BITS PILANI, DUBAI CAMPUS
DUBAI INTERNATIONAL ACDEMIC CITY
SECOND SEMESTER 2011-2012
COMPREHENSIVE EXAMINATION (CLOSED BOOK)

COURSE NO. BIOT C463 10.6.2012 MAXIMUM MARKS: 40
COURSE NAME; INTRO TO IMMUNO &IMMUNOTECH DURATION: 3 Hrs.

Attempt all the questions in the given sequence only

Q1. (i) List out various types of autoimmune diseases and describe what happens in the following diseases. (4)

a) Hashimoto's thyroiditis
b) Myasthenia gravis
c) Septic shock
d) Chagas disease

Autoimmune Diseases:

- Organ Specific and Systemic Autoimmune Diseases.

Hashimoto's thyroiditis

- Cause :Reaction of immune system specific to thyroid antigens.
- Gradul destruction of secretory cells and loss of thyroid function
- This inflammatory response causes Goiter or visible enlargement of thyroid glands, a physiological response to hypothyroidism –
- **caused when antibodies are formed to a number of thyroid proteins i.e. thyroglobulin and thyroid preoxidase (involved in uptake of iodine).**
- **this interferes with iodine uptake leading to hypothyroidism.**

Myasthenia gravis: Autoimmune disease mediated by blocking antibodies.

Cause: Auto – antibodies that bind to acetylcholine receptors on the motor end plates of muscles, blocking the normal binding of acetylcholine and inducing complement mediated lysis of cells

Result: weakened skeletal muscles and ultimately destruction of cells bearing the receptors

Early signs: drooping eyelids, inability to retract the corners of mouth snarling appearance.

Septic shock ; Caused by Gram negative bacteria

Symptoms like drop in BP,fever,diarrhea,blood clotting are seen

Caused when bacterial cell wall endotoxins bind TLRs on dendritic cells & macrophages causing them to overproduce IL-1 & TNF-α.

IL-1 & TNF-α activity can be neutralized by monoclonal antibodies or antagonists.

Chagas Disease :

- Severe immune suppression caused by protozoan *Trypanosoma cruzi*
- In presence of *T.cruzi*, T cells are not activated by any antigen,mitogen or monoclonal Ab

This is because there is reduction in expresssion of α subunit (specific for cytokine binding) of IL-12 recetor.

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TEST -2 (OPEN BOOK)

COURSE NO. BIOT C463 8-5-2012 MAXIMUM MARKS: 20
COURSE NAME; INTRO TO IMMUNO &IMMUNOTECH DURATION: 50 Mins

Q1.(i)Explain the mechanism which ensures that each cell expresses the receptors of single antigen specificity . (3)

(ii) Normal serum always contain small amount of immune complexes due to spontaneous formation of autoantibodies to various self components but still they seem to be harmless .What could be the possible reason for the same ?Under what conditions /circumstances this could be harmful ? Explain (3)

(iii) How does the premature binding of the peptides is prevented to MHC molecules? Explain (2)

Q2. (i) It is been noted that under certain conditions the genes in the heavy chain binding proteins get mutated, what could be the implications of such mutation in an individual? (2)

(ii) There are certain regulatory molecules central to regulation of the immune response but at times can be detrimental, Justify with example. (3)

(iii) What are the consequences if C3b is continuously activated? How is the activity regulated, explain? (2)

Q3. (i) Why DC are known to be potent activators of naïve, memory and effector cells whereas resting macrophages are known to be poor? Explain (2)

(ii) How is it possible that a population will be able to deal with diversity of microbes and will not succumb to the newly encountered /mutated microbe? (3)

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TEST -1 (CLOSED BOOK)

COURSE NO. BIOT C463 20-3-2012 MAXIMUM MARKS: 25
COURSE NAME; INTRO TO IMMUNO &IMMUNOTECH DURATION: 50 Mins

Q1. Differentiate between the following
(i) T dépendent & T Independent Antigen
(ii) Mannose receptors & Scavenger receptor
(iii) PAMP & PRR
(iv) HSC and progenitor cells (4)

Q2. (i) Do all the immunoglobulins are able to be transferred to fetus & provide Immunity? Explain with an example. (2)

(ii)List out the major function related to the specific parts on Ig Molecule.

(iii) In which way the immunogen plays a role in influencing the Immunogenicity? Explain briefly. (3)

(iv) How does tissue damage or a wound which is invaded /attacked by a pathogen is repaired or protected from further attack?

Q3.(i) What do you understand by TLR's ?List out the TLR's that identify Bacterial pathogens and Viruses. (2)

(ii) How do innate and adaptive immunity coordinate their activity in immune response? Explain with an example. (4)

(iii) Name the lymphoid organs that mount an immune response to the tissue borne antigens and how these antigens are eliminated? (3)

(iv) What are NK cells? What role do these cells play in innate immunity and how do they differ in their mechanism from complement System in fighting against microbes? (3).