

INTRODUCTION TO SNAPS LABS

A SNAPS laboratory includes station activities designed to develop students' science skills with hands-on activities and thought-proving exercises. The labs require students to use science, math, literacy, problem-solving and engineering skills so to expand their understanding scientific ideas and apply scientific concepts to the real world.

Science Skills Station

Students explore a concept using science and math skills. The skills may be procedural that a student must physically do. The skills may be mathematical or require scientific thinking and reasoning.

Narrative Station

Students employ literacy skills important to understanding scientific text as well as illustrations, tables and graphs. In many labs, students will explore multimedia sources, such as videos, audio files or animations.

Assessment Station

Students answer multiple choice questions, short answer questions and/or open-ended, thought-provoking questions. The questions progressively get "harder" and require students to employ lower, mid and higher order thinking.

Problem-Solving Station

Students utilize the engineering design process and problem-solving skills so to identify problems, test solutions and/or make improvements to solutions.

Synthesis Station

Students compose a CER report as a lab conclusion so to relate the observations, data and other information gathered in the lab to the objective(s) of the lab.

Synthesis Project

Students complete an activity or project that helps summarize information studied and learned in the lab. This facilitates "bringing it all together" while getting students to think harder and deeper about a concept.

SNAPs LAB STATIONS ACTIVITY

The image shows a PDF document titled "Recombination Stations Lab.pdf" displayed in a web browser. The document is a comprehensive lab activity for students, organized into several sections:

- Introduction:** Explains the purpose of the lab, which is to understand the molecular basis of genetic recombination and its role in genetic diversity.
- Objectives:** Lists the learning goals for the activity.
- Materials:** Lists the required materials, including DNA, enzymes, and buffers.
- Procedure:** Provides a step-by-step guide for the experiment.
- Lab Stations:** A grid of 16 stations, each with a specific focus:
 - Station 1: DNA Structure and Replication:** Focuses on the structure of DNA and the process of replication.
 - Station 2: DNA Replication:** Details the steps of DNA replication, including the role of DNA polymerase.
 - Station 3: DNA Replication:** Focuses on the synthesis of the leading and lagging strands.
 - Station 4: DNA Replication:** Discusses the role of RNA primers and DNA ligase.
 - Station 5: DNA Replication:** Explains the formation of the replication fork and the role of topoisomerase.
 - Station 6: DNA Replication:** Focuses on the termination of DNA replication.
 - Station 7: DNA Replication:** Discusses the proofreading and error correction mechanisms.
 - Station 8: DNA Replication:** Explains the role of telomerase in maintaining chromosome length.
 - Station 9: DNA Replication:** Focuses on the role of the cell cycle in DNA replication.
 - Station 10: DNA Replication:** Discusses the role of DNA damage and repair mechanisms.
 - Station 11: DNA Replication:** Explains the role of DNA methylation in gene regulation.
 - Station 12: DNA Replication:** Focuses on the role of DNA methylation in cancer.
 - Station 13: DNA Replication:** Discusses the role of DNA methylation in aging.
 - Station 14: DNA Replication:** Explains the role of DNA methylation in development.
 - Station 15: DNA Replication:** Focuses on the role of DNA methylation in disease.
 - Station 16: DNA Replication:** Discusses the role of DNA methylation in evolution.
- Recording Sheets:** A grid of 16 recording sheets, each corresponding to a lab station. Each sheet includes a table for recording data and a space for answers to questions.
- Answer Key:** A grid of 16 answer keys, each corresponding to a lab station. Each key includes the correct answers to the questions and a brief explanation.

Features:

- ✓ Connects Science, Math, ELA & Engineering (Problem-Solving) Skills
- ✓ Requires easy-to-get and inexpensive materials
- ✓ **Printable lab** for traditional classrooms included
- ✓ Student Recording Sheets, Teacher Guide and Answer Key included

Printable Lab downloaded as a PDF file. Teacher Guide and Key not shown.

