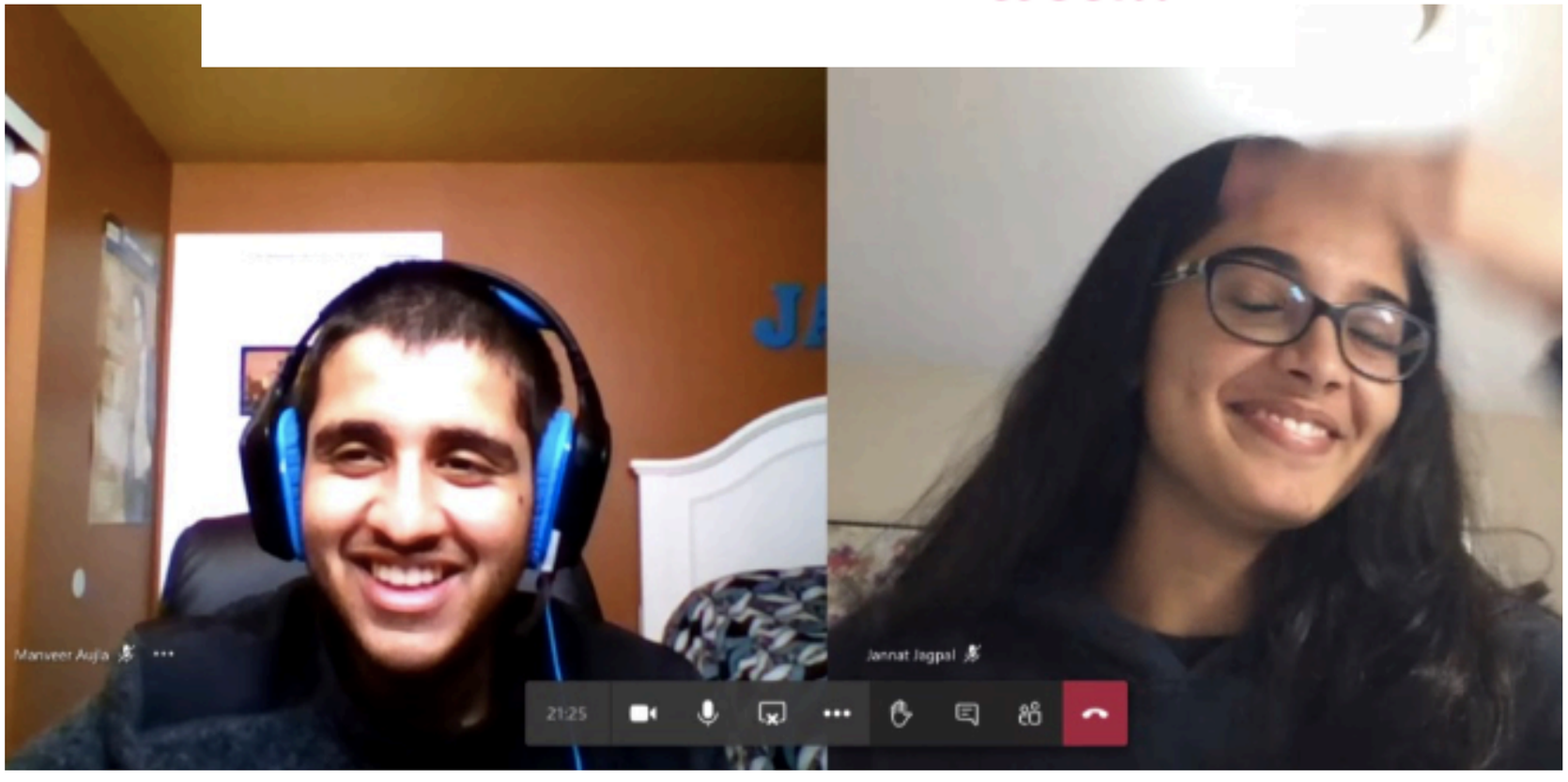
