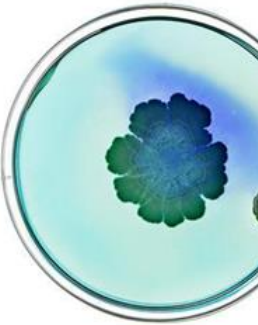
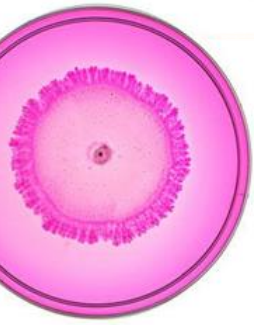
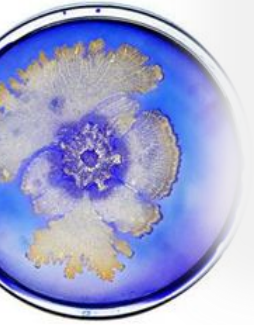
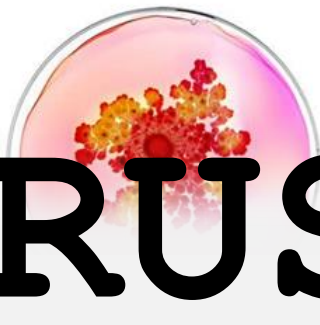


VIRUSES & ALLERGIES

U5: L3



PATHOGENS

- Biological agents that cause disease or illness
 - Bacteria and Viruses are examples of pathogens
-

The Difference Between Bacteria and Viruses

- Bacteria can replicate on their own & are 10 to 100X larger than viruses
- Viruses need to invade a cell in order to replicate





- Bacteria grow and divide inside human tissue

- When 1 harmful bacteria start to outnumber other safe bacteria, this causes a problem

- Release toxins to further reduce their "competition"



