

# Human Illness

## Malnutrition

- Nutrient deficiencies
- Obesity

## Injury

- Not genetic
- Not contagious
- Immune system helps heal tissue

## Accidents

## Toxins

- Drugs / Alcohol
- Environmental
- Poisons

## Strain on Body

- Overuse, Wear and Tear, Aging

## Parasites

- Multi-cellular eukaryotes
- feed on or otherwise weaken host
- usually types of worms (ex. round worm, tape worm, triginosis)

## Parasitic Protozoans

- Single-celled eukaryotes
- cause cell death in a variety of ways

## Fungi

- Eukaryotic cells that live in colonies
- Feed on dead tissue (already dead or they kill it), may release toxins and/or spores that cause illness (ex. athletes foot, molds, ringworm)

## Communicable Diseases

- Not genetic
- Are contagious
- Caused by **pathogens**
- transmitted to **host** organisms via **direct contact** (ex. handshake, sneeze), **indirect contact** (ex. door knob, desk top), or a **vector** (ex. rat, insect)

## Bacteria

- Single-celled prokaryotes
- some attack and kill cells in order to obtain their nutrients
- some release toxins that kill cells
- Examples: anthrax, tuberculosis, strep throat, Lyme disease, E. coli, salmonella, botulism)

## Viruses

- Tiny protein capsules that contain minimal DNA
- Infect cells by inserting DNA into the cells which then takes them over
- Uses cells to make copies of the virus
- Cell death results when cells burst open to release viral "babies"
- Some viruses can hide in cells for years and then reemerge

## Prions

- abnormally folded proteins that are able to induce normal proteins to fold incorrectly
- primarily involve proteins expressed by brain cells
- form plaques (clumps of "bad" proteins) that cause cell death and progressive deterioration of the brain
- Examples: mad cow disease, Creutzfeldt-Jacob disease, Kuru)

## Autoimmune Disorders

- Immune system attacks own body
- May be caused by an inherited (genetic) disorder or triggered by an environmental agent like a toxin or pathogen
- Not Contagious

## Mental Disorders

- May be caused by a genetic disorder or result from injury/trauma
- Least understood area of medicine
- Not contagious

## Cancers

- Result from genetic mutations to multiple key regulatory genes
- Some of the mutations may be **congenital** (from birth) but most occur over time
- Mutations are caused by random copying errors and environmental factors like radiation, pathogens, and **carcinogens**
- Not contagious (but pathogens that may have helped cause it are contagious)

## Inherited Disorders

- Genetic (inherited from mom and/or dad - either they have the mutation or it came from a spontaneous copying error in the egg or sperm)
- Can be caused by a defect in a single gene or from defects in multiple genes (polygenic)
- Not contagious

## Chromosomal Disorders

- Duplication, deletion, insertion or inversion of a segment of a chromosome
- **Nondisjunction** (missing or extra chromosome)

## Point Mutations

- **Recessive:** you must inherit the mutation from both parents
- **Dominant:** you must inherit the mutation from just one parent