



Culinary Institute  
of America

# Day 1: Food Safety

Rialto USD Culinary Training

March 28-30



# Learning Objectives

- Identify the different types of microorganisms and pathogens.
- Recognize the conditions that support the growth of pathogens.
- Learn how to prevent food-borne illnesses.
- Understand how food handlers contaminate food.

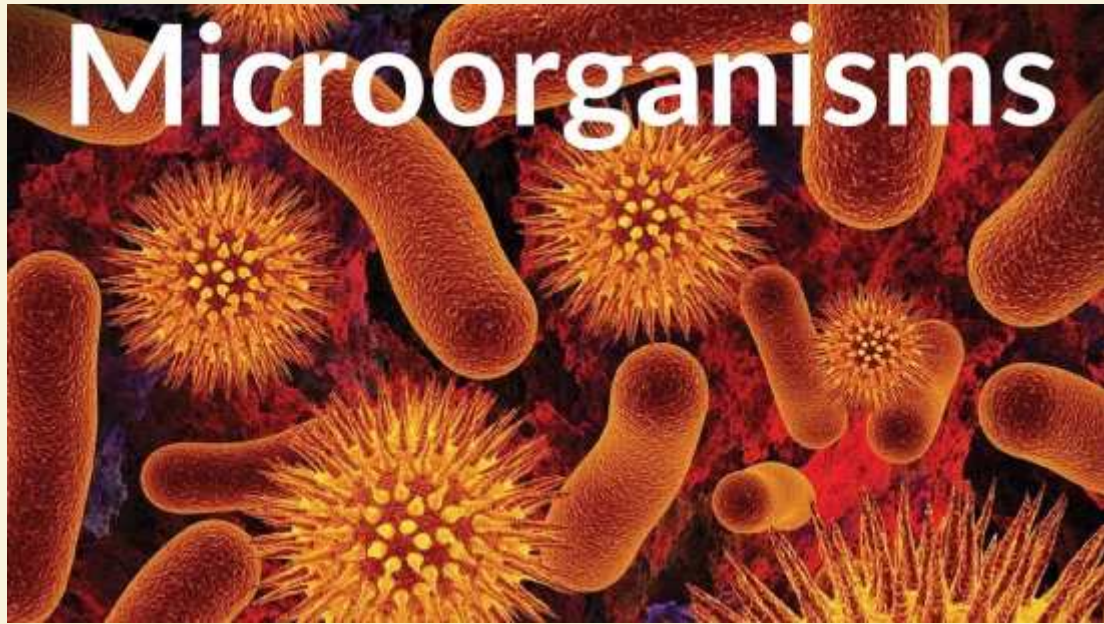
# Key Terms

- Acidity
- Bacteria
- Cross-contamination
- Food-borne illness
- Fungi
- Moisture
- Microorganisms
- Parasites
- Pathogens
- Personal hygiene
- Temperature danger zone
- Viruses

# Kitchen Responsibilities

- Keep stations clean.
- Properly handle and store all food.
  - When handling “ready-to-eat” food items...if you don’t cook it, glove it!
  - Wash hands, cutting boards, knives, etc. when switching between meats and vegetables.
- Clean all small equipment as you go.
- Store all pots, pans, and cutting boards on the rolling rack.
- Leave the kitchens clean at the end of class.





- Small, living organisms that can be seen only through a microscope
- Some are harmless or even beneficial
  - Mold for blue cheese
  - Yeast for bread
- Some are harmful – called pathogens
  - Can make sick by eating
  - Can make sick by producing toxins

# Types of pathogens

- Viruses
  - Survive freezing and cooking
  - Need a host to reproduce
- Bacteria
  - Produce spores & toxins
- Parasites
  - Must be in flesh of an animal to survive
- Fungi
  - Mostly spoils foods



