

## ***Advanced Science Research 11 (9654)***

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**Google Classroom Code: 5x653yb**

**JOIN THE GOOGLE CLASSROOM AS SOON AS YOU GET THIS ASSIGNMENT and  
configure the settings to receive text/email alerts when posting!**

### **ADVANCED SCIENCE RESEARCH 11 SUMMER ASSIGNMENT**

- ☐ **Join the Advanced Research 11 google classroom and configure the settings to receive text/email alerts. Once you join the google classroom, you will be able to access the RESEARCH PLAN assignment and the LOGBOOK assignment. Please do this ASAP.**
- ☐ **LOGBOOK ASSIGNMENT: Following the specific instructions outlined in this document, the summer logbook should be completed and updated daily. Your summer logbook document must be submitted 9/2/2021 by 7 AM.  
\*\*\*You MUST actively work in this document.\*\*\***
- ☐ **RESEARCH PLAN/PROJECT SUMMARY ASSIGNMENT: Following the specific instructions outlined in the [ISEF Research Plan Template](#), submit a RESEARCH PLAN for the project to be investigated. Your Research plan/project summary assignment must be submitted 9/2/2021 by 7AM.  
\*\*\*You MUST actively work in this document.\*\*\***
- ☐ **MAKE an AdvResearch 11 folder in your GoogleDrive**

## **Summer Logbook**

### **REQUIREMENTS**

- A well organized project must be documented within the parameters set below through the record of all details from the start of that project.
- The time stamp on this document will serve as proof of your commitment to research by showing consistent dedication to the field of study you have selected throughout the summer.
- This Logbook document will be submitted with your research plan on the first day of school in the fall.

### **INSTRUCTIONS**

- Summer Logbook should be completed & updated daily
- The student will use the digital logbook template that has been assigned to them in the google classroom

- A sample template is provided below demonstrating the proper organization of the digital logbook. As your logbook work progresses, please continue to add rows to each table.

### **PART 1 - Table of Contents**

DATE	PAGE	BRIEF STATEMENT

### **PART II - LOGBOOK ENTRIES**

Date	Location	ENTRY

### **PART III - VOCABULARY**

WORD	DEFINITION
1	
2	
3	

1. Part I, the first table, is the “Table of Contents”. The “Table of Contents” is meant to be a BRIEF statement of what is written in the “Entry Table”. The student is responsible for entering the dates for the table of contents. Table of Contents should contain no more than a 10 word description for each date.
2. Part II, the second table, is the “Entry Table”. The “Entry Table” is where your logbook entries will be written. The student is responsible for entering the dates for the table of entries. Continue creating an organized format for your entries with each entry including:
  - The Goal
  - The Note
  - The Summary
3. Part III, the third table, is the “Vocabulary Table”. Vocabulary terms must be new relevant, scientific words that are clearly defined. Do not write acronyms.

**For students who are doing an experiment in-house**  
**(not mentored at an outside institution):**

Investigate a specific problem you would want to study this coming school year. You must get a logbook and begin recording your ideas about possible research projects and eventually settle in on a *specific, viable project idea*. This activity will allow you to "hit the ground running" this September when you will be required to submit a RESEARCH PLAN for the project to be investigated.

**Start your topic BROAD and work your way NARROW.**

**ASSIGNMENT: ONE Potential Project Research Plan**

**DUE DATE: First Research Class (W Day)**

The most important element in selecting a research topic is to **read, read, read!** As you begin to read scientific articles of interest to you pay close attention to who the researchers are and where they work. You should ultimately be able to trace the information back to the primary scientific source (research journal article). Once you have been able to obtain the primary literature, read the materials and methods section to learn about how these experiments were conducted, and to obtain useful information about the experimental technique. This is where you will get ideas to incorporate into your own procedure. Although it is not appropriate to simply copy another researcher's experiment, it is acceptable to use other researchers' methods to ask your specific research question.

