

University Medicine

Name: _____ Score: _____

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

7. Live vaccines are safe for a baby with severe combined immunodeficiency.
- ☐ 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

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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.