

LESSON RESOURCES

# MILK SKETCH HANDOUT

NAME: \_\_\_\_\_

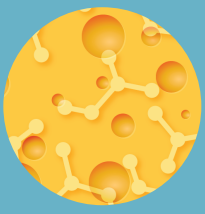
**A glass of milk looks white at first glance, but what would happen if you could look even closer?**

**USE YOUR IMAGINATION AND BRAIN POWER TO DRAW WHAT SECRETS MILK MIGHT BE HIDING...**



***Make sure you label the parts of your drawing!***





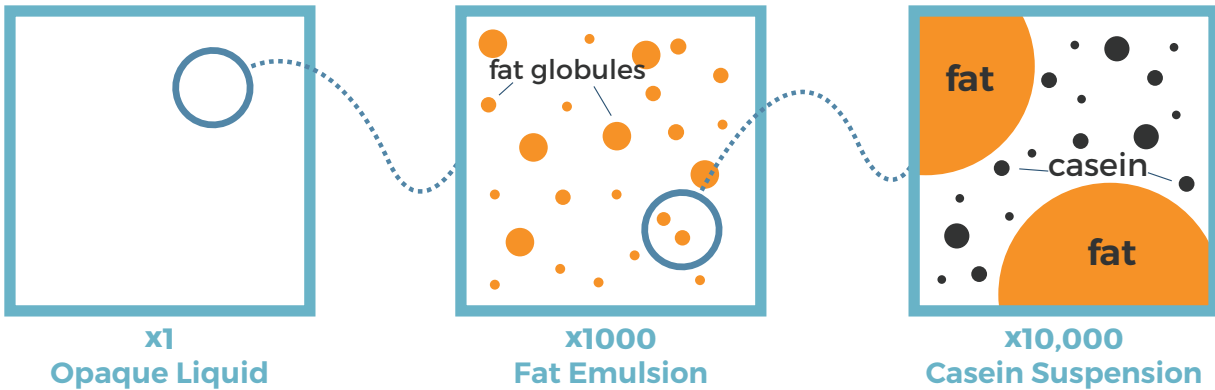
The flavor of cheese is influenced by many things -- microorganisms, enzymes, and processing steps to name a few.

For an *interactive* version visit [cheesescience.org/wheel](https://cheesescience.org/wheel)