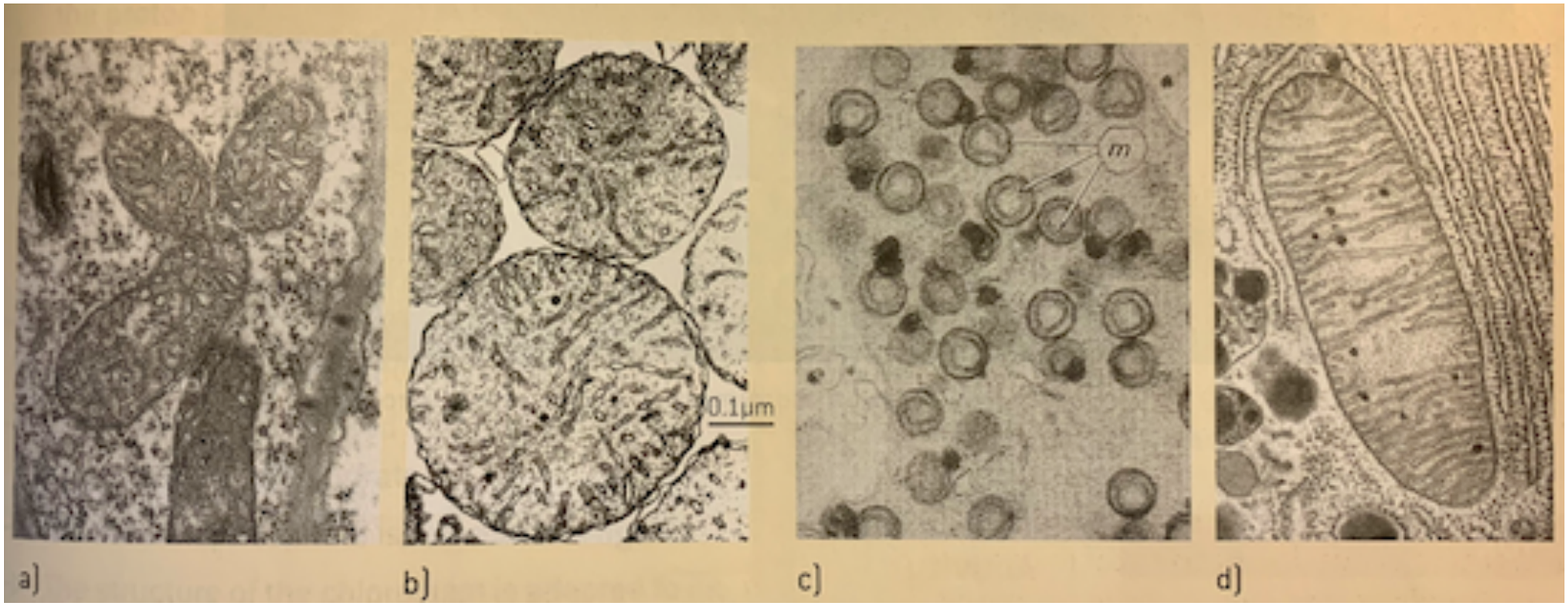
HAPPY MONDAY

