7th Grade Science
Project #1

Introduction: What better way to begin the year with a science project by focusing on the content we have been discussing during class time. We have covered instructional lessons about scale and the human gut microbiome. Inside your gut lives a community of tiny bacteria called the gut microbiome that helps digest food, make vitamins, protect against harmful germs, and support your immune system. These bacteria are mostly good and essential for your health. You begin building your microbiome at birth, and it changes based on your diet and lifestyle. Learning about the gut microbiome helps us understand how bacteria can keep us healthy, not just cause illness.

Here are your choices for the 1st marking period project:

1. **Wanted Poster – Bacterial Outlaw!**
   - Description: Create a "Wanted" poster for a disease-causing bacterium. You'll research its characteristics, how it infects people, the symptoms it causes, and how it can be stopped — all presented in a fun, old-western "outlaw" style.
   - Goal: Research a harmful bacterium and creatively communicate how it spreads, what it does to the body, and how it can be treated or prevented.
2. **Listeria Outbreak Investigation**
   - Description: Investigate the real Listeria outbreak from 2024. Research how it started, how it spread, who was affected, and how it was handled. Present your findings as a news report, poster, slideshow, or skit.
   - Goal: Understand how *Listeria monocytogenes* causes illness, how outbreaks are tracked and managed, and how foodborne illnesses can be prevented.
3. **Gut Bacteria Menu Design**
   - Description: Design a creative restaurant-style menu for the helpful bacteria in your gut! Choose 3–5 gut bacteria and list their favorite "foods" (prebiotics), what they produce (like vitamins or gases), and how they help your body.
   - Goal: Understand the role of gut bacteria in digestion and health by researching their food sources, functions, and benefits — then present it in a fun, creative format.
4. **Microbiome Mythbusters**
   - Description: Choose 3–5 common myths about bacteria or the human microbiome (e.g., "All bacteria are bad") and bust them using real scientific research. Present your findings as an infographic, short video, poster, or slideshow.
   - Goal: Develop research and critical thinking skills by investigating misinformation about bacteria and clearly communicating the scientific truth in a creative and engaging way.
5. **Poop and the Power of the Microbiome**
   - Description: Explore how human waste can reveal important information about gut health and the microbiome. Learn how scientists study stool samples and how fecal transplants can be used to treat certain diseases.
   - Goal: To understand the role of feces in microbiome research and health, and to communicate its scientific value through a creative, informative, and age-appropriate product.

Rubric: Wanted Poster – Bacterial Outlaw

Criteria	4-Advanced	3-Proficient	2-Developing	1-Beginning
Scientific Accuracy	All information is scientifically accurate with clear explanations of each section.	Minor inaccuracies or unclear parts in one or two sections.	Some errors or vague explanations in multiple sections.	Major scientific inaccuracies or misunderstandings present.
Required Content	Includes **all required elements**: common & scientific name, aliases, crimes, last seen, M.O., victims, symptoms, weapons, treatment/prevention, reward.	Missing 1–2 required elements or lacks full detail in a few.	Missing 3–4 elements or several sections underdeveloped.	Missing most elements or very minimal detail provided.
Creativity & Design	Poster is highly creative, visually engaging, and clearly themed as a "Wanted" poster.	Design is neat and creative, with a mostly consistent theme.	Some creativity shown; poster may be plain or inconsistent in theme.	Lacks creativity or effort; difficult to read or understand visually.
Clarity & Communication	Information is clearly written, well-organized, and easy to understand.	Mostly clear; minor issues with organization or explanation.	Some sections are confusing, poorly written, or hard to follow.	Information is unclear, poorly organized, or hard to read.

Rubric: Listeria Outbreak Investigation

Criteria	4-Advanced	3-Proficient	2-Developing	1-Beginning
Content & Accuracy	All facts are scientifically accurate and clearly explained. Demonstrates strong understanding of the topic.	All facts are scientifically accurate and clearly explained. Demonstrates strong understanding of the topic.	Some errors or vague explanations.	Major inaccuracies or misunderstandings.
Required Information	Includes **all required elements**: What is listeria?; 2024 Outbreak details; Symptoms and effects; Response, and; prevention	Missing 1–2 required elements or lacking detail in a few sections.	Missing 3–4 elements or several underdeveloped.	Missing most elements or very limited detail.
Organization & Clarity	Information is very clear, organized, and easy to follow.	Mostly clear and organized.	Some parts are confusing or poorly organized.	Disorganized or hard to understand.
Creativity & Presentation	Project is engaging, thoughtful, and visually or creatively presented (poster, video, slideshow, etc.).	Some creativity shown with a clear presentation format.	Minimal creativity or basic layout.	Low effort, messy, or incomplete presentation.

