Cell Organization

Mary Spata, Joliet West High School

5-E Inquiry Model

E–1 ENGAGE

T: Engage student interest.
T: Convey the context of the lesson/unit through an opening activity (e.g., hook).
S: Engage in investigations that reveal their thinking.
S: Record initial ideas.

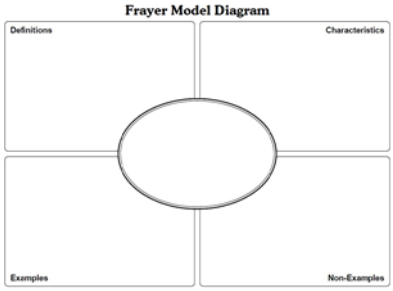
What is the teacher doing?	**What are the students doing?**
Opening Activity– Do Now 1. List three things you know about cells 2. Are cells different sizes? 3. How do cells multiply?	Completing Do Now using prior knowledge
Discuss the Do Now – what do the students know – what do they need to know	Participating in class discussion
Show the Video - NASA SCI Files - Cells, Tissues, Organs, and Systems (4 minutes) Teacher will show a video that presents the current data regarding climate change (http://www.youtube.com/watch?v=_EWOrZQ3L-c)	Watching video – summarize in a pair and share recalling model
Pass out index cards to each group	Each group to have a set of index cards to put in order – working in groups

E–2 EXPLORE

S: Test ideas and develop knowledge using explorations, investigations, and experiments.
S: Record ideas and modify ideas based on activities.
S: Develop new questions and testable hypotheses.

Activities List:

Advanced Organizer and have students complete according to directions



In the center, students will label Levels of Organization
On one foldable, students will label atom, molecules and

Engineering Practice Question:
What happens when cells do not do what they are supposed to do?

Scientific Practice Question:
How does this knowledge of cell organization help to prevent and treat disease and disorders?
How does this knowledge help scientists treat and prevent problems with cells?

Cell Organization

Mary Spata, Joliet West High School
5-E Inquiry Model

cells in each corner. (one corner will be blank) On the second foldable students will also label Levels of Organization in the center and then label each corner tissues, organs, organ systems and organisms. Students will be given a list of terms they will classify as examples for each level of organization for organisms.	
Student Assessment: Completion of a Frayer Model Worksheet.	

E–3 EXPLAIN

T: Provide relevant vocabulary, formal definitions, and explanations of concepts as needed.
S: Explain answers to Key Question(s).

Content Media:

A Summary of What We Know About Cells. They are:

- •Very small (typically seen only under a microscope).
- •Specialized for particular functions (for example, skin cells, bone cells, blood cells).
- •Work together in organs that may contain several cell types of tissues.
- •Self regulate (although they need help from other cells and organs).

Vocab

- •atom, molecules, cells, tissues, organs, organ systems and organisms

Student Assessment: Frayer Model Worksheet and class discussion Are students able to explain the layers correctly

Cell Organization

Mary Spata, Joliet West High School

5-E Inquiry Model

E–4 ELABORATE / EMPLOY

S: Extend conceptual understanding through application or practice in new settings.

- **Content Media:** Student to classify the additional following terms
- Animal
- Brain
- Carbon
- Carbon dioxide
- Cardiovascular
- Cell membrane
- Circulatory
- Connective
- Cytoplasm
- Digestive
- Dogs
- Endocrine
- Epithelial
- Excretory
- Fish
- Fungus
- Gallbladder
- Glucose
- Group of cells working together
- Heart
- Humans
- Hydrogen
- Large intestine
- Liver
- Lungs
- Lymphatic
- Mitochondria
- Muscle
- Musculoskeletal
- Nervous
- Nervous
- Organs that work together
- Oxygen
- Pancreas
- Plant
- Reproductive
- Respiratory
- Several tissues working together
- Skin.
- Small intestine
- Stomach
- Trees
- Urinary

Cell Organization

Mary Spata, Joliet West High School

5-E Inquiry Model

Extension / Application Questions for Whole / Small Group Discussion:

1. Disease - Organelles that are damaged or diseased cannot perform their roles properly.
2. Cells do not work as well as they get older.
3. Cells are damaged by disease and "wear and tear" of living.
4. Many cells die, even without disease (example: "shedding" of skin).
5. Big problems can result when cells do not replace themselves as they die (example: skin gets thinner and more easily damaged in old age; death of neurons can cause senility, Parkinson's disease, paralysis).
6. Big problems result if cells replace themselves in an out-of-control way (example: cancer).

Student Assessment: Class discussion, can students correctly categorize the additional words, Students can also research disorders/diseases with cellular causes, Unit Test,

Students can test their knowledge of cellular organization at http://www.ck12.org/biology/Organization-of-the-Human-Body/asmtpractice/Organization-of-the-Human-Body-Practice/r1/?referrer=concept_details

Cell Organization

Mary Spata, Joliet West High School

5-E Inquiry Model

E–5 EVALUATE **T:** Assess student understanding of the learning objectives. **S:** Assess understanding of the learning objectives.	
Skill / Reasoning Learning Objectives (e.g., model building, iMovie production, writing narration, choosing best items and procedures for a project, etc.) 1. Identify levels of cellular organization (cells → tissue → organs → systems → organism).	**Assessment Instrument** (e.g., rubric, final product, effective communication, etc.) **Unit test with essay question**: Essay - A school is organized into classrooms with students and teachers, offices with secretaries, administrators, and support staff, the cafeteria with cafeteria workers, etc. Compare this to how the human body is organized? Are all parts of the body the same? If not, what makes one part different from another? Explain in as much detail as you can.
Knowledge Learning Objectives (e.g., action verbs, taxonomies, etc.) 1. Describe cellular organization and the way this organization relates to function 2. Relate the organization of the cell to different functional activities 3. Relate disorders/diseases related to cellular disorders	**Assessment Instrument** (e.g., accuracy of product and product components, test, etc.) Students should be able to accurately answer the test questions and essay question