

INKBIOLOGY FLASHCARDS

Pathogens, disease and immunity

Unit B11 · 25 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in mark-scheme wording, and the misconceptions that lose marks. These cards and each lesson's whole-lesson check run on the website with spaced-repetition scheduling, at inkphysics.co.uk/biology/flashcards.

DEFINITION

Define: Pathogen.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Antigen.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Non-specific defence.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Phagocytosis.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Phagosome.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Lysosome.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Antigen-presenting cell.

PATHOGENS AND NON-SPECIFIC DEFENCES

SPOT THE ERROR

Say what is wrong with this claim:

White blood cells fight infection by recognising the germ and producing the right antibody for it.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

A molecule, usually a protein or glycoprotein on a cell surface, that the immune system can recognise as self or non-self and that can trigger an immune response.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

An organism that causes disease in its host.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

The engulfing and hydrolysis of a pathogen or other foreign material by a phagocyte, forming a phagosome that fuses with a lysosome.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

A defence that acts against any pathogen, without recognising which one it is, and acts at the same speed every time.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

An organelle containing hydrolytic enzymes, including lysozymes, kept separate from the cytoplasm.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

The vesicle formed when a phagocyte's cell-surface membrane closes around an engulfed pathogen.

PATHOGENS AND NON-SPECIFIC DEFENCES

SPOT THE ERROR

The first cell to arrive recognises nothing in particular. A phagocyte engulfs anything carrying surface molecules it does not read as yours. Recognition of a particular pathogen comes days later, and it comes because that phagocyte displayed the antigens.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

A cell displaying antigens from a pathogen it has destroyed on its own cell-surface membrane.

PATHOGENS AND NON-SPECIFIC DEFENCES

DEFINITION

Define: Antigen.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Self.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Non-self.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Lymphocyte.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Clonal selection.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Clonal expansion.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Plasma cell.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Memory cell.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Antigens present on an organism's own cells, which its lymphocytes do not respond to.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

A molecule, usually a surface protein or glycoprotein, that is recognised as self or non-self and can trigger an immune response.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

A white blood cell carrying receptors of a single shape, produced in bone marrow; T cells mature in the thymus and B cells in the bone marrow.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Antigens not present on the organism's own cells: pathogens, transplanted tissue, cancerous cells with altered surface proteins, and toxins.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

The repeated division by mitosis of the selected lymphocyte, producing a large clone of genetically identical cells.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

The binding of an antigen to the one lymphocyte whose receptor is complementary to it, activating that cell and no others.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

A long-lived cell produced by clonal expansion that does not secrete antibody, but divides rapidly into plasma cells if the same antigen is met again.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

A differentiated B cell that secretes large quantities of a single antibody into blood and lymph. Most survive only a few days; a minority settle in the bone marrow and secrete for years.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

SPOT THE ERROR

Say what is wrong with this claim:

Memory cells are the ones that make antibody quickly the second time you meet a pathogen.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

Define: Antibody.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Variable region.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Constant region.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Antigen-antibody complex.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Vaccine.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Herd immunity.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Define: Antigenic variation.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

A protein with a quaternary structure of four polypeptide chains, produced by plasma cells, with variable regions forming two binding sites complementary to one antigen.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

SPOT THE ERROR

Memory cells secrete nothing while they circulate, which is how they last for decades. On re-exposure they divide rapidly into plasma cells, and it is the plasma cells that secrete antibody. The speed comes from starting with thousands of the right cells.

THE SPECIFIC RESPONSE: SELECTED, CLONED, REMEMBERED

DEFINITION

The part of an antibody that is the same in all antibodies of a class, and that binds to receptors on phagocytes.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

The part of an antibody whose amino acid sequence differs between antibodies, forming the antigen-binding site.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

A preparation containing antigens from a pathogen, given to produce a primary immune response and memory cells without causing the disease.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

The structure formed when an antigen binds to the complementary binding site of an antibody.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

Change in the antigens on a pathogen's surface, so that memory cells and antibodies produced against the previous form are no longer complementary to it.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

DEFINITION

The protection of unvaccinated individuals that results when a large enough proportion of a population is immune for transmission not to be sustained.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

SPOT THE ERROR

Say what is wrong with this claim:

Antibodies kill pathogens.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY

SPOT THE ERROR

An antibody has two binding sites and no enzymic activity: it cannot lyse, digest or poison anything. It binds, which agglutinates pathogens, blocks the parts that would attach to your cells, and marks them for a phagocyte. The destruction happens inside the phagocyte.

ANTIBODIES, VACCINATION AND THE FOUR KINDS OF IMMUNITY