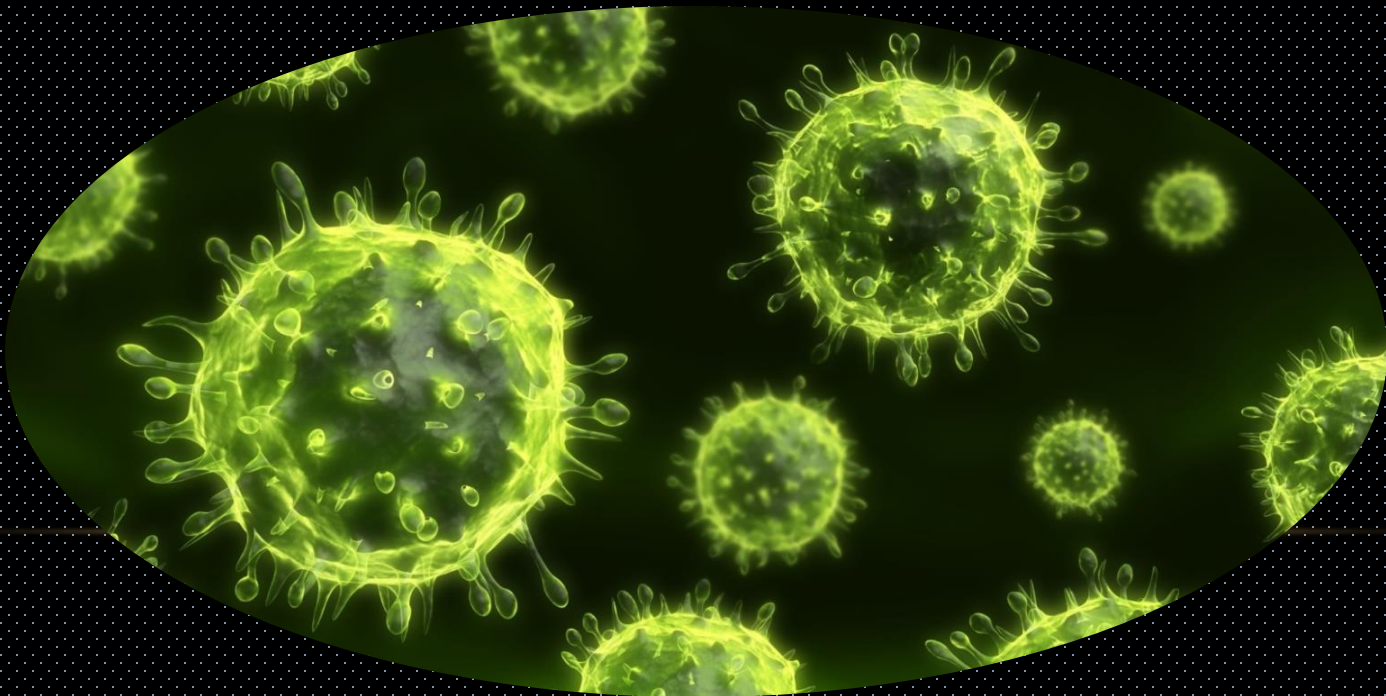
EXAMPLES OF HARMFUL BACTERIA

- E. coli
- Anthrax
- Streptococci
- Staphylococci



VIRUSES

1. DNA or RNA = instructions for making more viruses
2. Protein coat/capsid = protect DNA or RNA
3. Envelope = like a cell membrane
4. Receptors = Bind with cell that is to be infected



VIRUS INVASION !!!!!!!!!!!

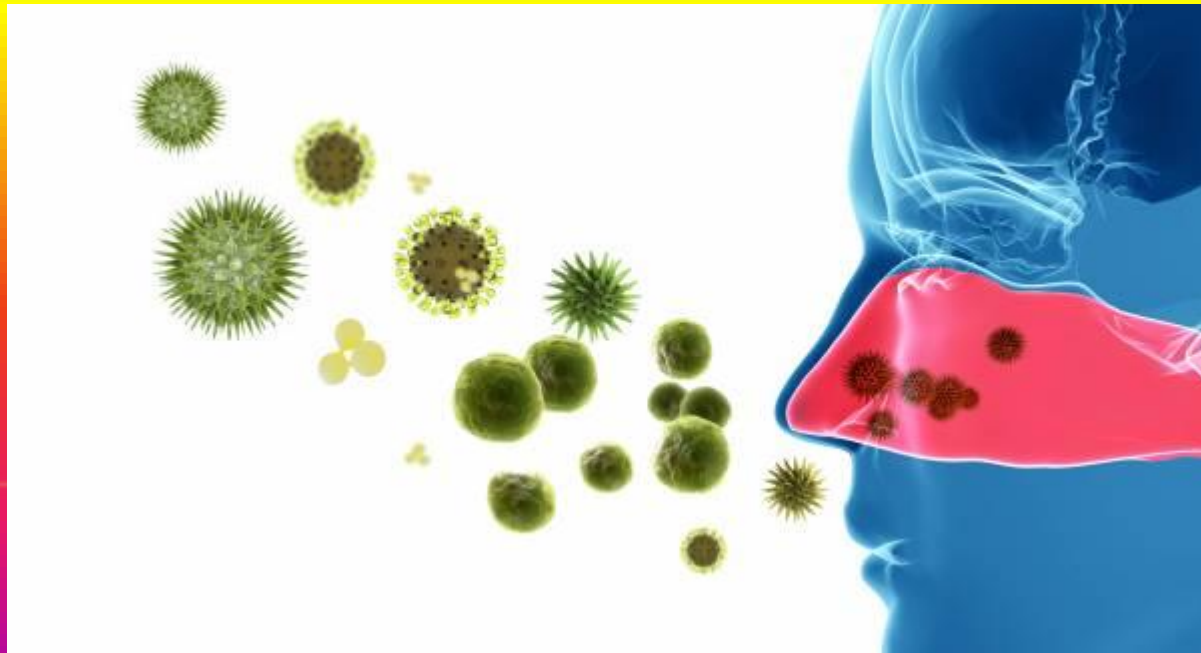
- Virus binds to normal cell
- Cell mistakes virus for nutrients... OOPS!
- Virus gives its' "instructions" to the cell to make more viruses
- New viruses escape infected cell
- Cycle continues





WHAT ARE
ALLERGIES
???