DIGITAL SNAPs LAB STATIONS ACTIVITY

The screenshot displays a digital lab interface titled "Recombination Digital Lab - Saved to my Mac". The interface is organized into a grid of 24 stations, numbered 1 through 24. Each station contains text, diagrams, and tables. The stations are arranged in three rows of eight. The top row (stations 1-10) includes a "Name" field, a "Description" field, and a "Notes" field. The middle row (stations 11-18) includes a "Name" field, a "Description" field, and a "Notes" field. The bottom row (stations 19-24) includes a "Name" field, a "Description" field, and a "Notes" field. The interface also features a top navigation bar with "Home", "Insert", "Draw", "Design", "Transitions", "Animations", "Slide Show", "Review", "View", "Recording", "Acrobat", and "Tell me" buttons. A search bar and "Comments" and "Share" buttons are located in the top right corner. The bottom of the interface shows a slide number "Slide 24 of 24", language "English (United States)", and accessibility options "Accessibility: Investigate".

Features:

- ✓ **Digital lab** for distance learning and paper-free classrooms included
- ✓ Fillable slides (pptx file) compatible with both Microsoft PP and Google Slides
- ✓ Assessment station available as self-grading Google Form (via force copy link)

EDITABLE SNAPs LAB STATIONS ACTIVITY

The image shows a Microsoft Word document titled "Recombination Editable Lab Stations". The document is a multi-page activity with 15 stations. Each station includes text, diagrams, and tables. The top row shows stations 1-6, and the bottom row shows stations 7-15. The interface includes a ribbon with "Home", "Insert", "Draw", "Design", "Layout", "References", "Mailings", "Review", "View", "Grammarly", "Acrobat", and "Tell me". The status bar at the bottom shows "Page 12 of 15", "2538 words", "English (United States)", and "Accessibility: Investigate".

Features:

- ✓ **100% Editable** stations downloaded as a docx file
- ✓ Necessary diagrams, tables and graphs included
- ✓ Illustrative graphics and clipart NOT included

TEACHER GUIDE

PRINTABLE LAB SETUP AND PREPARATION

Each “traditional PDF file” includes directions and questions for each station. Print one copy of these materials for each station. Place copies of the letter-sized directions questions in sheet protectors or use self-laminating sheets to protect the documents. Position the materials at each station with the general supplies of that station.

TEACHING DURATION

Most SNAPS lab activities require **two class periods** or **90 to 120 minutes**. However, the time needed to require one lab can vary with grade level, student autonomy and difficulty of content. Allowing two class periods allows ample time – regardless of these factors – for students to finish the four in-class stations.

Suggestions for shortening the lab:

1. Assign the Narrative Station as pre-lab work. By doing this, you ensure your students have first-order knowledge of the concepts and ideas explored in the lab. If you are using this lab to introduce new concepts, using the narrative station as a pre-lab will increase student success at the other lab stations.
2. Assign the Assessment Station as post-lab work. By doing this, you ensure your students are evaluated on the concepts and ideas in this lab after completing ALL stations.

DOCUMENT DISTRIBUTION

1. Distribute student copies of the lab overview and pre-lab assignment the night before the laboratory. The pre-lab is a ½ page assignment. Staple the pre-lab to the lab overview before distributing these documents.
2. Distribute student copies of the recording sheet at the beginning of the laboratory.
3. Distribute copies of the post-lab, synthesis station and synthesis project at the end of the lab. The post-lab is a ½ page assignment. Staple the post-lab to the synthesis station and project before distributing these documents.
4. Assign a due date for the synthesis project. The post-lab reflection is a formative assessment and should not require a formal “due date.”

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DIGITAL VERSION OF SNAPs LAB ACTIVITIES

This download includes a digital lab/fillable slides that allow students to complete the laboratory on a computer or tablet. This file was created to work with a variety of online platforms and secure file-sharing platforms. The digital lab has been modified so students record answers directly following questions rather than in a student packet.

Important Notes

- The answer key is removed from the digital lab.
- The answer key is included in the traditional PDF file.
- The digital laboratory CANNOT be edited; only fillable areas can be manipulated.
- When applicable, videos are included to help students create digital graphs.

The digital laboratory can be used a variety of ways:

- Distribute paper-free laboratories as part of regular instruction
- Use to assign at-home work as part of a remote or distance learning plan
- Send work to acutely or chronically absent students
- Support tutoring or at-home instruction for homebound students

How can you distribute and share the digital laboratory with your students?