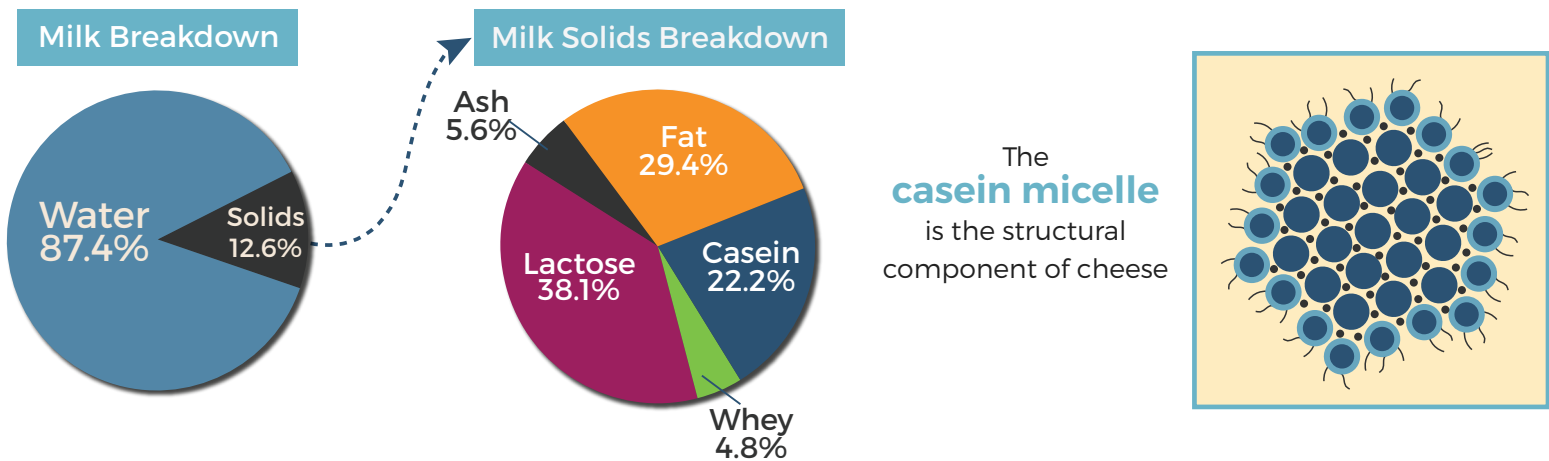


# MILK CHEMISTRY 101

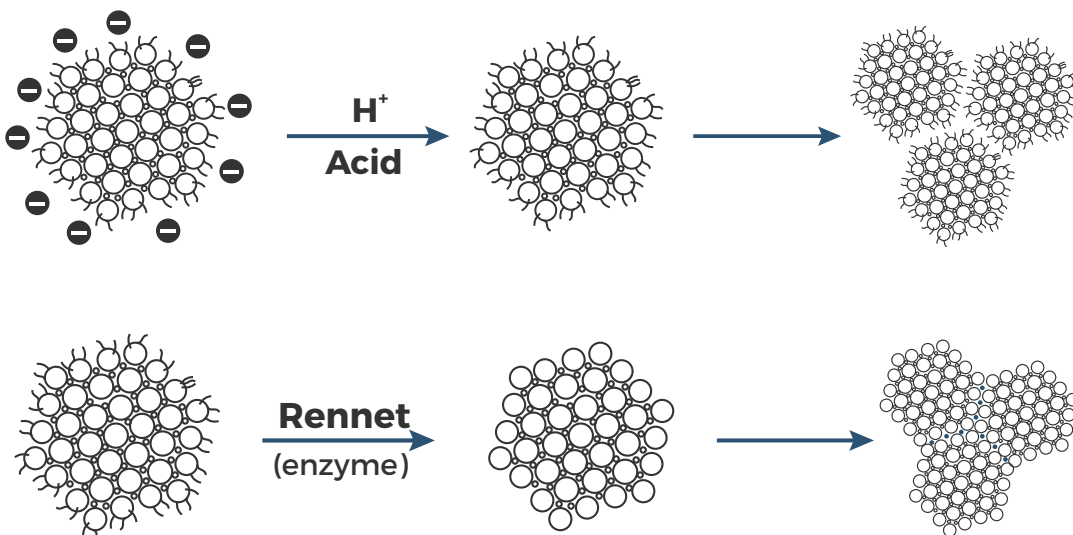
Simply, milk is an emulsion with **fat particles (globules)** and **proteins** dispersed in an aqueous (watery) environment.



Milk is composed of water, sugar, fat, protein, and minerals



Casein proteins will aggregate under two main conditions:  
acid coagulation and enzymatic coagulation



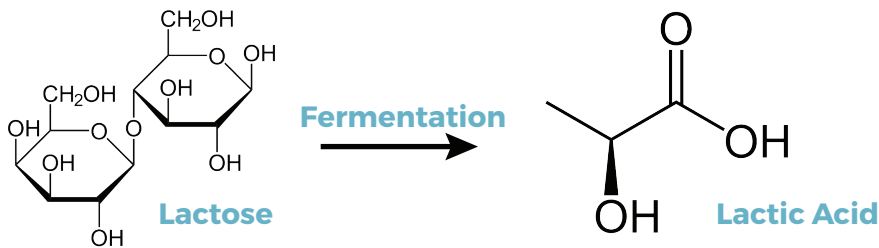
Coagulation is what turns liquid milk into solid cheese curd

# CHEESE CHEMISTRY 101

Three main reactions take place during cheese aging

## FERMENTATION

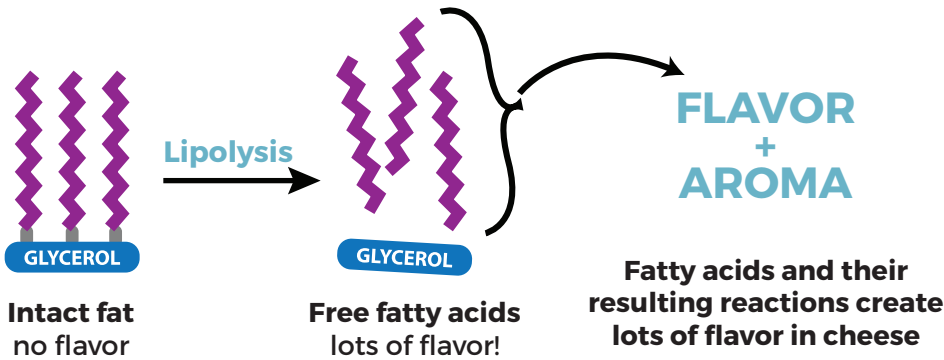
Fermentation (or glycolysis) is the breakdown of the natural milk sugar (lactose) into lactic acid through the use of bacteria (i.e. starter cultures)



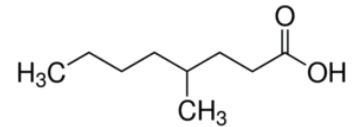
The “sharpness” in cheddar comes from the acidity produced by the culture **Lactococcus lactis**

## LIPOLYSIS

Lipolysis is the breakdown of fat into fatty acids, which are crucial to flavor

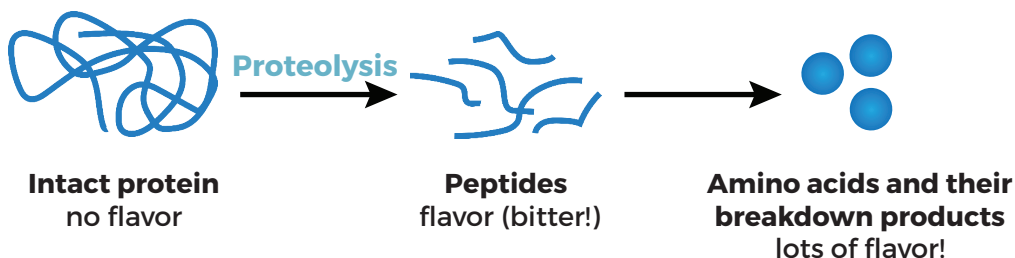


The unique flavor of goat cheese is caused by fatty acids



## PROTEOLYSIS

Proteolysis is the breakdown of protein, which greatly impacts cheese flavor and texture



The sulfur or “boiled egg” flavor in cheddar comes from the breakdown of sulfur-containing amino acids

