

Answers to the exam 2014:

Multiple choice:

1. B
2. D
3. A
4. A
5. D
6. A
7. B
8. C
9. A
10. D
11. C
12. C
13. D
14. C
15. C and D (this was a mistake)
16. B
17. D
18. B
19. D
20. C

Open questions:

1. (An example) Which of the following statements about dendritic cells is FALSE?
 - a. Activation of the chemokine receptor CCR7 attracts them into lymph nodes.
 - b. Follicular dendritic cells is another name for (myeloid) dendritic cells that have migrated to and settled in the follicles of lymph nodes.
 - c. Dendritic cells can present antigens taken up from the extracellular environment by phagocytosis on MHC class I molecules.
 - d. Immature dendritic cells are not specifically involved in antigen presentation, but in the uptake and processing of antigens.
 - e. Infected dendritic cells can pass virions to healthy, resident dendritic cells to let them present the viral antigens on MHC class I molecules.

The right answer is **b**.

2. (More unique properties are possible)
 - IgM: either expressed as monomer or pentamer (the latter is unique)
 - IgD: no known function
 - IgA: either expressed as monomer or dimer, plays a large role in mucosal immunity
 - IgG: transmitted to fetus via the placenta
 - IgE: bound to the surface of the mast cells; binding to the antigen leads to the release of histamine granules

3. Yes because of the presence of H-Y antigen, the male skin is rejected. As female thymus does not express H-Y antigen, T cells recognizing H-Y antigen in the female mouse are not deleted via negative selection. They become active when male skin is grafted.
4. T, F, F, F.
5. C3 is a protein that is involved in all 3 complement pathways, and therefore when an individual can not produce C3, her/his complement system is non-functional. This brings by itself severe immune deficiencies, as the complement system is one of the most important first line defense of the host.
6. During a local infection, the antigen originating from the infecting agent is presented by dendritic cells in the closest by draining lymph-nodes. In order to find their antigen and start up an immune response, naïve T cells should therefore continuously travel through the lymph nodes.
7. After the infection with other viruses, LCMV CD8 T memory cells are decreasing in the spleen. This could be due to the competition for space and other survival signals during or after the infection. In each new infection more memory cells are made and the new cells take the space of some of the older cells.