- The laboratory CAN be distributed directly to students through email.
- The laboratory CAN be distributed or assigned with Google Classrooms, Microsoft Teams, Blackboard, Canvas, Schoology and other like platforms that are password-protected or require a code to enroll.
- The laboratory CAN be distributed with secure file sharing platforms like Google Drive, OneDrive and DropBox that are password-protected or shared only with students with their email or student account.
- Printable SNAPs labs can be shared or distributed just like the digital labs.

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To use the digital laboratory with Microsoft Teams:

1. Upload an assignment to your One Drive.
2. Create a new assignment. Add the file as a "resource."
3. Assign to the appropriate class or students.

To use the digital laboratory with Google Classrooms:

1. Upload the assignment to your Google Drive. Add the file using the upload tool in a web browser or drag and drop the file into your Drive. Watch a demonstration of the process: <https://safesha.re/3h6n>
2. Create a new assignment and add the digital lab to it. Make a copy for each student.
3. Assign to the appropriate class or students.

GOOGLE FORM ASSESSMENT

To better support digital classrooms, I created a Google Form version of the assessment station. There are two ways the Google Form assessment station can be used:

1. If using the digital lab, you can remove slides for the assessment station and use the Google Form assessment station instead. This makes the assessment station "more formal" since it is separate from the rest of the lab station activities.
2. If looking for a way to shorten the in-class lab, remove the assessment station – including the assessment station student recording pages – and assign the Google Form assessment station as an at-home assessment. Alternatively, you can use the Google Form assessment station as an in-class quiz if students have their own digital personal learning device.

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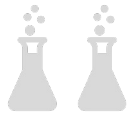
DISTANCE – INDEPENDENT LEARNING COMPATIBILITY

SNAPs lab activities are rated for their ease with distance – independent learning. Some lab activities are very hands-on and require a lot of materials whereas other lab activities are more thought-provoking and require minimal – or no – additional materials.

This lab has been rated the following:



The lab requires no modification to the required materials for distance – independent learning. All materials important to the lab are included in the digital lab. A calculator, colored pencils or a ruler may be needed.



The lab requires some modification to the required materials for distance – independent learning. Students can use household items, if needed, to complete hands-on activities.



The lab requires significant modification. Teacher should demonstrate or perform activities in a live session or prerecorded video and/or provide materials needed for the science skills or problem-solving station.

Suggestions

- The printable lab has been modified to work in a digital learning environment.

TEACHER GUIDE

EDITABLE COMPONENTS OF SNAPs LAB ACTIVITIES

This download includes an editable word document of all lab components. The stations are available as fully editable DOCX files., Diagrams, illustrations, tables and/or graphs that are essential to lab activities are included in the editable document. Illustrative clipart is NOT included in the editable document.

Some labs have a directed synthesis project. When applicable, the directed synthesis project is available as an editable word document as well. Editable documents and rubrics important to standard synthesis projects are included in the [SNAPs Lab Stations Setup Guide](#).

There are three important reasons for creating editable versions of these stations:

1. Most lab station activities utilize five or more stations with relatively simple and short activities. However, my SNAPs lab activities include four comprehensive stations. The science skills station and problem-solving station could be used independently as single class period laboratories. To better allow for this option, I have made these stations editable. Teachers can use the narrative station as "pre-lab" work and the assessment station as "post-lab" work.
2. The science skills and problem-solving stations are the only stations that will require materials other than computers or calculators. By providing these stations in an editable format, you can manipulate the materials required and/or the directions so the activities work for your classroom.
3. By making the science and problem-solving station editable, you can alter the scope of the activities to suit your students' needs. You can also edit the questions so to evaluate your students in a manner that is best for you and your classroom.

MAKE SURE YOU DOWNLOAD the FREE [SNAPs Lab Stations Setup Guide](#) for SIGNAGE, BEST PRACTICES & EDITABLE DOCUMENTS (<https://www.teacherspayteachers.com/Product/SNAPs-Lab-Stations-Guide-2953726>)