

Edible Cell Challenge

For this challenge we will be making Animal Cell models, as scientifically accurate as possible, using common pizza making ingredients. Please include every organelle listed on the table below in your model, and as many “extras” as you can! Be creative!

Organelle	Function	Location	Description	Topping used	Notes/comments
Nucleus	Control center; contains DNA	Near the center of the cell	Large and round		
Ribosomes	Protein factories	Either free in the cell or on the rough endoplasmic reticulum	small and colorful		
Mitochondria	Powerhouse; contain their own circular DNA and are the site of aerobic respiration (ATP production)	Throughout the cell	Bean shaped pieces		
Golgi bodies	Stacked sacs that process and package lipids and proteins made in the cell	Often depicted near the nucleus, but can be anywhere in the cell	Flattened, stacked sacs		
Endoplasmic Reticulum (ER)	Lipid and Protein carrier		Series of folded membranes		
Lysosome	Contains enzymes to catalyze hydrolysis reactions that break down proteins, carbohydrates, and some lipids; acts as “cleaning crew”	Anywhere in the cell	Sac-like		
Vacuole	Storage Site; contain food, waste, enzymes, and water	Throughout the cell	Membrane bound sacs		

Extras:

- Make both smooth (no ribosomes) and rough (with ribosomes; makes proteins and sends them to the golgi bodies for packaging) endoplasmic reticulum
- pinocytic or secretion vesicles
- centrioles
- Nuclear membrane, nucleolus, and/or chromatin
- Any additional detail from the module (hint: for ideas look at the figures)

The cytoplasm is a jelly like fluid in which all of the cell organelles are suspended. We will be using tomato sauce to represent the cytoplasm.

The cellular membrane separates the cell from its surroundings and is semipermeable, letting good things in and keeping bad things out. We will use mozzarella cheese to represent the cellular membrane, which is especially appropriate since the membrane is made of lipids (fats) and proteins (this way we can cover our “cells” with cheese before we bake so they will be more delicious but still scientifically accurate 😊).

Other toppings to choose from will include: black olives, canned mushrooms, bell peppers, tomato slices, canned pineapple, pepperoni and/or ham slices, Italian seasoning.

Feel free to bring any other topping that you would like to have available for your cell!