It's gonna be an awesome week!



Homework Take up

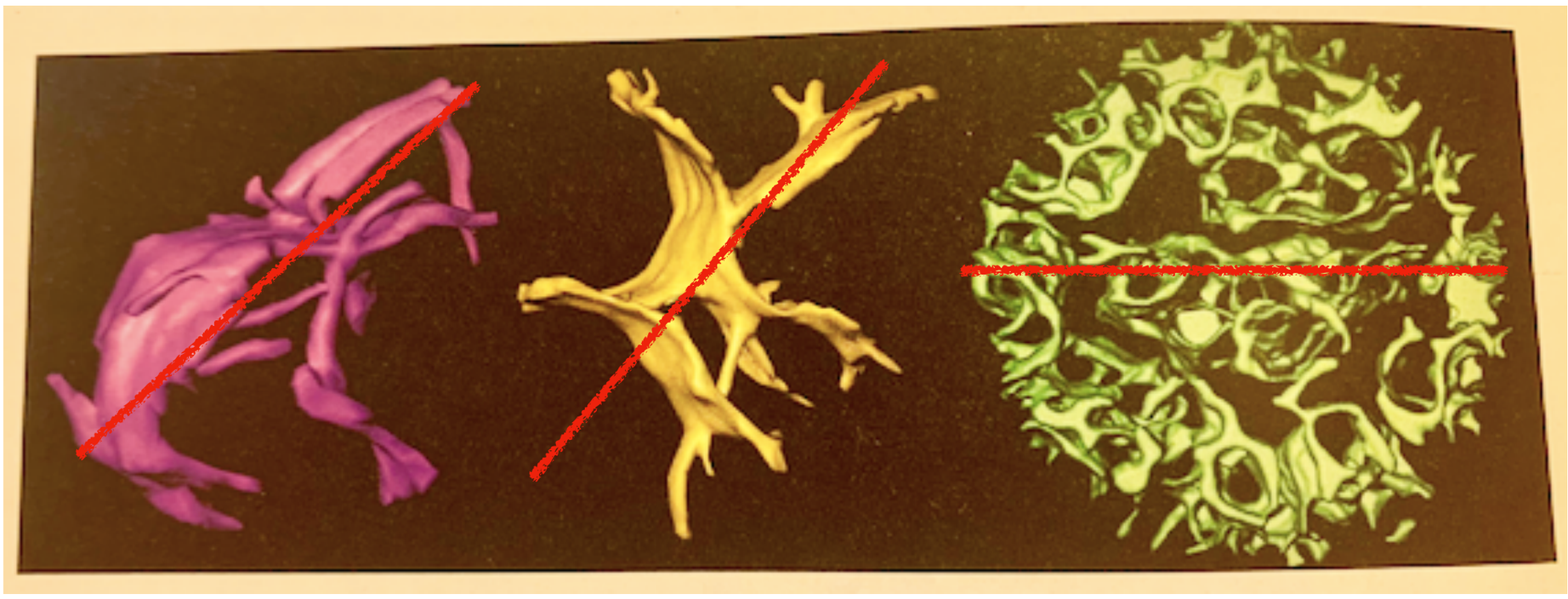
Homework Take up



Magnification=

Image size

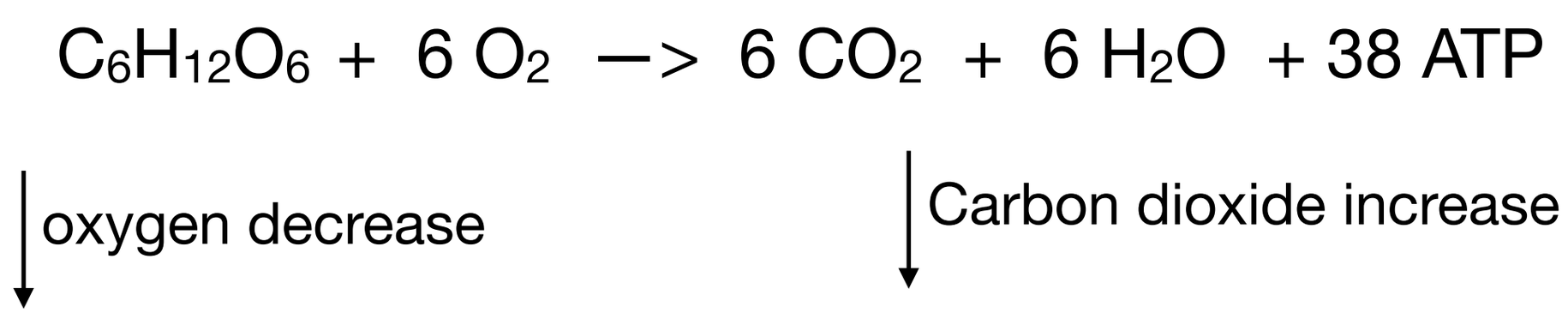
actual size

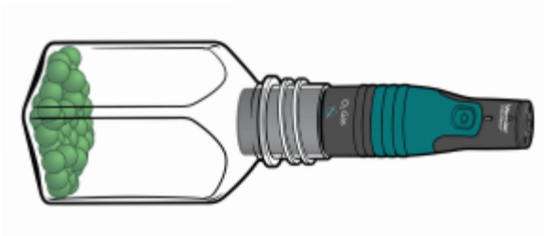


Respiration in Seeds Lab

- Some groups will be working with CO2 probes and others while other with O2 probes

- Pairs will wash hands then put on gloves





Set up

Set up Using the O2 sensor

- Always keep O2 sensor in the upright position.

Between each treatment

- Fill with chamber with water and dry to ensure that the atmosphere at the start is refreshed and the same for each treatment

With a partner you have Two of three questions to the test.

QUESTIONS

- What affect does time after germination have on O2 consumption in *Phaseolus vulgaris* seed (black beans).

- What affect does temperature on O2 consumption in *Lathyrus aphaca* .

- How much is cellular respiration is occurring in non-germinated seeds?

With a partner you have Two of three questions to the test.

QUESTIONS

What affect does temperature on O2 consumption in *Lathyrus aphaca* ?

- ice water treatment, and room temperature water as a treatment

- glass beads will be used a control

With a partner you have Two of three questions to the test.

QUESTIONS

What affect does time after germination have on O2 consumption in *Phaseolus vulgaris* seed (black beans).

- beans are germinated for 0 hrs 12 hrs and 36 hrs

- glass beads will be used as a control.

With a partner you have Two of three questions to the test.

QUESTIONS

How much is cellular respiration is occurring in non-germinated seeds?

Compare;

- dry black bean
- dry peas seeds
- glass beads

All at room temperature.

Get started

Break - 10 min

CONCLUSION

Think ABOUT five sentences;

- The conclusion has to be justified and supported by the data you've provided.
- Brag on, expound the possible effects, but make sure it's not too short.
- Relate this to your introduction
- talk a bit about the significance of the conclusion
- relate the real life application (from the intro…)

Evaluation

Title a separate section

Here you can talk about the following:

- Limitations of your experiment (eg. *this method is not so accurate but the standard lab method is too expensive/cannot be done in the laboratory*)
- *How accurate*?
- *Was there lots of variation between groups to make you question the results?*
- *Did other variables affect your result?*
- *Did your make mistakes along the way?*
- *Is there an alternative supplementary test to check for errors?*
- *Was there factors that weren't considered in the planning*

Evaluation

Title a separate section

Here you can talk about the following:

- A possible and relevant extension to your investigation - *eg. next experiment will be…*

