B-lymphocytes

mature in bone marrow
different B cells create different antibody molecules
B cells differentiate into plasma and memory cells
plasma cells secrete antibodies

T-Lymphocytes

T cells have T cell receptors that are specific to one antigen -> when they encounter said antigen, they divide by mitosis
T-helper cells release cytokines to stimulate B cells to secrete antibodies
T-killer cells realese toxic substance to kill invaded cell

Creating antibodies

B cells bind to antigens and get activated then they undergo clonal expansion and are stimulated by T-helper cells to produce plasma cells that secrete antibodies

monoclonal antibodies

identical antibodies produced in a lab
-> mouse vaxxed w/ target antigens
-> B cells are stimulated to produce antibodies against target antigen
-> B cells fuse with tumour cells (hybridoma cells created)

Antigens Vs Antibodies

Antigens	Antibodies
Antigens are foreign molecules that trigger an immune response (on surface of pathogens)	Antibodies are proteins that are made with a specific shape to match the antigen detected

Phagocytosis

allows phagocytes (macro-phages and neutrophils) to ingest and kill invading pathogens.
1. Attachment
2. Engulfment
3. Intracellular killing

active natural immunity

Antigens from environment

active artificial immunity

antigens are introduced via injection

passive natural immunity

antibodies pass from mother to infant through placenta (breast milk)

passive artificial immunity

antibodies are introduced via injection

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