Rubric: Gut Bacteria Menu Design

Criteria	4-Advanced	3-Proficient	2-Developing	1-Beginning
Scientific Accuracy	All bacteria facts are accurate and well explained. Clearly shows understanding of gut microbiome.	Mostly accurate with minor errors or vague explanations.	Some inaccuracies or unclear explanations in parts.	Major inaccuracies or misconceptions about bacteria or gut health.
Required Information	Includes **all required elements**: favorite foods; what they produce; and, health benefits	Includes most required details; 1–2 elements missing or lacking depth.	Some required elements missing or not fully explained.	Many elements missing or barely addressed.
Creativity & Design	Menu is highly creative, neat, and resembles a real restaurant menu. Excellent use of theme and visuals.	Good creativity and theme; visually organized and clear.	Some creativity shown; layout or theme could be stronger.	Low effort, poor design, or not clearly themed as a menu.
Clarity & Communication	Information is clearly written, well-organized, and easy to understand.	Mostly clear and organized with minor confusion.	Some parts are hard to follow or poorly written.	Writing is unclear or disorganized; difficult to read or understand.

Rubric: Microbiome Mythbusters

Criteria	4-Advanced	3-Proficient	2-Developing	1-Beginning
Accuracy of Information	All information is scientifically accurate; myth is clearly identified and debunked.	Mostly accurate information with minor errors; myth is addressed clearly.	Some inaccuracies or confusion in explanation; myth may not be clearly addressed.	Major errors in information; myth is unclear or not correctly addressed.
Creativity and Engagement	Presentation is highly creative, original, and engaging; holds audience attention throughout.	Presentation is creative and mostly engaging.	Some creative elements, but presentation may be dull or inconsistent.	Little to no creativity; presentation is hard to follow or unengaging.
Use of Scientific Evidence	Strong use of reliable scientific sources; evidence clearly supports mythbusting.	Good use of evidence with mostly clear connections to the myth.	Some evidence used but may be weak, unclear, or not well connected.	Little or no scientific evidence; does not support the mythbusting effectively.
Use of Scientific Evidence	Strong use of reliable scientific sources; evidence clearly supports mythbusting.	Good use of evidence with mostly clear connections to the myth.	Some evidence used but may be weak, unclear, or not well connected.	Some evidence used but may be weak, unclear, or not well connected.
Presentation Quality	Clear, well-organized, and polished; visuals/audio enhance the message.	Mostly clear and organized; minor issues with visuals/audio.	Some disorganization; visuals/audio may be unclear or distracting.	Disorganized or incomplete; visuals/audio are missing or poor quality.

Poop and the Power of the Microbiome

Criteria	4-Advanced	3-Proficient	2-Developing	1-Beginning
Scientific Understanding	Demonstrates a clear and accurate understanding of how stool relates to microbiome health and research.	Shows good understanding with minor inaccuracies or gaps.	Basic understanding with some confusion or errors.	Inaccurate or very limited understanding of the topic.
Use of Evidence	Includes strong, relevant scientific evidence (e.g., fecal transplants, gut health indicators).	Includes relevant evidence, but may lack depth or detail.	Some evidence used but weak, unclear, or not well connected to the topic.	Little or no evidence provided; lacks support for claims.
Creativity & Communication	Presents information in a creative, engaging, and age-appropriate format (e.g., comic, poster, video).	Format is appropriate and somewhat engaging.	Some creativity shown, but presentation may be unclear or hard to follow.	Presentation is unclear, unengaging, or missing creative effort.
Accuracy & Clarity of Message	Clearly and accurately communicates the importance of poop in microbiome science.	Message is mostly clear and accurate with minor issues.	Message is somewhat unclear or includes misconceptions.	Message is confusing, misleading, or off-topic.