***Biology 12***

***Food Lab Inquiry Write-Up***

**Your Mission 🡪 You are to devise an experiment that asks a question about food, macromolecules, or biochemistry.**

**Things to think about:**

* **What do you wonder about the food you eat?**
* **Come up with a question that you don’t already know the answer to….what do you really wonder about?**

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| --- | --- | --- |
| **Section** | **In A Nut Shell** | **Details** |
| **Big Question** | * **What are you trying to answer**
 | **Must start with a what, where, how, if** |
| **Background Research** | * **Look at a minimum of 3+ different resources and write a summary of what is already known about your question**
 | * **Approximately one page typed**
* **List the 3+ websites or resources you get the information from in your bibliography**
* **Do NOT copy their information word for word (you must reword it)**
 |
| **Hypothesis** | * **What is changing and what do you think would happen**
 | **If…****Then…****Because…****(do NOT use “I” in your statement)** |
| **Variables** | * **Independent**
* **Dependent**
* **Control**
 | **Independent Variable 🡪 What is changing****Dependent Variable 🡪 What you are measuring (explain units or ranking system)****Control Variable 🡪 What are you using as a control to show what would happen WITHOUT the independent variable (ie. Test with water)** |
| **Safety** | * **What safety concerns are there?**
 | **How will you stay safe in your experiment?** |
| **Procedure** | * **Step by step of what you did**
* **Needs to be in enough detail to be replicated by another scientist**
 | * **I have a Step By Step (MUST BE NUMBERED like a recipe) that have details so that other scientists could do EXACTLY what I did**
* **I have included EXACT measurements in my procedure (weights, distances, times, etc)**
 |
| **Observations** | * **What did you see and observe in your trials and tests**
 | * **Draw/take a photo of your equipment used and your results**
 |
| **Data Table/graph** | * **Organize your data**
 | **Show your trials (at least 3) and your average** |
| **Conclusion** | * **Did it prove or disprove your hypothesis?**
 | **Summarize what you found in one or two sentences and refer it back to your hypothesis….did your data prove or disprove your hypothesis** |
| **Sources of Error** | * **What could have contributed to some of your results that were out of your control?**
* **What would you do differently next time to improve your experimentation procedure**
 | 1. **Were there any errors in your equipment? How would this impact your results?**
2. **Any errors in your procedure? How would this impact your results?**
3. **Any errors in your number of trials? How would you fix this for next time?**
 |
| **Areas of Further Study** | * **What experiments could you do that furthers your understanding in this area?**
 | * **If resources were unlimited what other questions, on a similar topic, would you ask?**
* **How has this experiment bettered your understanding of biochemistry and food science? (expand on this….this should be a large paragraph that talks about everything you have learned in the biochem unit that pertains to macromolecules.**
 |
| **Bibliography** | * **What resources did you use for your background research?**
 | * **List the 3+ websites or resources you used for your background research**
 |

**Marking Criteria:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Learning Goal** | **Novice (1/2)** | **Apprentice****(3/4)** | **Expert****(5/6)** |
| **Questioning – does your question reflect your curiosity?** |  |  |  |
| **Planning – have you shown up prepared and understanding what to do? Prepared in advance?** |  |  |  |
| **Safety – goggles at all times, safe in lab with all indicators** |  |  |  |
| **Analyzing Data – nicely set up observations and data tables** |  |  |  |
| **Reflection – thoughtful sources of error and areas of further study** |  |  |  |
| **Societal Impact – in your areas of further study and background research have you focused on societal impact of your question?** |  |  |  |

***What do you wonder about food and macromolecules? (Brainstorm possible questions)***

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***What type of data could you collect about food and macromolecules? (possible dependent variables)***

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***Possible independent variables (what could you change)***

 Situation #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vs Situation #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Situation #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vs Situation #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Situation #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vs Situation #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***What is your Big Question?*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Hypothesis (If…..then. This is because….):***

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