Evaluation

Title a separate section

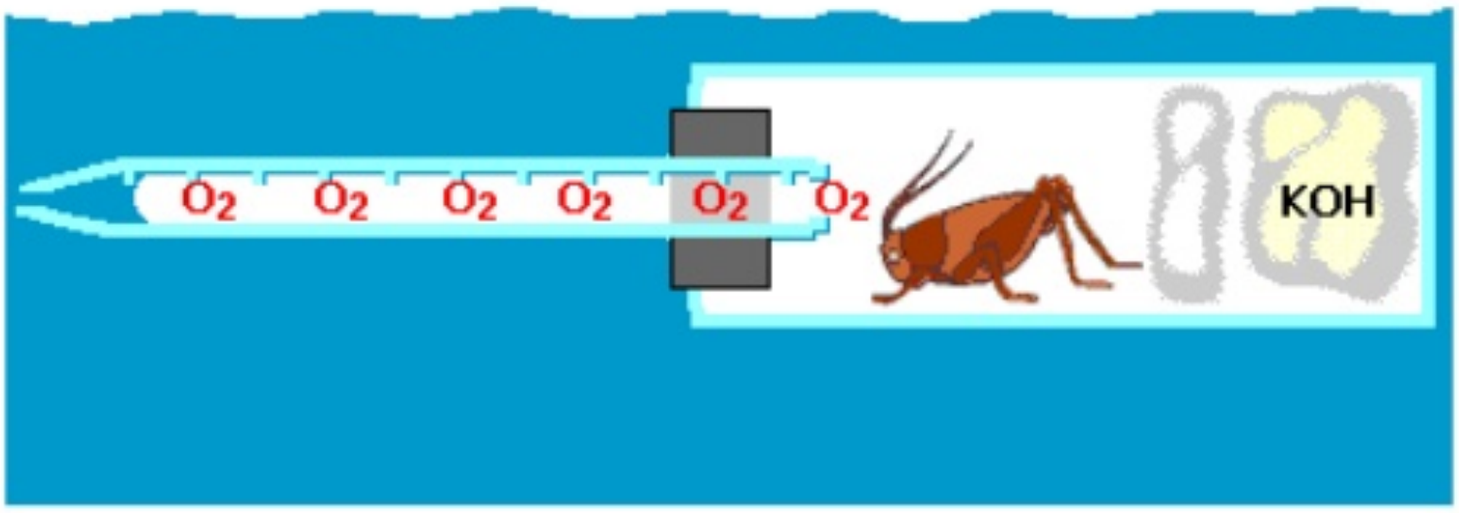
Here you can talk about the following:

- How can you relate this to your experiment to real life application?
- How can the investigation be improved or what else can be done in consideration with the application of your methods.

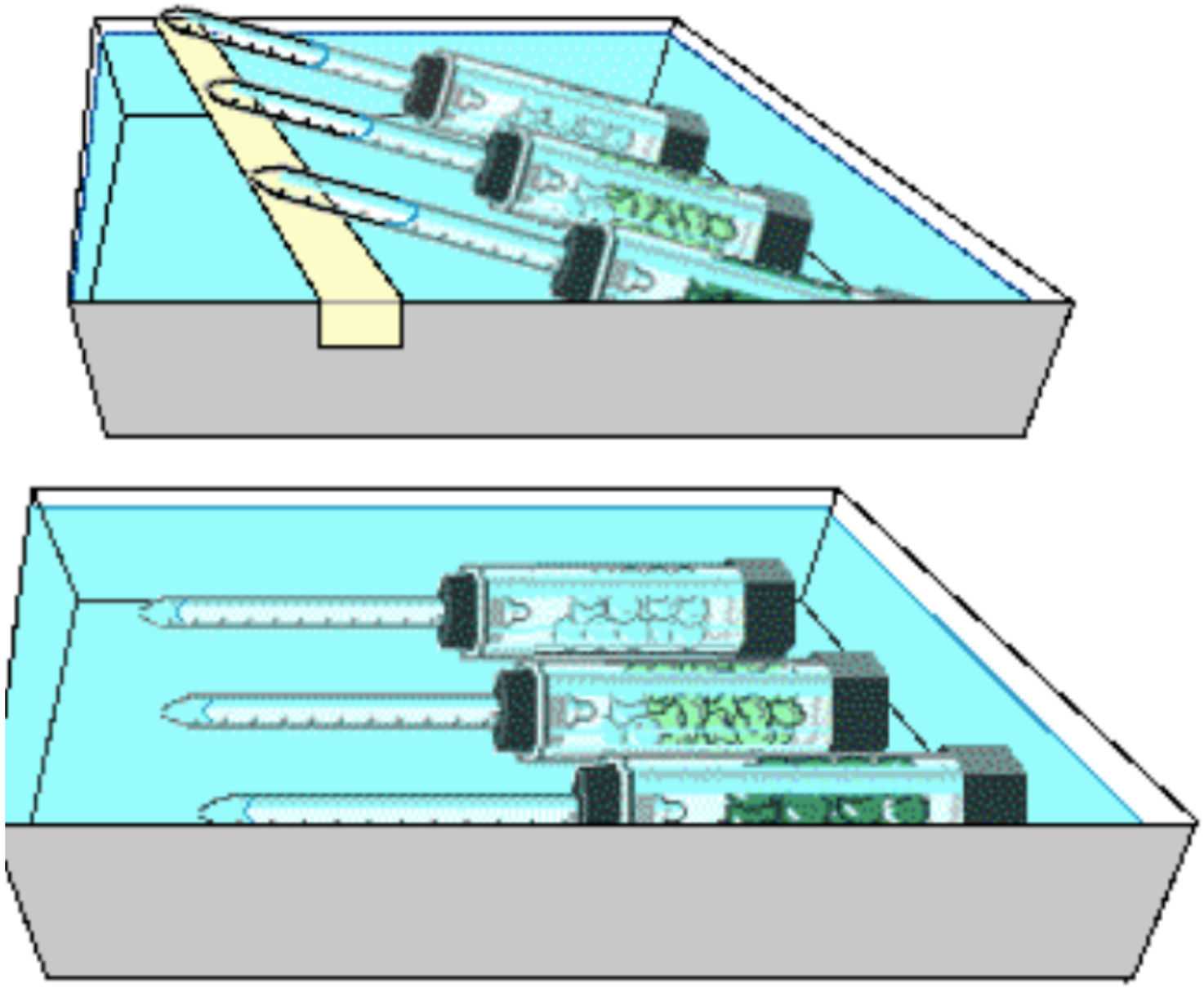
WRITE a rough draft and prepare to Share