- Your body responding to a false alarm by your immune system
- Due to genes and the environment
- Symptoms: Runny nose, sneezing, itching, rashes, swelling



- Allergies range from mild to severe

- Anaphylaxis reaction most severe



Anaphylaxis



A severe type of allergic reaction that involves two or more body systems (e.g., hives and difficulty breathing).

ALLERGEN

- A substance that causes an allergic reaction
- Ex. Pollen, fur, peanuts



WHAT ARE ALLERGIES?

Person exposed to allergen

Body produces large amount of IgE antibodies

Immune system mistakes substance as harmful

B-cell identifies antigen

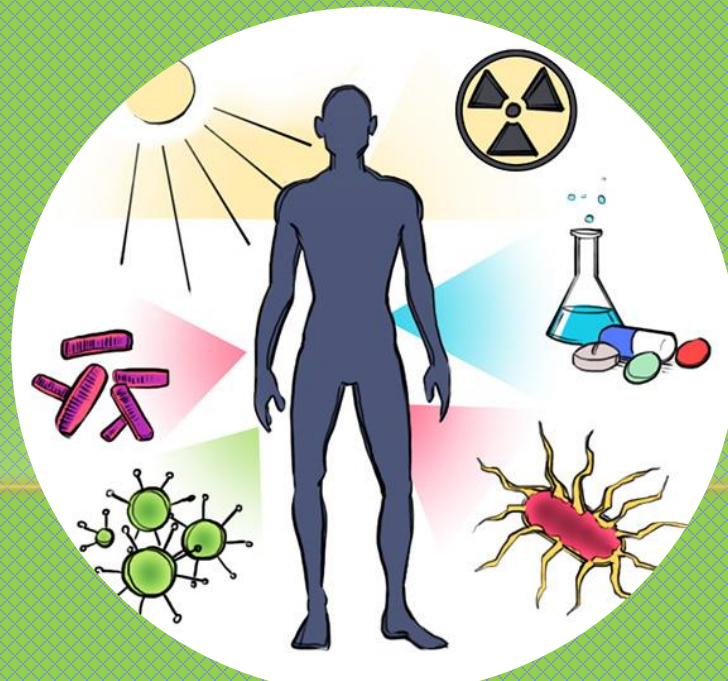
Antibodies destroy mast cells and basophils &
release histamine