# Conditions supporting the growth of pathogens

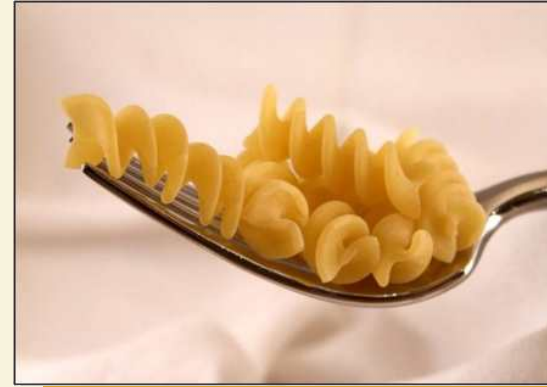
- **Food**
- **Acidity**
- **Temperature**



- **Time**
- **Oxygen**
- **Moisture**

# Pathogens: Food

- One of the most critical factors for microbial growth is the availability of nutrients and energy.
- Microbes need carbohydrates, fats, proteins, metals, and vitamins to survive, just like animals.
- Pathogens grow best on carbohydrates and protein





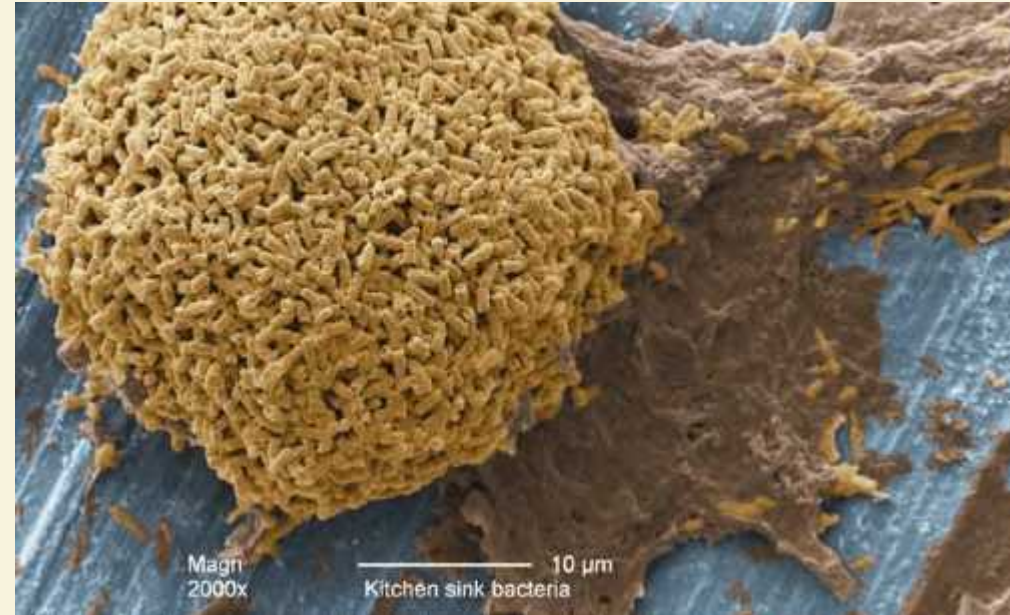
# Pathogens: Acidity

- Pathogens grow best in food that contains little or no acid
- Culinary Acids
  - Lemons/limes
  - Vinegars/pickles
  - Vinaigrette
  - Fermentatively generated acids
    - Lactic acid
    - Acetic acid