Respirometers

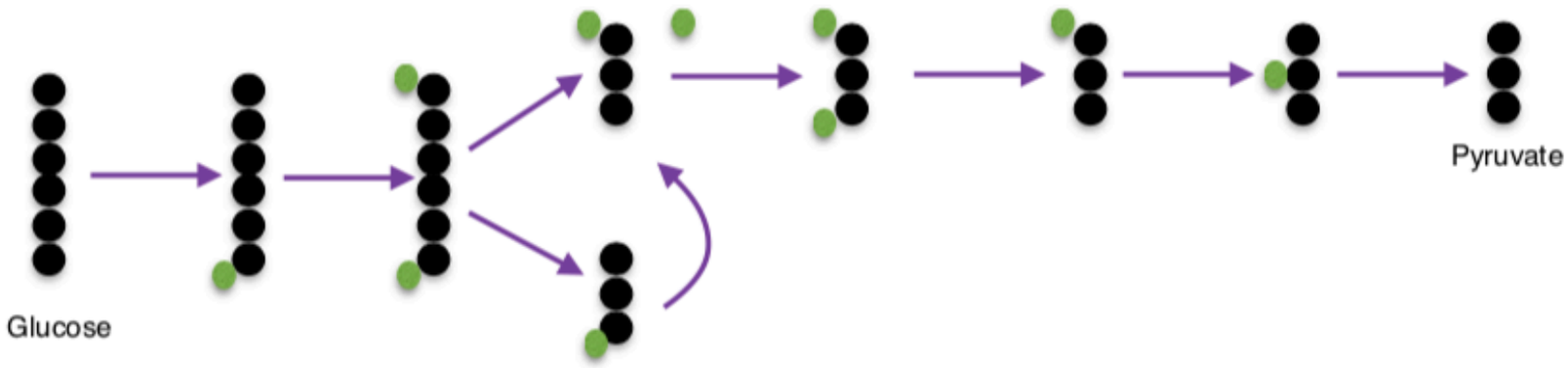
- **Respirometer:** A device used to measure respiration rate. *Most involve:*
  - A sealed container to contain living tissue
  - An alkali (i.e. KOH) to absorb carbon dioxide
  - A capillary tube or pipette connected to the container
- *As oxygen is used up, the fluid moves toward the container*