Allergic reaction

AUTOIMMUNE DISEASE

Body's immune system attacks and destroys healthy body tissues by mistake

- Immune system does NOT distinguish between healthy and unhealthy cells



NORMAL IMMUNE RESPONSE

Antigens invade



Antibodies form

Antibodies remove invading antigens



Antibodies remain and protect



AUTOIMMUNE DISEASE

Immune system forms antibodies to self-antigens

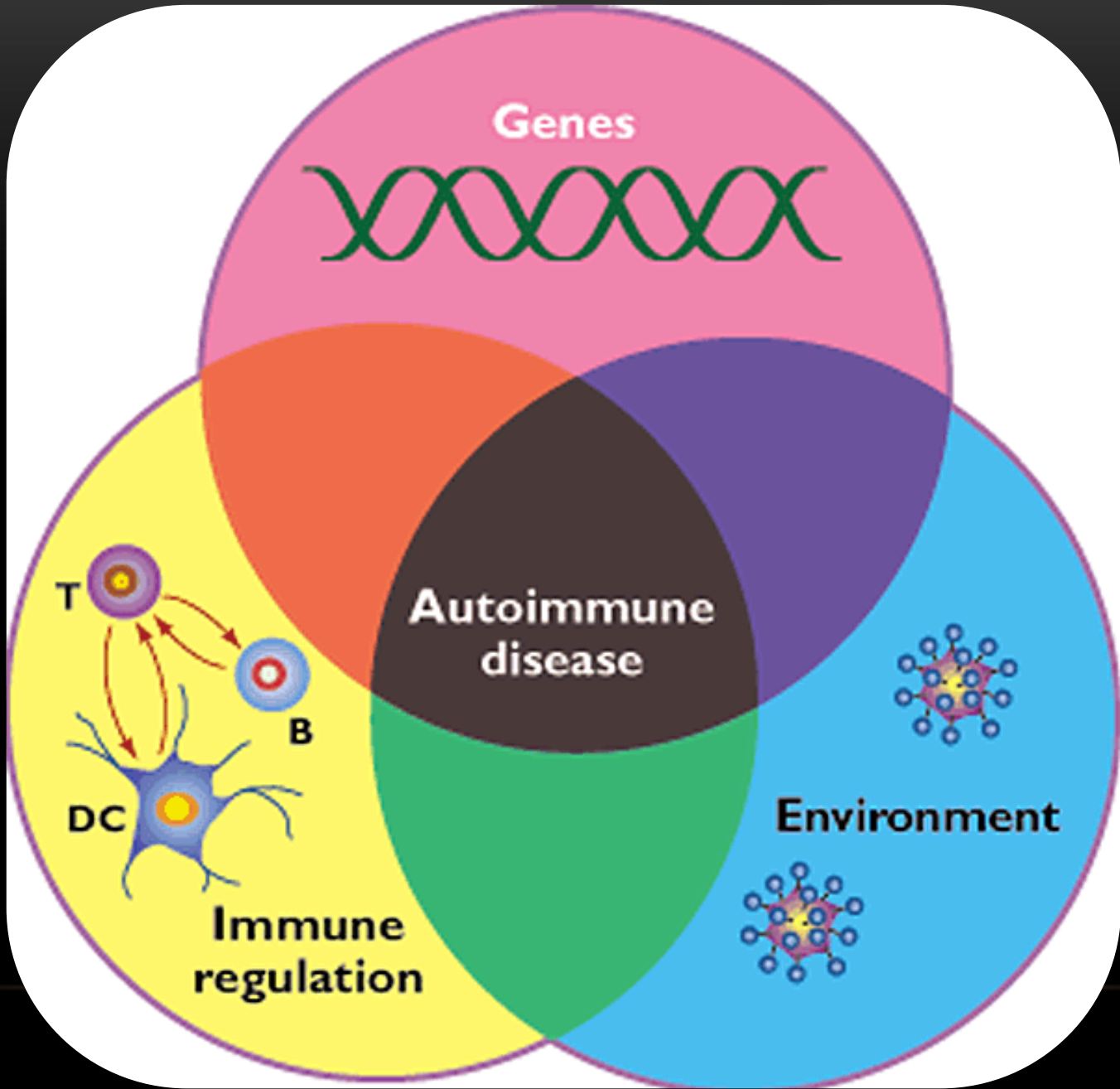


