School of Medicine

Graduate Entry year 1 – 2012/13

## Pathology Part 1:

## Immunology

Course Leaders: Dr Peter Kelleher and Professor Karim Meeran

Tel: 020 331 58246 and 020 8846 1065

Email: p.kelleher@imperial.ac.uk

 k.meeran@imperial.ac.uk

<https://education.med.imperial.ac.uk>

Immunology

Graduate Entry – Autumn/Spring term

CONTENTS

Page

SOLE *iii*

INTRODUCTION 1

COURSE STRUCTURE 1

ASSESSMENT DETAILS 1

TIMETABLE 2

LEARNING OBJECTIVES 3

READING LIST 6

CONTACT DETAILS 6

<https://education.med.imperial.ac.uk>

**SOLE FEEDBACK – Pathology Part 1: Immunology**

The following pages provide you with templates on which you can record your thoughts as the course proceeds. At the end of the course you can enter your views onto SOLE.

**Please answer all questions by selecting the response which best reflects your view.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| The content of this module is useful. |  |  |  |  |  |
| The support materials available for this module (e.g. handouts, web pages, problem sheets) are helpful. |  |  |  |  |  |
| I receive sufficient feedback and guidance. |  |  |  |  |  |
| Overall, I am satisfied with this module. |  |  |  |  |  |

Please use this box for constructive feedback and suggestions for improvement.

|  |
| --- |
|  |

**SOLE FEEDBACK - INDIVIDUAL LECTURERS**

Please note that for SOLE, a Lecturer’s name will only appear once. This template gives you the opportunity to record your comments about each lecture in the order of delivery.**On the following section, you have an opportunity to record any comments and constructive feedback you have for each lecturer.**

|  | **The lecture(s) are well structured** | **The lecturer explains concepts clearly** | **The lecturer engages well with the students** |
| --- | --- | --- | --- |
| **Lecturer and Lecture Title** | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| Dr. Peter KelleherIntroduction to Immunology I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dr. Peter KelleherIntroduction to Immunology II |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dr. Peter KelleherT cell mediated immunity |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dr. Peter KelleherB Lymphocytes & Humoral Immunity |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Professor Julian Dyson Immune response to infection |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dr. Keith GouldTolerance & Autoimmunity |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dr. Keith GouldAllergy & Transplantation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| **Lecturer and Lecture Title** | **Please use this box for additional constructive feedback.** |
| --- | --- |
| Dr. Peter KelleherIntroduction to Immunology  |  |
| Dr. Peter KelleherThe innate immune system |  |
| Dr. Peter KelleherT cell mediated immunity |  |
| Dr. Peter KelleherB cell mediated immunity |  |
| Professor Julian Dyson Immune response to infection |  |
| Dr. Keith GouldTolerance & Autoimmunity |  |
| Dr. Keith GouldAllergy & Transplantation |  |

Immunology course

**INTRODUCTION**

The **Immunology** strand of the Pathology module is taught in the Autumn and Spring term of Graduate Entry year 1.

The overall objective is to introduce the student into principles and function of the immune system. The initial lectures outline each component of the immune system and how it works as an integrated unit. I will then outline examples of how defects in immune function can give rise to immune deficiency, autoimmune disease and allergy This course will form the basis of courses in later years which will deal with clinical infectious disease, allergy, rheumatology and renal autoimmunity (as well as autoimmune diseases of other systems) and transplantation.

**COURSE STRUCTURE**

There are seven 45 minute lectures.

**ASSESSMENT**

**Summative Assessment**

The course will be examined in a single examination within the Support Systems Theme (paper 4).

The questions will be in Single Best Answer (SBA) and Extended Matching Question (EMQ) formats, both of which are machine-marked.

Further details about examinations will be provided on the Intranet.

