Birla Institute of Technology & Science, Pilani

Ist Semester 2016-17

Comprehensive Examination. Molecular Immunology (BIOG514)

1h 15m. 16 Marks (Closed Book)

---

1) The B and T lymphocytes progress through specific checkpoints during development and selection. Briefly detail all the molecular steps required to achieve the status of a mature T and B cell. (3)

2) Compare between the peptide binding clefts of Class I and Class II MFC molecules with reference to structure and function. (3)

3) Highlight the 4 important steps which together comprise the phenomenon of VDJ recombination. Consider the example of a heavy chain rearrangement? (4)

4) Differentiate between attenuated and subunit vaccines emphasizing differences if any in the immunological mechanisms. (3)

5) What is the role of Ubiquitin ligase Cbl-b in T cell responses? (3)

Birla Institute of Technology & Science, Pilani

Ist Semester 2016-17

Comprehensive Examination. Molecular Immunology (BIOG514)

24 Marks (0pen Book)

---

1) What would happen if HLA DM was mutated in a way so as to render it nonfunctional? (3)
2) In an in vivo study, expression of Tgf β, BAF, etc is limited by using antisense morpholino oligos. What is the possible effect on antibody production, especially class switching? (3)
3) What would happen to a T cell if CD28 and LFA 1 were absent? (3)
4) What is DTH? How is it involved in *M. tuberculosis* infection? (3)
5) Since central tolerance already takes care of self /nonself recognition, what is the need for peripheral tolerance? (3)
6) Deficiencies of Complement proteins can affect individuals adversely? Could it result in the immune mechanisms turning against the body cells themselves? (3)
7) What could happen in B and T cells if receptors like CTLA-4 and CD 22 were knocked out? (3)
8) What would happen if AID underwent a loss of function mutation? (3)