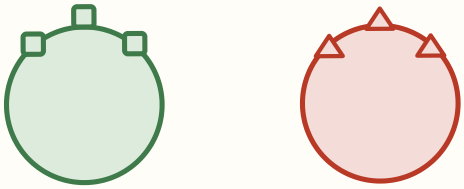
Antigens and Cell Recognition

An antigen is a surface molecule that triggers an immune response; non-self antigens are attacked, and mutation can change their shape.

SELF vs NON-SELF



body cell
own antigens
no response

pathogen
non-self antigens
immune response

ANTIGEN VARIABILITY



original antigen
antibody fits

mutated antigen
new shape: no fit

vaccine response no longer matches
so no protection

Key terms

antigen	a molecule, usually a protein, on the surface of a cell or virus that triggers an immune response.
self	the body's own cells, whose surface molecules the immune system does not attack.
non-self	an antigen different from the body's own, so it is recognised as foreign.
pathogen	a disease-causing organism (bacterium, virus, fungus); it carries antigens on its surface.
antigen variability	mutation changes the shape of a pathogen's surface antigens.
abnormal cell	a body cell (e.g. cancerous) with altered surface molecules that the immune system can identify.

I can...

- [ ] Each cell type has specific surface molecules including proteins that identify it
- [ ] Immune system identifies pathogens, cells from other organisms of same species, abnormal body cells, toxins
- [ ] Definition of antigen
- [ ] Effect of antigen variability on disease and disease prevention

EXAM TRAP

An antigen is not an antibody and not the pathogen itself: it is a molecule on its surface. Say foreign because it is different from the body's own antigens, and for variability say the antigen shape changes.

4 marks: what earns them

1. An antigen is a molecule (usually a protein) on the surface of a cell / virus that triggers an immune response
   Not: an antigen is an antibody; a substance that kills pathogens; a pathogen
2. The immune system recognises it as foreign / non-self because it differs from the body's own (self) antigens
   Not: recognised as harmful, with no reference to being different from self
3. Antigen variability: mutation changes the shape of the virus's surface antigens
   Not: the virus changes, with no mention of antigens; evolves into a new disease
4. The immune response / protection produced by the first vaccine no longer matches (is not specific to) the new antigens, so there is no protection
   Not: becomes immune to the vaccine; vaccine stops working, with no antigen shape

Remember

Antigen: surface protein, starts a response.
Different from self means foreign.
New antigen shape, old response no fit.

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