Antibodies attack self-antigens



Inflammation and tissue damage

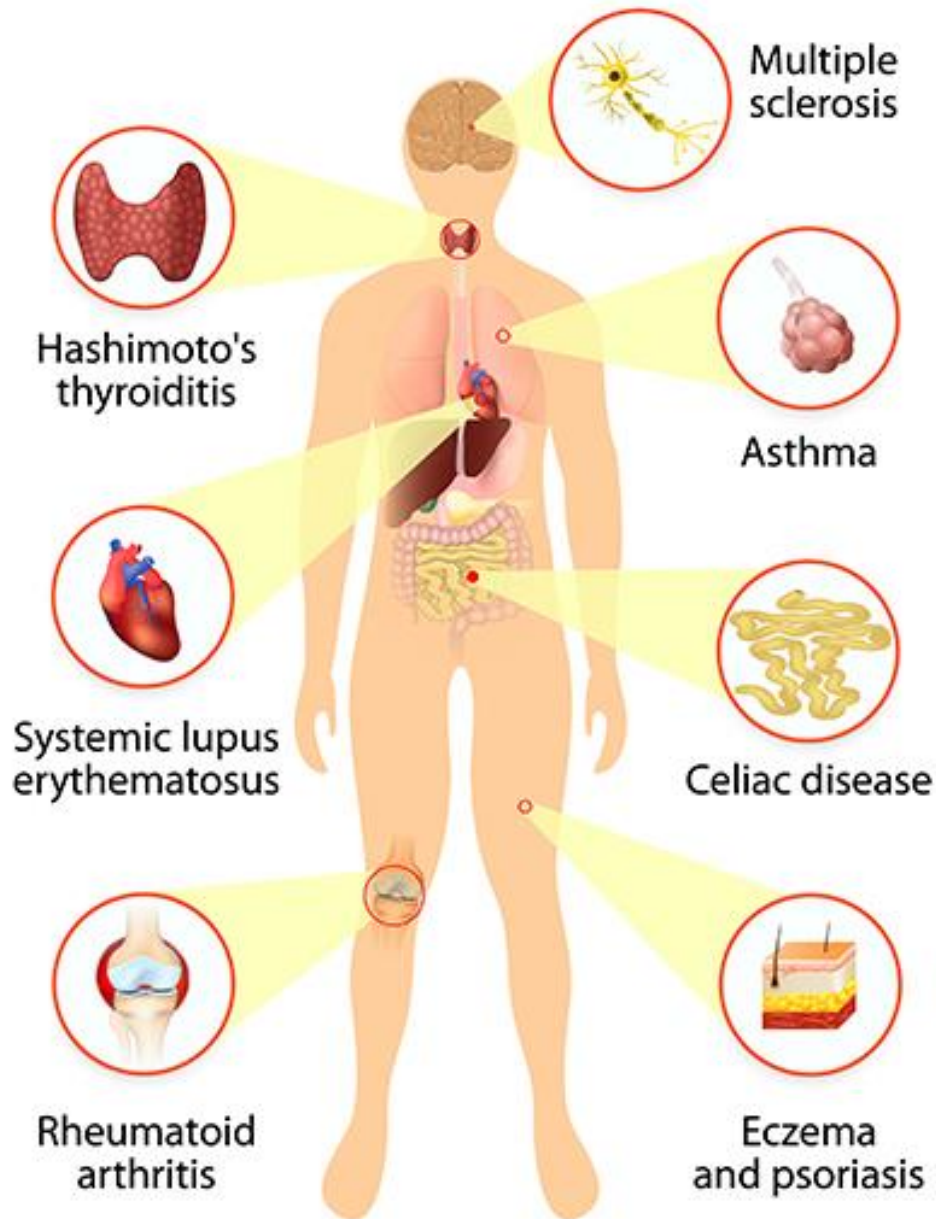




SYMPTOMS (vary based on type of disorder)

- Fatigue
- Fever
- Joint pain
- General ill feeling
- Heart palpitations

AUTOIMMUNE DISEASES



EXAMPLE - LUPUS

- Inflammatory
- Joints, skin, kidneys, blood, heart, lungs
 - Sensitive to sunlight
 - Butterfly rash
- More common in women
- Diagnosed between ages 15-40





