

CHAPTER 6

INTRODUCTION TO FOOD SAFETY



CULINARY ARTS

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FOODBORNE ILLNESS AND ITS COSTS

- **FOODBORNE ILLNESS**—DISEASE TRANSMITTED TO PEOPLE BY FOOD
- **FOODBORNE-ILLNESS OUTBREAK**
 - 2 OR MORE PEOPLE
 - FROM THE SAME FOOD SOURCE
 - INVESTIGATION IS CONDUCTED
 - LABORATORY ANALYSIS CONFIRMED



POPULATIONS AT HIGH RISK FOR FOODBORNE ILLNESS

- **HIGHER RISK FOR FOODBORNE ILLNESS**
 - WEAKENED IMMUNE SYSTEMS
 - CANNOT FIGHT ILLNESS
- **IMMUNE SYSTEM**—DEFENSE AGAINST ILLNESS
- ELDERLY PEOPLE
- PRESCHOOL-AGE CHILDREN
- **COMPROMISED IMMUNE SYSTEMS**
 - CANCER OR CHEMOTHERAPY
 - HIV/AIDS
 - TRANSPLANT RECIPIENTS
 - MEDICATIONS

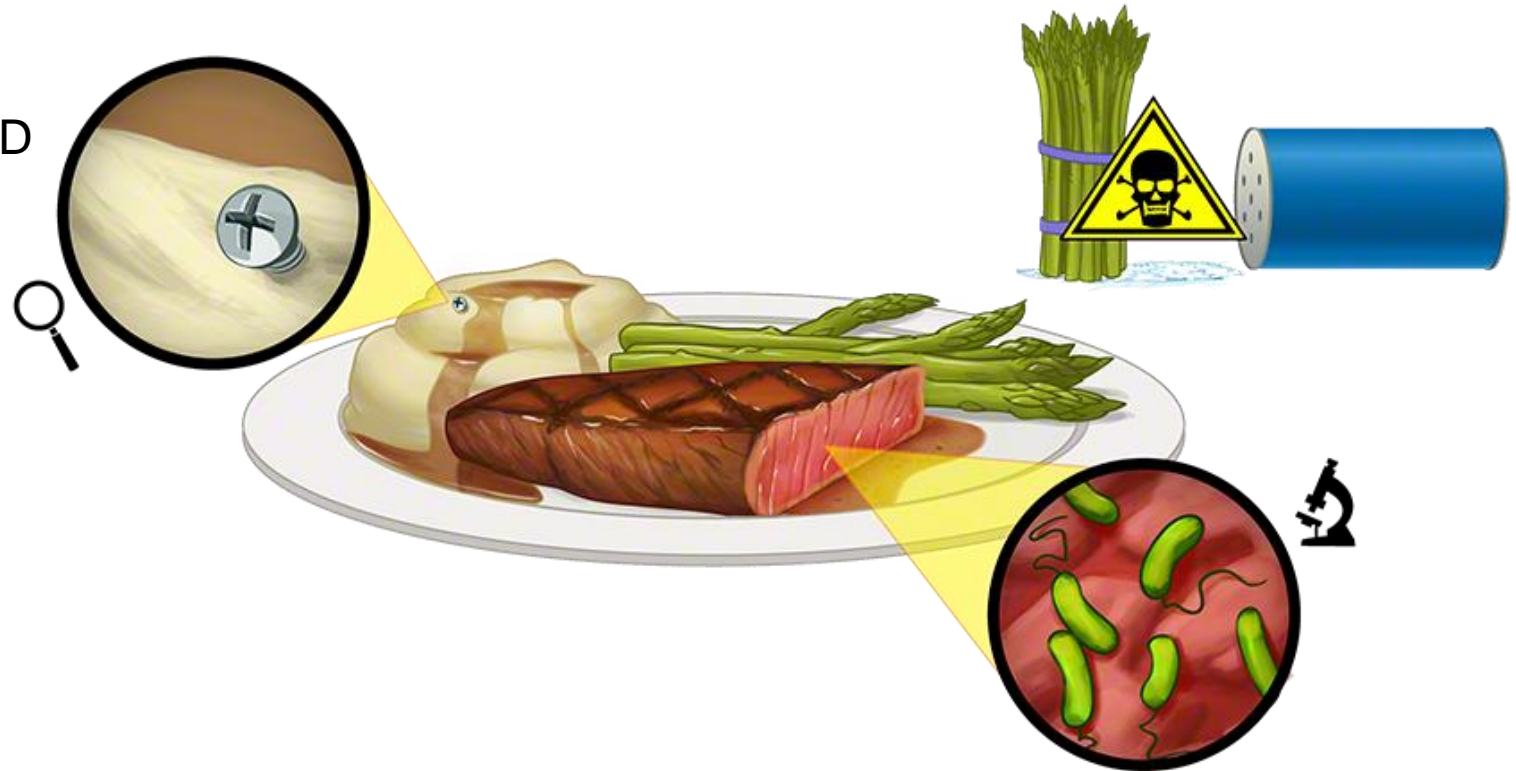


FORMS OF CONTAMINATION

- **HAZARD**—POTENTIAL TO CAUSE HARM
- **THREE CATEGORIES OF FOOD HAZARDS**
 - BIOLOGICAL
 - CHEMICAL
 - PHYSICAL

CONTAMINATION

- HARMFUL ITEMS PRESENT IN FOOD
- UNSAFE TO EAT THE FOOD



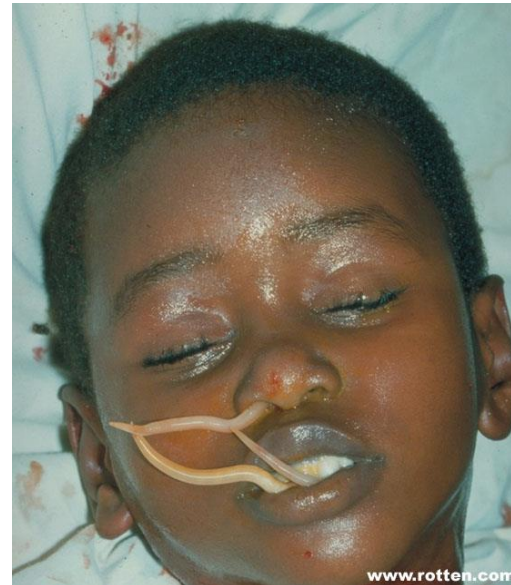
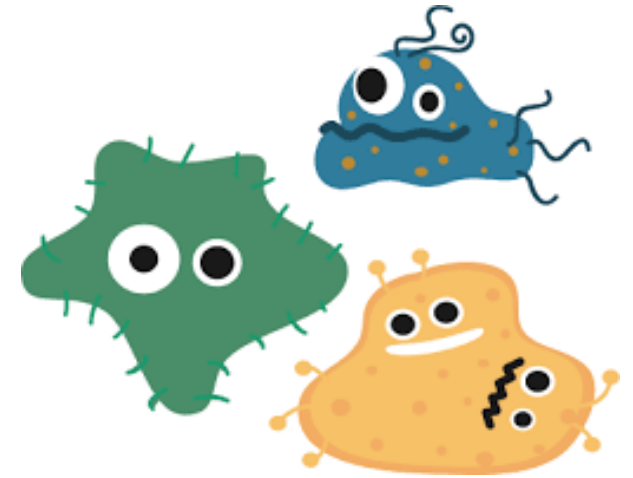
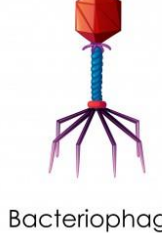
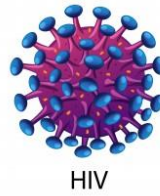
BIOLOGICAL CONTAMINATION

MICROORGANISMS

- SMALL, LIVING ORGANISMS
- ONLY SEEN THROUGH A MICROSCOPE
- HUMANS CAN CARRY THEM
- PATHOGENS - CAUSE ILLNESS

FOUR TYPES OF PATHOGENS:

