Welcome

Immunity and Infection 2019-20

Welcome to the Immunity and Infection BSc course. This is a very exciting time to be studying immunology and infectious diseases. Vaccines and antibiotics save millions of lives each year, whilst advances in immunotherapeutics are at the forefront of new treatments for cancer, allergy and autoimmunity. However, there are many infectious diseases for which an effective vaccine is not yet available, the rise of antibiotic resistance threatens advances in surgery and cancer chemotherapy and there are increasing numbers of people with immune dysfunction due to old age and conditions such as diabetes or obesity. Furthermore, the immune system is a major barrier to the success of organ transplantation.

This course will cover essential concepts in immunology and infectious diseases that underpin vaccination, cancer immunology, allergy, autoimmunity, transplant biology, infectious diseases and antimicrobial therapy and resistance, using clinical examples. You will also receive training in research techniques, data analysis, science communication and presentation skills, discuss current and future challenges in immunology, infectious disease and immunotherapeutics, and gain research experience via a laboratory-based project within an active research group.

This course will equip you to understand current challenges in immunity and infection, and prepare you to apply your knowledge in the coming years in research and clinical practice.

Fiona Culley, Course Director
General Information

Key People

Dr Andrew Edwards
Module 1 lead
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Dr Wayne Mitchell
Module 1 Assessments lead
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Prof Graham Taylor
Module 2 Science in Context lead
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Prof Danny Altmann
Module 2 Literature Review lead
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Dr James Pease
Module 3 Research Projects lead
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Celeste Miles
Course Administrator
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Locations

Most of your teaching will take place at the St Mary’s Campus or in the Sir Alexander Fleming Building on the South Kensington Campus. Some teaching such as the mini research project and some lectures will take place at the Hammersmith Hospital Campus. Check your calendar on CELCAT regularly for updates.

Campus maps are available on the course Blackboard pages and here –

https://www.imperial.ac.uk/visit/campuses/

Room Directions:

South Kensington – SAF, Sir Alexander Fleming Building

- 119 - up the steps onto the first floor concourse.
- MDL 1/2 - go to the orange wall on the ground floor, turn right for the stairs or lift and go to the first floor. Turn left.

St Mary’s

- Daads – 3rd floor, Medical School Building
- G65A/B, G64 – ground floor, Medical School Building, turn left at main entrance
- Clinical Lecture Theatre – 2nd floor, Cambridge Wing
- Cockburn - 2nd floor of the QEQM wing – at the end of the Sporborg Bridge.

Hammersmith Hospital – Commonwealth Building CWB

- Wolfson Education Centre (WEC) Seminar room II – first floor
- Computer seminar room – Commonwealth building (CWB) 3rd Floor
- Laboratories – CWB 3rd Floor
- Library: Level 1 CWB
  - Cafeterias: Level 1 CWB
  - Ground floor (WEC)
Key Dates

**Autumn Term (Monday 23 September – Friday 13 December 2019)**

**Induction Day**
Monday 23 September 2019 (AM)

**Module 1 – Taught Component**
Monday 23 September – Friday 13 December 2019 (12 weeks)

**Block 1:** Monday 23 September - Friday 18 October (4 weeks)
**Block 2:** Monday 21 October - Friday 15 November (4 weeks)
**Block 3:** Monday 18 November – Friday 13 December (4 weeks)

The final week of each block will be a consolidation week with no scheduled teaching.

**Science in Context - Clinical Case Study:** You will be assigned your clinical case study during module 1.

**Spring Term (Thursday 2 January – Wednesday 8 April 2020)**

**Module 2 – Self Directed Learning**

**Literature Review | Writing up Science in Context:**
Thursday 2 January – Friday 24 January (3 weeks, 2 days)

**Module 3 – BSc Project**
Monday 27 January – Friday 22 May (15 weeks)

**BSc Project Guidance Session:** Monday 27 January 2020 (09:00 – 11:00) Brian Drewe
Lecture Theatre, Charing Cross

**Summer Term (Wednesday 15 April – Friday 22 May 2020)**

**BSc Project continued:** Wednesday 15 April - Friday 8 May 2018 (3 weeks, 3 days)

**Project write-up:** Monday 4 May – Friday 15 May (2 weeks)

**Oral presentations of the Project:** Monday 18 - Wednesday 20 May
(Presentations are usually held over 2 days within the dates above. They may be held as early as Thursday 14 May)

**Project submission deadline:** Friday 22 May 2020 (1pm)
General Information

Course information, e-learning materials, the handbook, room locations, lecture slides and Pantopto recordings, details of in course assessments and submission portals are found on the Immunity and Infection pages which you can access via MedLearn and Blackboard.

