

1. How can complement be activated before any antibody has been made?
 - ☐ Only through T cells
 - ☐ It cannot; complement always needs antibody
 - ☐ Only after vaccination
 - ☐ Through the alternative and lectin pathways, which recognise microbial surfaces directly
2. A virus is making proteins inside a liver cell. How do T cells find out?
 - ☐ T cells bind the free virus in the blood
 - ☐ Viral peptides are shown on MHC class I to CD8 T cells
 - ☐ Antibodies carry the virus to the T cells
 - ☐ Viral peptides are shown on MHC class II to CD4 T cells
3. A naive T cell binds its peptide on MHC, but the presenting cell shows no B7. What happens?
 - ☐ The T cell becomes a plasma cell
 - ☐ The T cell is switched off (anergy)
 - ☐ The T cell divides rapidly
 - ☐ The T cell kills the presenting cell
4. How does a secondary response differ from a primary one?
 - ☐ It is mainly IgM
 - ☐ It needs a new set of naive cells
 - ☐ It starts within hours to 2 days, is mostly IgG and peaks 10–100 times higher
 - ☐ It is slower but longer
5. Why can a first-ever bee sting not cause type I anaphylaxis?
 - ☐ Mast cells appear only in adults
 - ☐ T cells must first be activated for three days
 - ☐ No IgE against the venom exists yet to sit on mast cells
 - ☐ Bee venom is harmless the first time
6. If one identical twin has type 1 diabetes, the other always develops it.
 - ☐ True
 - ☐ False

☐ True ☐ False

8. NK cells need antibody before they can kill a virus-infected cell.

☐ True ☐ False

9. A T-cell receptor can bind a whole protein floating in the blood.

☐ True ☐ False

10. Vaccine adjuvants work by supplying the danger signal that leads to co-stimulation.

☐ True ☐ False

1. **Through the alternative and lectin pathways, which recognise microbial surfaces directly**

Only the classical pathway is triggered by antibody; the other two start on microbial surfaces.

2. **Viral peptides are shown on MHC class I to CD8 T cells**

MHC class I, on nearly all nucleated cells, shows what the cell is making; CD8 T cells inspect it.

3. **The T cell is switched off (anergy)**

Signal 1 without co-stimulation tells the T cell to stand down.

4. **It starts within hours to 2 days, is mostly IgG and peaks 10–100 times higher**

Memory cells are commoner, more sensitive and already switched to IgG.

5. **No IgE against the venom exists yet to sit on mast cells**

The first exposure sensitises by making IgE; a later exposure cross-links it.

6. **False**

Concordance is about 30–50%; the environment and chance decide the rest.

7. **False**

Without T cells, the weakened vaccine microbe can cause serious disease.

8. **False**

NK cells kill stressed cells and cells that have lost MHC class I directly; antibody can help but is not required.

9. **False**

T cells see only short peptides held in MHC molecules on a cell surface.

10. **True**

Adjuvants make dendritic cells express B7, so signal 2 accompanies the vaccine antigen.