VACCINES

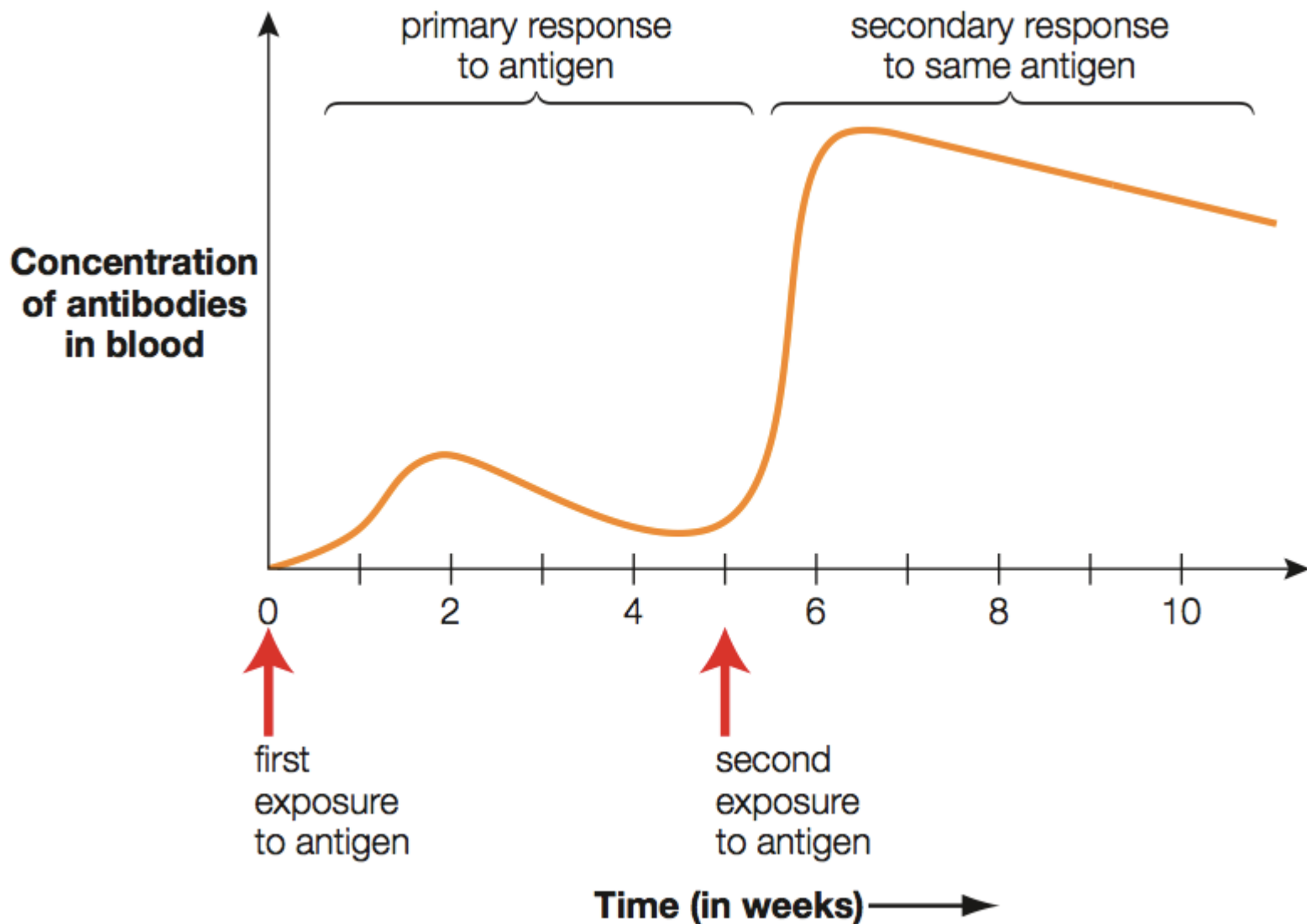
Injecting a weakened/
dead strain to produce
immunity