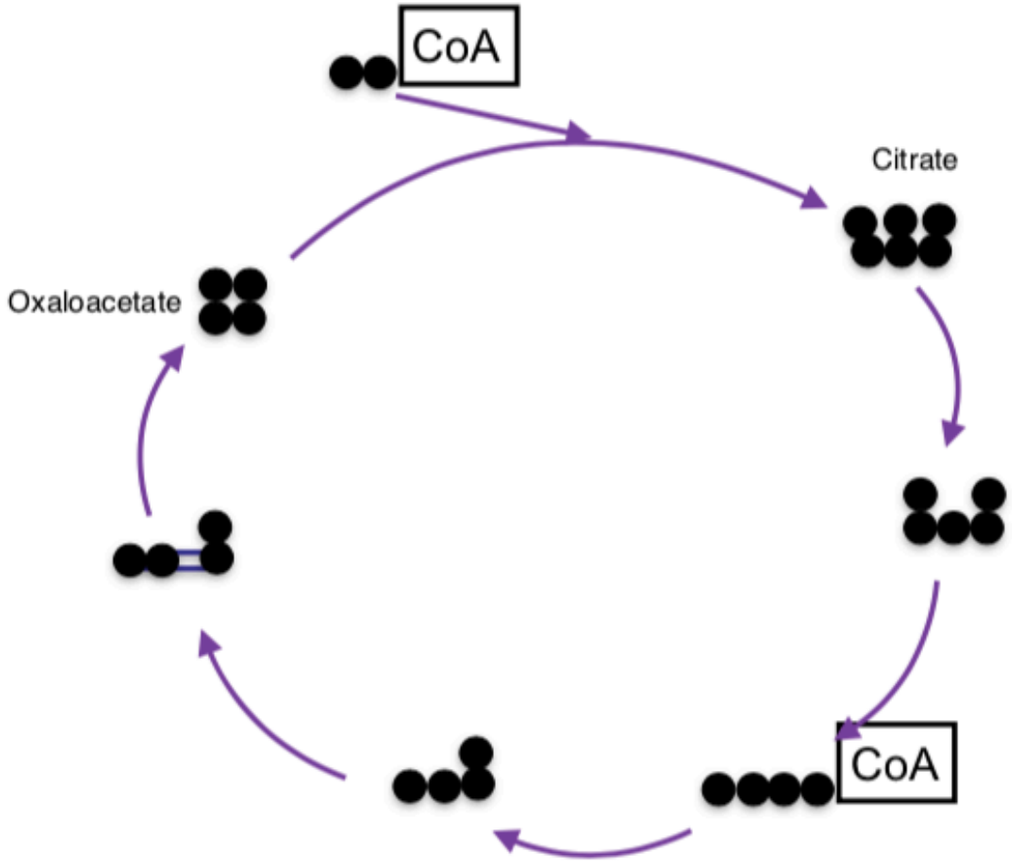


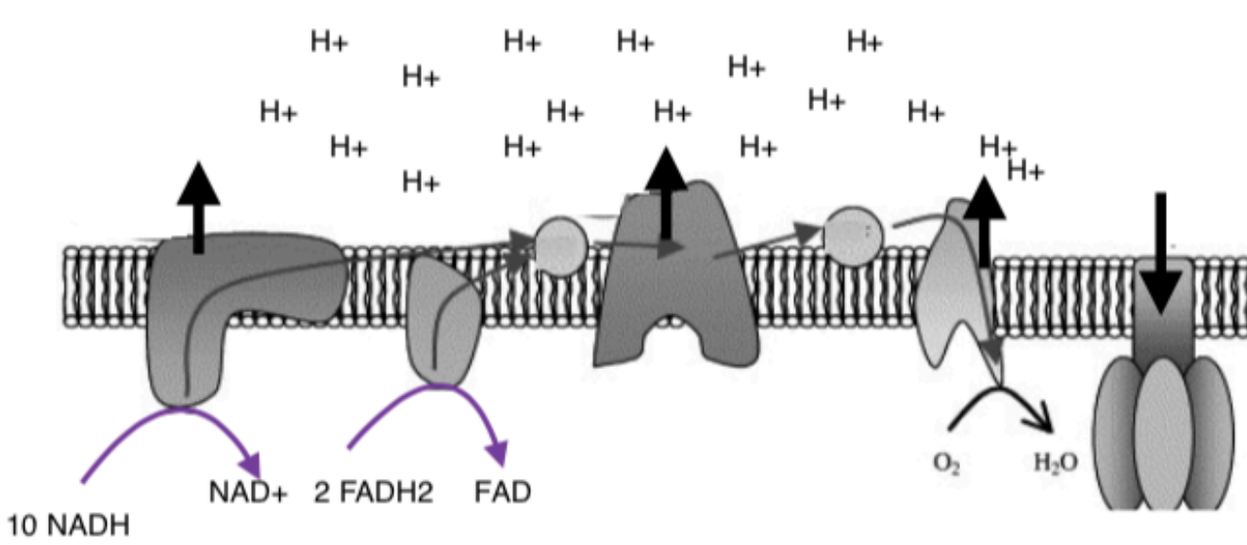
Try and measure respiration in 10 germinated seed 15