- The ‘Key Information’ link is where you can find information about BSc structure and assessment, along with the link to apply for mitigating circumstances.
- The ‘Course Material’ link will take you to the course-specific page within MedLearn.
- Upcoming ICA deadlines will be listed on your MedLearn Homepage along with a link to the guidance and submission portal for that particular ICA.
- The ‘Research Skills’ link will go to a page which contains useful information for developing your skills throughout the course.
- The ‘Absence and Leave’ link will take you to the form where you submit absence reports/leave requests.

You must request leave in advance via the FEO. A maximum of 3 days leave are allowed in the year. A medical certificate is required after 7 calendar day’s sickness.

Plagiarism: Written coursework will be checked on Turnitin. Late work is capped at the pass mark (40%) where it is up to 24h late. A mark of 0% is awarded for work which is more than 24h late.

Wider reading


Other recommended journals are; Nature Immunology; Nature Reviews in Immunology; Nature Medicine; Current Opinions in Immunology

See Leganto for suggested further reading.
Course Learning Outcomes

To be able to demonstrate an in-depth understanding of Immunity and Infection:

a) Demonstrate an understanding of the major components of the immune system, their functions and the mechanisms by which they are activated and regulated.

b) Discuss the concepts of innate and adaptive immunity, self-non-self-discrimination, tolerance, immune regulation, immunoevasion and immunopathology in the context of infection, allergy, autoimmunity, cancer and transplantation

c) Demonstrate an understanding of how microorganisms interact with the host and cause disease, and the mechanisms by which we treat infections and microbes resist this

d) Evaluate of the current and potential future therapeutic applications of our knowledge of immunity and infection.

Course Structure and Module Content

The Immunity and Infection course content will include the basic organisation of the immune system, and the mechanisms by which it detects microorganisms and protects against infection, using examples of global importance. Content will also include the role of the immune system in cancer, transplantation, autoimmunity and allergy, and how our knowledge of immunology has application in the development of novel vaccines, diagnostics and therapies. You will carry out a mini-research project using key immunological techniques, and evaluate different experimental approaches used in immunology.
Module 1

The taught component structure consists of a 12-week teaching block interspersed with three consolidation weeks (i.e. Three blocks of: three weeks of teaching plus one consolidation week). Optional masterclasses will run during the consolidation weeks.

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<thead>
<tr>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
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<tr>
<td><strong>Week 1</strong>&lt;br&gt;Course introduction&lt;br&gt;Innate immunity&lt;br&gt;Methods tutorial&lt;br&gt;Science communication tutorial</td>
<td><strong>Week 5</strong>&lt;br&gt;Infection, vaccines and pathogen genomics&lt;br&gt;Student presentations</td>
<td><strong>Week 9</strong>&lt;br&gt;Autoimmunity and cancer</td>
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<td><strong>Week 2</strong>&lt;br&gt;Adaptive immunity&lt;br&gt;Methods tutorial&lt;br&gt;Science communication tutorial</td>
<td><strong>Week 6</strong>&lt;br&gt;Research methodology and approaches</td>
<td><strong>Week 10</strong>&lt;br&gt;Asthma and allergies&lt;br&gt;HIV&lt;br&gt;TB</td>
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<td><strong>Week 3</strong>&lt;br&gt;Adaptive immunity cont.&lt;br&gt;Methods tutorial&lt;br&gt;Scientific communication tutorial</td>
<td><strong>Week 7</strong>&lt;br&gt;Mini research project</td>
<td><strong>Week 11</strong>&lt;br&gt;Assessment: Presentations</td>
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<td><strong>Week 4</strong>: Consolidation&lt;br&gt;E-learning, masterclasses and formative work</td>
<td><strong>Week 8</strong>: Consolidation Assessment: Data analysis MRP report</td>
<td><strong>Week 12</strong>: Consolidation Assessment: Written commentary article</td>
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You will learn through:

- Lectures
- Tutorials
- Journal clubs
- Laboratory work
- Skills masterclasses
- Formative writing and presentation with feedback
- E-learning
- Self-directed learning
Assessments

_module 1_
A1. Written assessment of specialism-specific knowledge within scientific context – 4.5% of overall BSc
You will produce a 1000 word commentary article on a research paper in the style of an editorial from The Lancet.
Submission deadline: Week 12, 12.00, Friday 13th December

A2. Oral assessment of specialism-specific knowledge within scientific context - 4.5%
You will give a 10 minute presentation + questions on a current area of immunity and infection research.
Oral presentations will take place: Week 11, Friday 6th December

A3. Assessment of data management, interpretation and communication of findings – 21%
You will carry out a week long mini research project. You will design your own experiments and produce data. You will write a report which includes a scientific and lay abstract.
Deadline: Week 8

_module 2_
A4. Assessment of group work and appraisal of literature and evidence base -15%
A5. Science in Context (SiC) - Clinical Case Study - 10%

_module 3_
A6. Assessment of Project work - Research Paper -35%
A7. Assessment of Project work - Oral Presentation – 10%