**PROJECT RESTRICTIONS FOR SCIENCE RESEARCH**

1. **TEAM PROJECTS ARE NOT ALLOWED**
2. *In light of these uncertain times, and if you are having trouble settling on an idea, consider a research project that can be conducted at home, in the "field" or at school with minimal disruption. Many of last year's research students were unable to collect data before the closure (or alternating in/out cohorts) and consequently had to devise an alternate research project that could be conducted at home. I only bring this up because, as life has demonstrated, expect the unexpected. If an "in house" laboratory style of project better suits your interests, then you will likely be fine but keep in mind that there are no guarantees.*
3. A project **cannot** be entirely a short-term study that could be completed as a one or two-day classroom laboratory activity.
4. Science research students **may not** conduct psychological, behavioral, or sociological studies using human subjects; however, invertebrate animals may be used for behavioral studies.
5. Students **may not** conduct a purely comparative study. For example, water absorption may not be compared between several brands of paper towel to determine which is "best." However, a student would be allowed to develop an original paper towel and assess its effectiveness.
6. Experimentation on **living** organisms will be limited to the following organisms (*proceed with caution here, living things need to be maintained consistently, by YOU*):
  - a. *Caenorhabditis elegans*
    - i. Wild Type *C. elegans* can be maintained at SHS
    - ii. Available mutant strains of *C. elegans* can be ordered from [University of Minnesota Caenorhabditis Genetics Center \(CGC\)](#). Use this site to

- research stains that you might want to experiment with.
- b. *E. coli* (Biosafety Level I, BSL-I)
    - i. Students **may not** use pathogens that could cause illness, any BSL-II organisms
  - c. *Lumbriculus variegatus*
  - d. Small plant species (Must be able to be maintained at SHS *or* at home.  
Examples: Soy beans, *Arabidopsis thaliana*, *Asimina triloba* (PawPaw Tree), etc.)
  - e. Students working at Syosset High School **may not** use vertebrate animals, including humans.
7. Projects which are **computational based** are acceptable (if this is a skill you have or have the potential to develop over the summer the project can easily be conducted at home or at school).
  8. Projects where students have to **construct or build** something are acceptable (depending on what materials and tools that are needed, these types of projects can be conducted at home, *with safety approval*).
  9. Field studies that rely on data collection from an outdoor environment require logistics and careful planning that may rely on others to get you to where you want to go.

**For further rules and guidelines please check the Intel ISEF and LISEF Guidelines:**

[ISEF Forms](#)

[ISEF Research Plan Template](#)

[LISEF Rules and Guidelines](#)

**For students who are doing an experiment with an outside mentor  
at a Regulated Research Institution:**

You MUST get a logbook immediately and record all of your ideas, safety training, background research, methods, materials, data, and any other work that you do at the lab with your mentor over the summer.

***\*TEAM PROJECTS ARE NOT ALLOWED***

***\*\*If you are working with a mentor that uses any kind of vertebrate animals, including humans, contact your teachers immediately and see the International Science and Engineering Fair (ISEF) Rules for vertebrate animal studies.***

***There is no guarantee that if you secure a placement in a Regulated Research Institute, that you will be able to continue physically working in the lab. Many of this year's research students were unable to collect data before the closure. It may be in your best interest to devise an alternate research project that you could complete at home. I realize this may not be ideal for your research interests however, it may be the most realistic approach at this time.***

**For further rules and guidelines please check the Intel ISEF and LISEF Guidelines:**

[ISEF Forms](#)

[ISEF Research Plan Template](#)

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## **FOR ALL STUDENTS:**

### **Accessing Information:**

**If you have any questions about accessing information or would like to discuss any ideas, you are welcome to E-mail us. E-mail all teachers together.**

**Places to search using the Internet for primary scientific literature include:**

- *Syosset High School Library Online Databases*  
<https://www.syossetschools.org/domain/249>  
Click on “Databases” on the left hand side, log in with your school Google account. You can use Science Direct on your school device however, you have to log in using your school email in order to do so. Email [mhendrickson@syossetschools](mailto:mhendrickson@syossetschools) if you are having trouble
- *Pubmed* - PubMed comprises more than 20 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites. Some articles are full text and free, some you may need to look in ScienceDirect from a school computer.  
<http://www.ncbi.nlm.nih.gov/pubmed/>
- *PLoS ONE*: a peer-reviewed scientific journal for the swift publication of original research in all areas of science and medicine, with innovative user tools for post-publication commenting, rating, and discussion.  
<http://journals.plos.org/plosone/>
- Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research  
<https://scholar.google.com/>

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