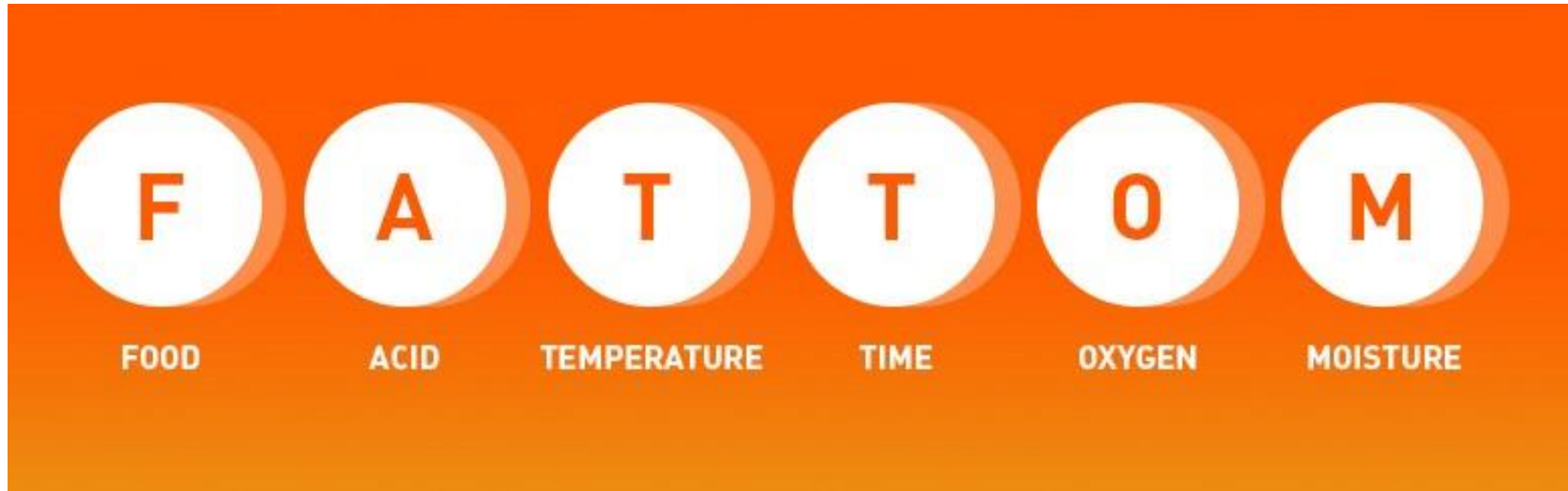
- VIRUSES
- BACTERIA
- PARASITES
- FUNGI – MOLD AND YEAST



BACTERIA

- **FAT TOM - SIX CONDITIONS TO GROW:**

- FOOD
- ACIDITY
- TEMPERATURE
- TIME
- OXYGEN
- MOISTURE



BACTERIA – FAT TOM PRINCIPLES

FOOD:

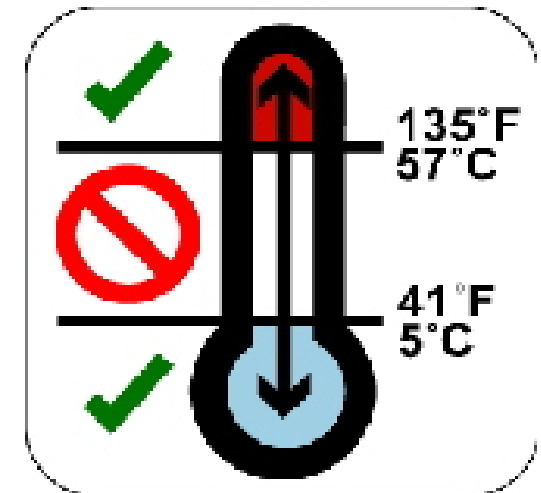
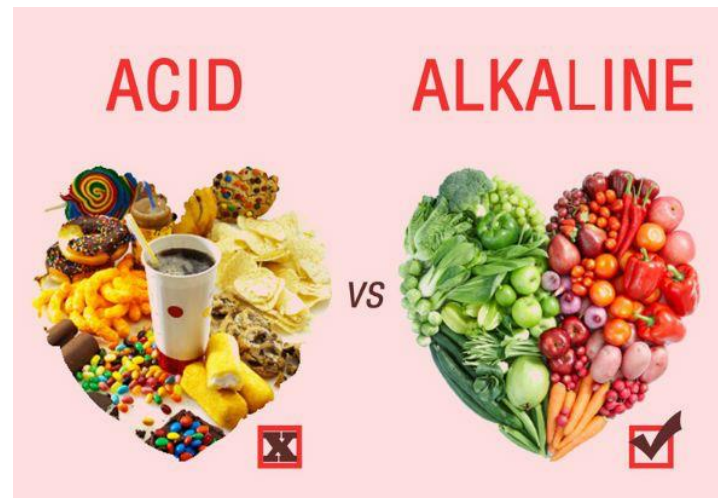
- ENERGY SOURCE FOR BACTERIA
- CARBOHYDRATES AND PROTEINS