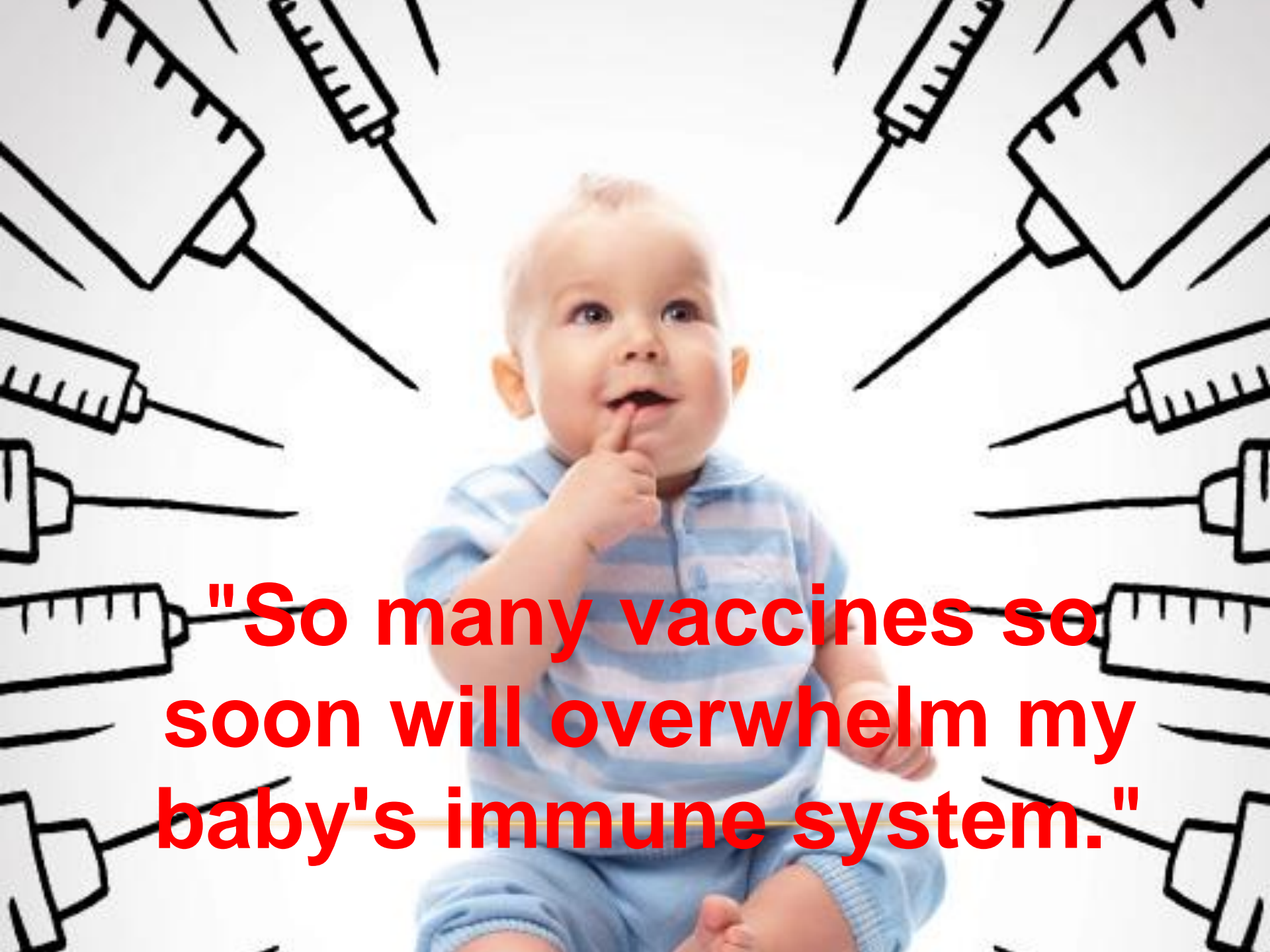
PRIMARY RESPONSE

- **First exposure to antigen**
- **Low amount of antibody produced**
 - **short duration**
 - **10-17 days to peak**

SECONDARY RESPONSE:

- After 2nd immunization with same Ag
 - Greater amount of AB
 - Peaks quicker (2-7 days)
 - Lasts longer (months-years)



A baby is sitting in the center of the frame, looking upwards and to the right with a thoughtful expression, pointing to their chin. The baby is wearing a blue and white striped long-sleeved shirt and blue pants. The background is white and filled with numerous black line-art icons of syringes, some pointing towards the baby and others pointing away, creating a sense of being surrounded by vaccines.

"So many vaccines so soon will overwhelm my baby's immune system."

"My child's immune system is immature, so it's safer to delay some vaccines or just get the most important ones."



