Scientific Basis of Allergy Module/Short course (SBA) – 2021-22

Module leads: Prof Adnan Custovic, Dr Mohamed Shamji

Introduction

In this short course you will study the scientific basis of allergy, focussing on the immune mechanisms underlying allergic diseases and how this relates to the origin, clinical presentation, diagnostic approach and potential therapeutic and prevention targets. This will be done through lectures, interactive sessions, group work and oral presentations.

This course forms part of a range of short courses in Allergy which are available both to students who are enrolled on the MSc in allergy programme, and as stand-alone CPD programmes for basic scientists, professionals working in industry in the field of asthma and allergy, as well as healthcare professionals who deal with patients with asthma and allergic conditions, including doctors (GPs, Paediatricians, Specialists in Allergy, Dermatology, Respiratory Medicine or ENT) as well as specialist nurses, dietitians and nutritionists.

The course has been designed in an innovative format combining asynchronous materials (e.g. pre-recorded sessions, reading lists and web-based resources) to revise in your own time, and live interactive online and on campus sessions which will include meet the expert sessions, focused discussions and practical sessions. A range of formats will be used to encourage active learning, including expert panel question & answer sessions, group work, presentations, debates and scenario-based sessions.

Key Dates:

- 13 October 2021: Launch Webinar (30 mins) – release of asynchronous materials
- 3 November 2021: Immunology Warm Up (2.5 hours)
- 16, 17 and 18 November 2021: live online teaching (3 - 5 hours per day)

Module learning outcomes

By the end of the module students will be better able to:

- Demonstrate a systematic understanding of the immune response to pathogens, and a critical awareness of processes such as antigen presentation and effector cell mechanisms, which are the key evidence base for our understanding of the immune system.
- Critically compare the immune mechanisms underlying the spectrum of allergic diseases and relate them to clinical symptoms in children and adults.
- Differentiate the early and late phase of the allergic immune response, as well as IgE mediated versus cell-mediated mechanisms, and apply the implications to practical situations such as diagnosis and therapy.
- Critically appraise the usefulness of available diagnostic tests and candidate treatments for allergic diseases in view of the underlying immune mechanism.

Planned topics

1. Immunology

- Immunology & Allergy for beginners – Dr R Jimenez-Saiz
- Overview of the immune system – Dr U Kishore
- Innate immunity and adaptive immunity – Dr U Kishore
- Immune mechanisms of antibody responses – Dr U Kishore
- Immunologic Tolerance - natural and acquired – Dr U Kishore

2. Pathophysiology of allergic disease

- What is an allergen? – Prof C Mills
- How do allergen sensitise? – Prof H Breiteneder
- IgE – structure and function – Prof J MacDonell
- The hygiene hypothesis revisited – Prof H Ranz
- Parasites and allergy – Prof P Cooper
- Epidemiology of asthma – Prof N Pearce
- The role of microbiome in Asthma – Prof M Moffat
- Clinical presentation and pathophysiology Allergic Rhinitis – Prof S Durham
- Clinical presentation and pathophysiology Asthma – Prof S Saglani
- Clinical presentation and pathophysiology Food Allergy – Dr B Boyle
- Epidemiology and pathophysiology of Anaphylaxis – Dr P Turner
- Allergy to Alpha-Gal – Prof T Platts-Mills

3. Diagnosis/immune monitoring in allergy and clinical immunology

- Lab tour (virtual) -Diagnostic tests, Cellular and molecular methods – Dr M Shamji

4. Therapeutics

- Personalised medicine in asthma – Prof J Kappen
- Biologicals for atopic dermatitis – Prof E Guttman
- Immunotherapy for food allergy - focus on mechanisms – Prof K Nadeau
- Mechanisms immune tolerance and biomarkers of allergen-specific immunotherapy – Dr M Shamji
- Novel approaches of inhalant Allergen Immunotherapy – Prof M Larche

5. Big Data and Artificial Intelligence in Allergy and Immunology

- Utility of Computational Biology and Allergy – Dr S Fontanella
- Trajectory of allergic disease – new insights by Machine learning and Artificial Intelligence – Prof A Custovic