Lets review Cellular respiration; process







Discussion question

Cyanide is a chemical that irreversibly binds to (i.e., prevents the functioning of) the enzyme Complex VI, an important enzyme in the electron transport system.

A)Explain, at the cellular level, why cyanide is a lethal chemical.
B) Suggest at least one other cellular consequence of cyanide (i.e., what else happens to the electron transport system when cyanide is present), and prepare and explanation of this effect.

Discussion question

Rotenone is a naturally occurring chemical derived from the roots of several tropical and subtropical plants. Ingestion of rotenone can be fatal. It inhibits chemiosmosis by interfering with NADH dehydrogenase preventing utilization of NADH as a proton and electron donor in the electron transport chain.

A) Explain why rotenone exposure can be fatal.

B) Suggest at least one other cellular effect of rotenone (i.e., what other parts of respiration might be affected by rotenone), and prepare an explanation of this effect.

Discussion question

DCCD (dicyclohexylcarbodiimide) inhibits oxidative phosphorylation. DCCD is a drug that binds to ATP synthase and blocks proton transport through the ion channel.

A)Explain what the consequences are of DCCD on cellular energy production.

B) Suggest at least one other cellular effect of DCCD, and prepare an explanation of this effect.

Discussion question

Describe the relative pHs of the cytoplasm, the mitrochondrial intermembrane space, and the mitochondrial matrix, with an explanation of the origin of this pattern.

Discussion question

Vitamin B3 (niacin) is a component of NAD+ (or NADH). Niacin is acquired through the diet.

A) Describe the consequences of niacin deficiency on energy production.

B) Invent two strategies a cell might use to maintain energy production
under niacin deficiency.

Discussion question

Antimycin A is a pesticide in use worldwide. It is recognized as a respiration inhibitor, since it blocks the electron transport chain between Complex III and cytochrome c.
A)Describe why antimycin A is a successful pesticide.
B) Describe the effects of antimycin A exposure on cellular respiration in terms of the by products of the process.

Assignment

- **Data Based question 128**

- Discs of tissue were cut from horse chestnut seeds and were placed in a solution of hydrogen peroxide. The enzyme catalase released from the cut cells resulted in the reaction:

$$2\ H_2O_2 \xrightarrow{\textbf{catalase}} 2H_2O \text{ and } O_2$$

The oxygen released by the reaction formed foam on the surface of the hydrogen peroxide. The volume of the foam was measured after five minutes using the various hydrogen peroxide concentrations, both with and without a fixed low concentration of copper ions. The results are shown right .

Table 1

Concentration H2O2 (%)	**Volume of Oxygen (ml)** No Cu	With Cu
0	0.0	0.0
10	7.3	3.8
20	10.3	5.4
30	11.4	6.3
40	11.8	6.5
50	11.9	6.6

a. Calculate the rate of reaction for each of the 12 results.

b. Plot to show the effect of hydrogen peroxide concentration on the rate of reaction both with and without copper ions.

c. Deduce, with reasons, the effect of copper ions on catalase.