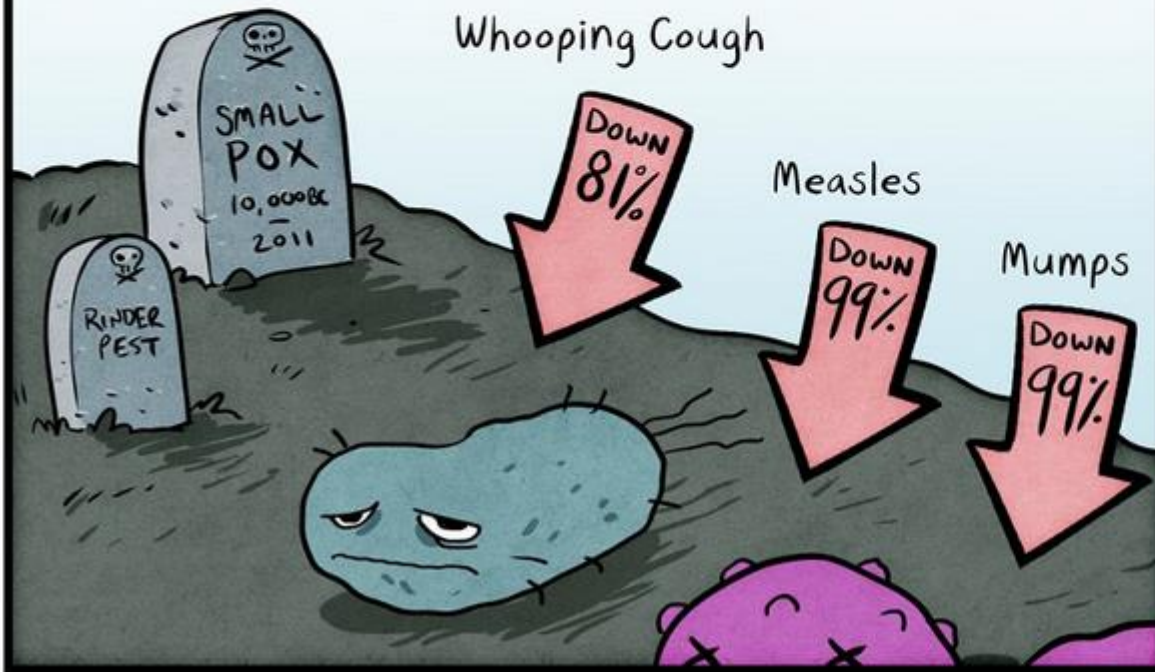


"Vaccines contain toxins, such as mercury, aluminum, formaldehyde, and antifreeze."

"Vaccines don't really work anyway—look at last year's flu vaccine."



Since their implementation, smallpox has been eradicated, and diseases like polio, measles, mumps, and rubella are on their way out.



If vaccines make me immune, why do I have to get a flu shot every year?



The side effects of some vaccines seem worse than the actual disease



**Vaccines seem
like a way for
pharmaceutical
companies and
doctors to
make a lot of
money.**





VACCINES AND AUTISM



What are the signs of **Autism**?

Inability to relate to children or adults



Poor speech or lack of speech



Inappropriate laughter or crying



Oversensitive or undersensitive to sound



Inappropriate playing with toys



Difficulty dealing with changes in routine



Oversensitive or undersensitive to touch



RECEIVE®
EASY

I heard that
vaccines cause
autism.



THE LANCET

Q. Do Vaccines Cause Autism?
A. Nope.

The myth began in 1998, when an English medical journal called *The Lancet* published a paper which claimed a link between autism and the Measles, Mumps, and Rubella vaccine (MMR).

However, after a lengthy investigation, it was discovered that the author, **Andrew Wakefield**, had not only fudged the data...

...but also did a lot of other shady stuff.



For example, he paid kids for blood samples at his son's birthday party.

NO LINK WAS FOUND

So people started investigating his claims

Following Dr. Wakefield's study, here's what other more rigorous studies found

1999

a study of
500 CHILDREN
no connection was found

2001

a study of
10,000 CHILDREN
still found no connection

2002

a study from Denmark of
537,000 CHILDREN
found no connection

a study from Finland of
535,000 CHILDREN
once again found no connection

2012

A review of 27 cohort studies, 17 case control studies, 6 self-controlled case series studies, 5 time series trials, 2 ecological studies, 1 case cross-over trial covering over
14,700,000 CHILDREN

2005

A review of 31 studies covering more than
10,000,000 CHILDREN
Also found no connection

2004

Lancet released a statement **REFUTING** the original findings

NO LINK TO AUTISM WAS FOUND IN ANY CASE, IN ALL OF THE STUDIES.

“ They had conducted invasive investigations on the children without obtaining the necessary ethical clearances... picked and chose data that suited their case; **THEY FALSIFIED FACTS.** ”