ACIDITY:

- PH—MEASURE OF ACIDITY LEVELS
- PH SCALE— 0 TO 14
- BEST GROWTH—PH OF 7.5 TO 4.6
- BACTERIA PREFER FOOD WITH LITTLE OR NO ACID

TEMPERATURE:

- BETWEEN 41°F AND 135°F (5°C AND 57°C)
- TEMPERATURE DANGER ZONE



BACTERIA – FAT TOM PRINCIPLES

TIME:

- TIME SPENT IN TEMPERATURE DANGER ZONE
- BACTERIA GROW TO UNSAFE LEVELS
- FASTEST GROWTH BETWEEN 70 – 125F

OXYGEN:

- AEROBIC: GROW WITH OXYGEN
- ANAEROBIC: GROW WITHOUT OXYGEN

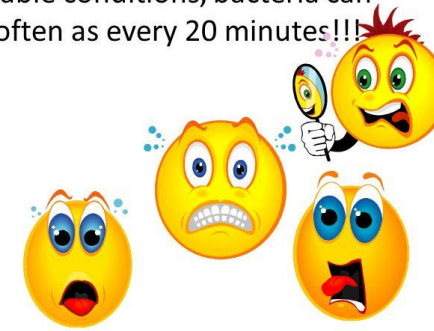
MOISTURE:

- BACTERIA LOVE FOOD WITH HIGH LEVELS
- EXAMPLE: TOMATOES, MEAT, POULTRY



Under the right conditions bacteria can increase quickly.

- With plenty of food, the right temperature and other suitable conditions, bacteria can reproduce as often as every 20 minutes!!!



BACTERIA

TCS FOOD:

- TIME AND TEMPERATURE CONTROL FOR SAFETY
- INCLUDE ALL FAT TOM CONDITIONS
- MOST COMMONLY INVOLVED IN FOODBORNE-ILLNESS OUTBREAKS
- VIRTUALLY ALL FOODS ARE CONSIDERED TCS FOODS



Baked potatoes



Fish



Heat-treated plant food, such as cooked rice, beans, and vegetables



Shell eggs (except those treated to eliminate nontyphoidal *Salmonella*)



Shellfish and crustaceans



Sliced melons, cut tomatoes, and cut leafy greens



Meat such as beef, pork, and lamb



Milk and dairy products



Poultry



Sprouts and sprout seeds



Tofu or other soy protein; synthetic ingredients, such as textured soy protein in meat alternatives



Untreated garlic-and-oil mixtures

BACTERIA

READY-TO-EAT FOOD:

- FOOD EATEN WITHOUT FURTHER:
 - PREPARATION
 - WASHING
 - COOKING
- EXAMPLES: WASHED FRUIT, DELI MEAT, SEASONINGS



CHEMICAL CONTAMINATION

- Used or stored incorrectly
- Cleaners, sanitizers, polishes
- Separate area
- Away from food, utensils, equipment
- Follow manufacturer's directions



PHYSICAL CONTAMINATION

- Objects in food
- Naturally occurring
- Accidents and mistakes



FOOD ALLERGIES

- Food allergy—negative reaction to food protein
- Food allergens—proteins causing allergic reactions
- Immune system attacks protein
- Causes allergic reaction

FOOD ALLERGIES

Cross-contact:

- Allergen food item touches another food item
- Proteins mix

THE “BIG EIGHT” FOOD ALLERGENS



Crustacean shellfish, such as crab, lobster, and shrimp



Eggs



Fish, such as tuna and cod



Milk

THE "BIG EIGHT" FOOD ALLERGENS



Peanuts



Soy



Tree nuts, such as almonds, walnuts, and pecans



Wheat

STEPS TO AVOID CROSS-CONTACT

WASH, RINSE, & SANITIZE

- Cookware, utensils, and equipment
- Food-prep surfaces

KEEP ALLERGENS SEPARATE

- Use separate utensils
- Store common allergen foods separate
- Have dedicated fryer