**TIMETABLE 2012/13 – Autumn & Summer terms**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date and campus** | **Time and****lecture theatre**  | **Lecture topic** | **Lecturer** |
| Friday**16/11/2012** | 14.00HM-WEC LT III | Introduction to Immunology | Dr P Kelleher |
| Friday**16/11/2012** | 15.00HM-WEC LT III | The innate immune system | Dr P Kelleher |
| Tuesday**20/11/2012** | 14.00HM-WEC LT III  | T cell mediated immunity | Dr P Kelleher |
| Tuesday**20/11/2012** | 15.00HM-WEC LT III | B cell mediated immunity | Dr P Kelleher |
| Friday**19/4/2013** | 9.00HM-WEC LT III | Immune response to infection | Professor Julian Dyson |
| 10.00HM-WEC LT III | Tolerance and Autoimmunity | Dr Keith Gould |
| 11.00HM-WEC LT III | Allergy and Transplantation | Dr Keith Gould |

Learning objectives – Graduate entry 2012/13

**Autumn term**

These session objectives may include tasks you should be able to carry out after you have completed the relevant activity. They provide you with a way to assess how well you are keeping up with the material. Note that they are also provided to the external examiners as a guide to what you should know at the end of the course.

**Lecture 1 – Introduction to Immunology**

* Give a brief overview using the ‘Immunology Tree of Life’ cartoon as to why study of immunology is important for our understanding of human health and disease.
* Outline the anatomy of the immune system with emphasis on primary and secondary lymphoid tissue and the mucosal immune system.
* Briefly describe the phenotype and function of cellular components of the immune system.

**Lecture 2 -The innate immune system**

* Understand the basic principles of innate immune responses and the timescale in which they occur
* Describe the major recognition strategies used by the innate system to detect the presence of infection and tissue damage.
* Describe the role of mediators of innate immunity such as complement, inflammatory cytokines and chemokines in host defence against infection.
* Be able to give some examples in which disorders of affecting components of the innate immunity are associated with human disease.

**Lecture 3 – Adaptive immune responses: T cell mediated immunity**

* Understand the basic principles of adaptive immune responses and the timescale in which they occur
* Outline the molecular mechanisms underlying the formation of T and B cell receptors
* Describe the developmental and maturational pathways of T cells
* Understand how T cells can recognize and respond to antigens
* Be able to classify the development pathways and function of different T cell subsets
* **Lecture 4 – Adaptive immune response: B cells mediated immunity**
1. Outline the developmental and maturational of B cells
2. Understand how B cell recognize and respond to antigen
3. List the immunoglobulin classes. Describe their functions and relate these to their individual structure.
4. Compare and contrast immune responses to T cell dependent and T cell independent immune responses

**Lecture 5 – Immune response to infection**

* Describe the initial immune response to infection
* Discuss immune responses to extracellular bacteria, intracellular bacteria, viruses, parasites and helminths
* Compare and contrast systemic and mucosal immune responses
* Outline clinical features which should prompt consideration of an underlying immune deficiency give some examples of a primary and secondary immune deficiencies

**Lecture 6 – Tolerance and Autoimmunity**

* Understand the concept and mechanisms of immunological tolerance.
* Discuss how defects in tolerance lead to autoimmune disease
* Describe mechanisms of tissue damage in autoimmune diseases
* List some examples of systemic and organ specific autoimmune diseases

**Lecture 7 - Allergy and Transplantation**

* Explain the immunological processes underlying the development of allergic diseases
* Describe the clinical features of IgE mediated immune responses
* Discuss how the immune system responds to alloantigens
* Outline the clinical features of transplant rejection

**Recommended reading**

Todd I, Spickett G. Lecture Notes: Immunology 6th Edition. Chichester, Wiley-Blackwell 2010. ISBN 978-1-4051-9136-4

MurphyKenneth.Janeway’s, Immunobiology:8th Edition. Garland Sciences, 2012. ISBN 978-0-8153-4243-4

Abbas AK, Lichtman A, Pillai S. Cellular and Molecular Immunology. 7th Edition. Elsevier Saunders 2011ISBN 9781437715286

**CONTACT DETAILS**

***Course Leaders:***

Dr Peter Kelleher p.kelleher@imperial.ac.uk

Professor Karim Meeran k.meeran@imperial.ac.uk