Quiz 1 – Immunology

1. Do the MHC class I molecules discriminate self and non-self?
2. What immune pathway is responsible for intracellular pathogens? Which for extracellular?
3. What are the main APC (antigen-presenting cells)?
4. Where B- and T-cells usually first meet the antigens?
5. Which cell is responsible for activating the clonal expansion of B-cells?
6. What is the role of antibodies?
7. Which cells are part of the innate immunity and which of the adaptive one?
8. What is the biological reason for the large number of alleles for TCR, antibodies and MHC molecules?
9. Do MHC class I and class II molecules bind to similar peptides? What is the main difference?
10. What is the mechanism of cross-presentation?

Quiz 2 - Antibodies

1. What are the sources of variability in the antibody repertoire?
2. Why we don't observe aberrant rearrangements of germlines containing multiple V, D or J genes?
3. What are the CDRs?
4. Which CDR is the most variable?
5. What is a Fab?
6. What defines the isotype of an antibody?

7. How does the isotype determine the specificity of an antibody?

8. What are the Canonical Structures?

9. Up to how many templates can be used to model an antibody?

10. What is (approximately) the expected accuracy of an antibody model? Which part of the model is usually the least reliable?

Quiz 3 – B cell epitopes

1. What is the relative abundance of linear and conformational B cell epitopes?

2. Which sequence features are correlated with B cell epitopes?

3. What is the expected accuracy of linear B cell epitope prediction tools?

4. Which structural feature is characteristic of B cell epitopes?

5. What is the accuracy of conformational B cell epitope prediction tools?

6. Which additional features, excluding the sequence and/or structure of the antigen, might affect the prediction of B cell epitopes?

7. What events can prevent a dominant B cell epitope from giving a protective immune response? What can we do to avoid this in rational vaccine design?