**December Notes: Day 3 The Immune System**

Name: Period: Date:

**Aim: How does the Immune system protect us from disease?**

**Do now:** answer these review questions in your notebook

1. What is the name of the cells that makes up the nervous system?
2. What is the name of the type of organs that make hormones?
3. What type or organic molecules are neurotransmitters and hormones? (they are the same)
4. What are 2 differences between the signals of the nervous system and the endocrine system?

**Why an immune system?**

* Humans and animals must defend themselves against

: Examples: , ,

Examples: , ,

: Examples: , ,

Examples: , ,

* Cancer cells: body cells

**How do invaders enter the Body?**

* Points of entry: , , , ,
* How does the body defend? ,

**How are invaders recognized?**

chemical name tags on the of every cell

**Lines of defense**

* 1st line: → broad, defense i.e. “walls & moats”
  + & membranes
* 2nd line: patrol → broad, defense i.e. “patrolling soldiers”
  + phagocyte (eating) WBCs
* 3rd line: system → , immunity i.e. “elite trained units”
  + lymphocyte s & : B & T cells

**1st line:**   **Barriers**

* non-specific defense
* external barriers
* skin & mucus membranes

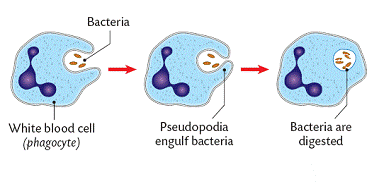
excretions: , , , ,

**2nd line:**  **,**   **range patrols**

* Patrolling cells
  + invaders that get through the skin
  + recognize invader by reading :surface name
* phagocyte cells: → “big eaters”

**Lymph system**

* of white blood cells & traps “foreign” invaders
* vessels: (intertwined amongst blood vessels)
* node
* 2nd system

**Phagocytes:**  blood cells that

**Why do injuries swell?**

Inflammation → cells release chemical signals called

Functions of histamines include:

* blood flow
* more blood cells to fight bacteria
* more blood cells & factors to

**Fever**

Occurs when a local response is not enough

* full body to
* body
* higher temperature helps in
* growth of
* helps
* up of tissues

**3rd line: Lymphocytes**

* defense
* responds to specific
* specific foreign
* white blood
  + &

**B cells & antibodies**

* B cells: white blood cells that invaders in blood
* mature in

Patrolling : make against invader immediately

B cells: remembers invader. Can make antibodies the next time. you from getting disease more than once

**Antibodies**

made by B cells that invaders in the blood so can eat them

* tag says “this is an ” → biological “ ”
* attaches to of

**Vaccinations**

* to version of
* immune system to produce to invader
* response if exposure
* Most successful against diseases

**Protecting you from disease**

* Vaccinations
  + Advantage → don’t get illness, immunity (produce for life), works against many   
     & bacteria
  + Disadvantage → not possible against invaders
* Breastfeeding: mother’s milk gives baby & keeps baby healthy`

**What if the attacker gets past** **the B cells in the blood & infects some of your cells?**

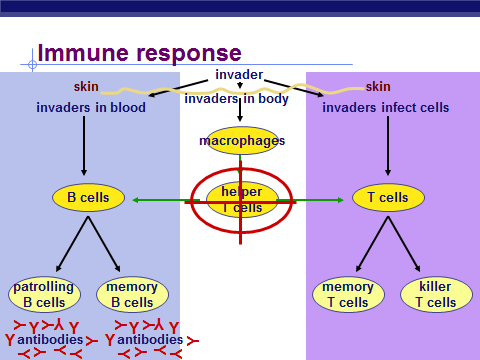
You need trained to kill off these infected cells!

**T cells**

* T cells mature in
* cells →sound the for rest of system
* cells → infected cells
* cells → invader & reacts against it again

**Attack of the Killer T cells**

* Killer T cells cells
* T cell to invaded cell
* cell membrane of infected cell
* cell

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**Diseases of the immune system**

:

* infects cells
* helper T cells can’t rest of system
* body doesn’t hear the

:

* system is
* by other diseases
* from invading or cancer

**Curing you of disease**

**Antibiotics** = medicine

* Advantage → kill that have successfully you, make you well after being sick
* Disadvantage→ use only sick, only good against bacteria, possible development of by bacteria (if don’t use correctly), can get sick again

**Immune system malfunctions**

Auto-immune diseases

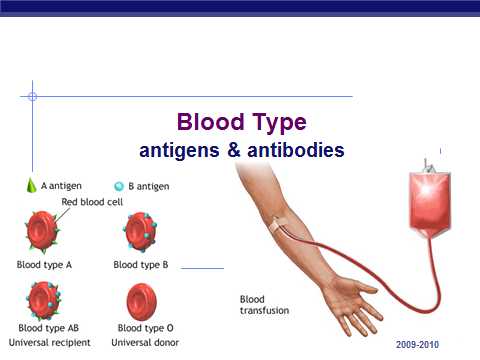
* immune system own cells
  + → attack many different cells
* rheumatoid → causing damage to & bone
* → -making cells of attacked & destroyed
* multiple →T cells attack myelin sheath of & spinal cord .Fatal

**Immune system malfunctions**

* Allergies → to compounds

Cause allergies

* proteins on
* proteins from mites
* proteins in saliva
* body thinks they are attackers

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