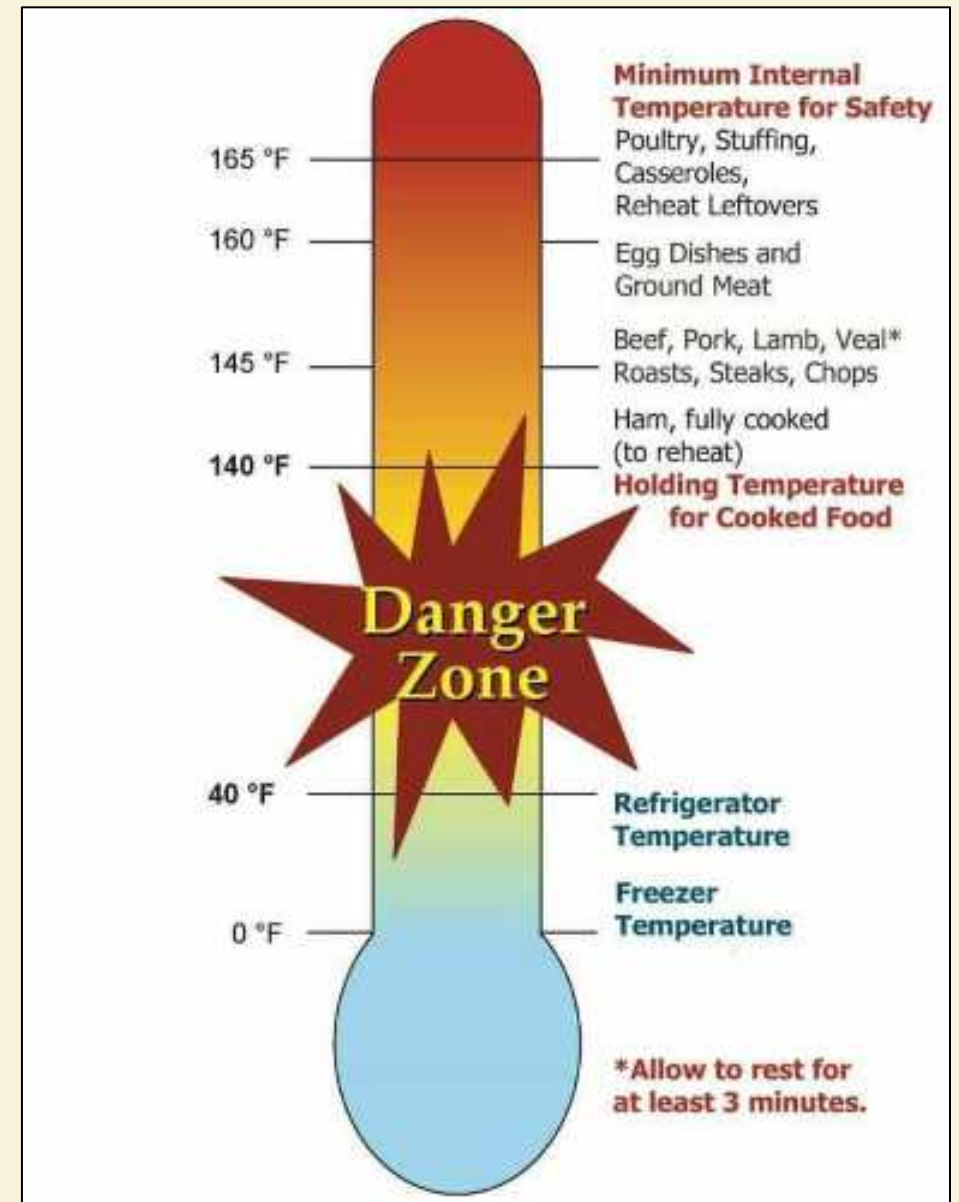
# Pathogens: Time

- Bacteria can DOUBLE their numbers in as little as 20 minutes
- After 4 hours, can make someone sick



# Pathogens: Temperature

- Temperature Danger Zone
  - **41°F - 135°F**
  - Ideal for pathogen growth



# Pathogens: Oxygen



- Pathogens can grow with OR without oxygen
  - Aerobic
  - Anaerobic

# Pathogens: Moisture

- Pathogens need moisture to grow
- Moisture comes from water
  - Food feels moist to touch
  - High-fat foods such as peanut butter and avocado are oily but not moist



# Preventing Foodborne Illness

- Control time and temperature
  - Store, cook, hold, cool, and reheat food to proper temperatures in proper time
  - Keep out of Temperature Danger Zone **41°F - 135°F**
- Prevent cross-contamination
  - Don't allow ready-to-eat food to come into contact with contaminated hands or surfaces or raw food

# Preventing Foodborne Illness

- Practice good personal hygiene
  - Don't come to work sick
  - Wash hands appropriately
- Purchase food from approved, reputable suppliers
  - Examine reports of FDA and USDA

# How Foodhandlers Contaminate Food

They have a  
foodborne illness

They have  
diarrhea, nausea,  
or vomiting

They have  
infected cuts

They live with  
someone who is  
ill

They  
contaminate  
their hands





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Any Questions?