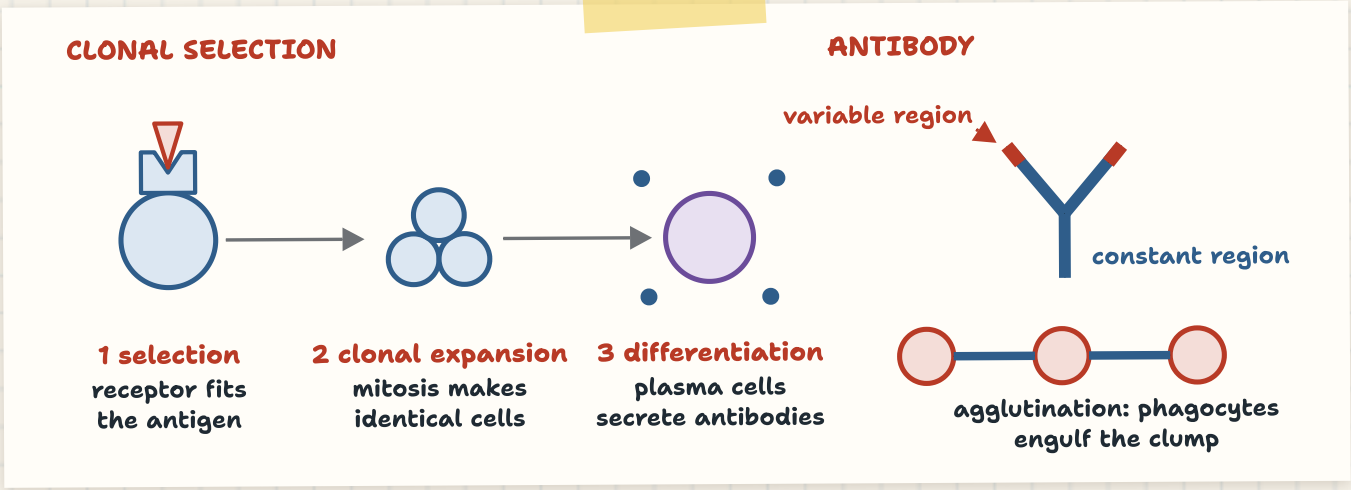
B Cells, Clonal Selection and Antibodies

The B cell with the complementary receptor is selected, divides by mitosis, and its plasma cells secrete antibodies that clump bacteria.



Key terms

clonal selection	the B cell whose receptor is complementary to the antigen is selected.
clonal expansion	the selected B cell divides by mitosis to form a clone of identical cells.
plasma cell	a differentiated B cell that secretes antibodies.
antibody	a protein with a variable region whose shape is complementary to one antigen, forming an antigen-antibody complex.
variable region	the part of the antibody that is specific; it differs between antibodies, the constant region does not.
agglutination	antibodies clump bacteria together, so phagocytes can engulf many at once.

I can...

- [ ] Response of B lymphocytes, clonal selection and release of monoclonal antibodies
- [ ] Definition of antibody
- [ ] Antibody structure
- [ ] Antigen-antibody complex leading to destruction of antigen via agglutination and phagocytosis of bacterial cells

EXAM TRAP

Plasma cells secrete antibodies, not B cells in general or memory cells. The variable region is specific, not the constant region. Antibodies do not digest bacteria: they agglutinate them, then phagocytes destroy them.

5 marks: what earns them

1. B cell with a receptor complementary to the antigen binds to it (clonal selection)
   Not: B cell recognises the bacterium, with no mention of receptor shape
2. B cell divides by mitosis to form a clone of identical cells (clonal expansion)
   Not: meiosis; binary fission
3. Cells differentiate into plasma cells, which secrete antibodies
   Not: B cells turn into antibodies; memory cells secrete antibodies; antigens make antibodies
4. Antibody has a variable region with a shape complementary to the antigen, so it binds to form an antigen-antibody complex
   Not: constant region is specific; antibody fits any antigen
5. Antibodies bind to several bacteria and clump them together (agglutination), making phagocytosis easier / phagocytes can engulf many at once
   Not: antibodies kill or digest the bacteria directly; agglutination with no consequence

Remember

Select the B cell that fits.
Divide by mitosis, then plasma cells.
Antibodies clump, phagocytes engulf.

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