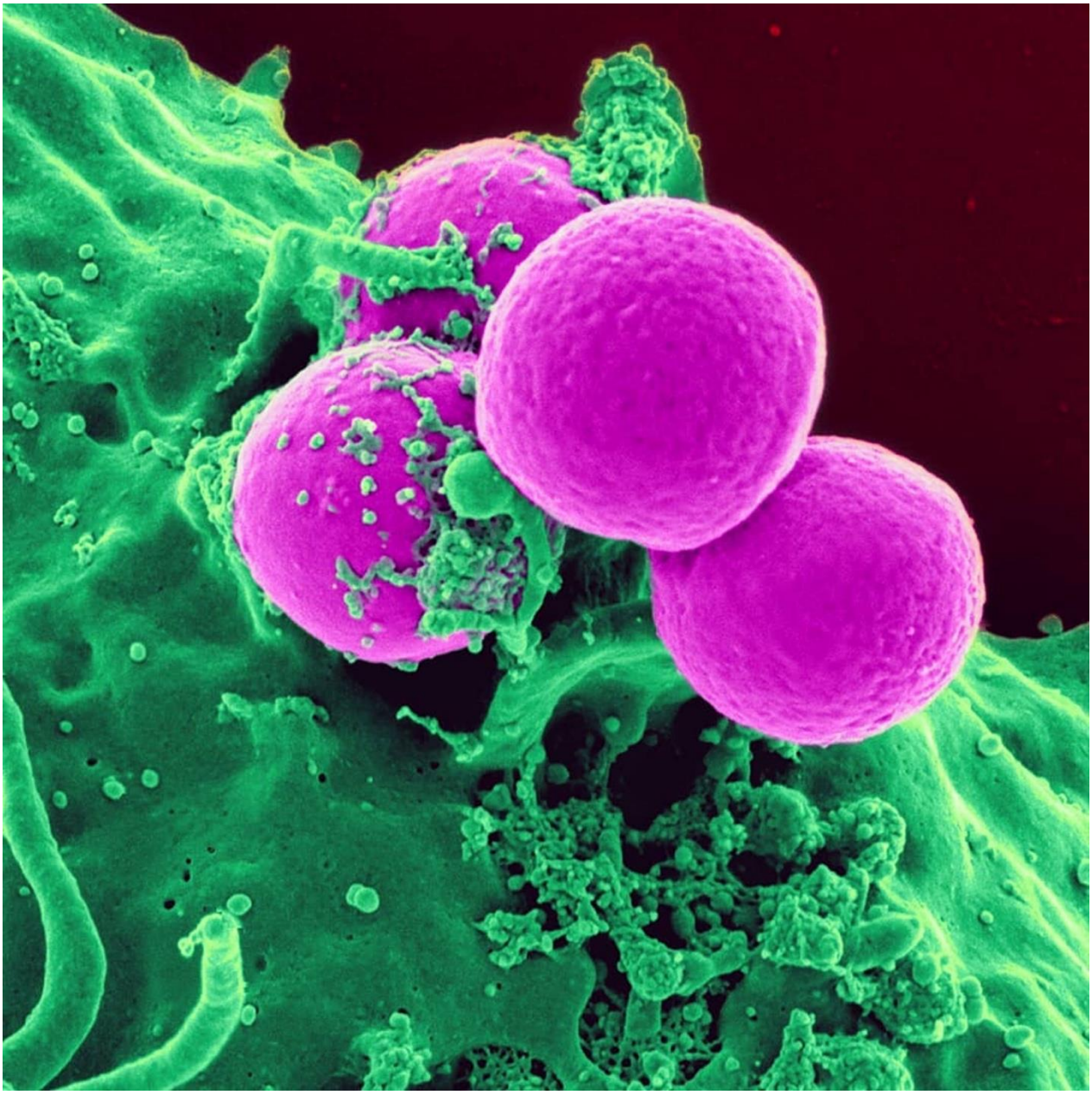
Immunity and Infection BSc



2024-2025

Imperial College London

Welcome

Immunity and Infection 2024-25

Welcome to the Immunity and Infection BSc course!

This exciting course will teach you the essential concepts of molecular and cellular immunology and how the immune system detects and eliminates different types of infectious pathogen. You will also learn about how dysfunction of the immune system can lead to disease, such as autoimmunity and allergy, how pathogens have evolved sophisticated mechanisms to bypass immune responses and how the exquisite specificity of the immune system is a major barrier to the success of organ transplantation. The course will also show how an increased knowledge of the immune system is being used to develop immunotherapies for various types of cancer and autoimmune disease as well as effective vaccines to different global pathogens, including SARS-CoV-2. In addition, you will receive training in research techniques, data analysis, science communication and presentation. These skills will then be put in to practice in a laboratory-based project within an active research group at Imperial.

With the ongoing COVID-19 pandemic, this is a very relevant time to be studying immunology and infectious diseases. Advances in vaccine technology will be important in the development of effective vaccines for SARS-CoV-2, while increased understanding of the immune response in COVID-19 will lead to better treatments for severe disease. Imperial College is one of the leading UK centres for COVID-19 research and this course will include several talks by Imperial researchers on late breaking work in this fast-moving area.

We look forward to working with you over the next year to prepare you to apply your knowledge of immunology and infectious diseases in your future careers in the clinic and research laboratory.

Professor Marina Botto
Course Director
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General Information

Key People

Dr Tom Clarke
Module 1 lead
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Dr Alex McCarthy
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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Alice Denton
Module 2 Literature Review lead
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Dr James Pease
Module 3 Research Projects lead
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Claire Wade
Pathway Administrator
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Blended Learning

In Term 1 your learning will done via a mixture of face-to-face teaching and Guided online Learning. Some teaching may take place on Microsoft Teams but the majority will be in person.

You can find more information on how to use MS Teams at:

https://www.imperial.ac.uk/admin-services/ict/self-service/connect-communicate/office-365/apps/microsoft-teams/

Microsoft Teams will also be used for:

- Course notices
- General module Q&A in the class channel where you can ask colleagues and team questions.
- "Student room" which is just for you (no staff) where you can chat to your student colleagues.

Insendi Virtual Learning Environment (VLE) will be used for:

Course information, e-learning materials, the handbook, Panopto recordings, details of in course assessments and submission portals are found on the Immunity and Infection Insendi pages.

On Insendi:

- The **'Learning Content** link will take you to the session resources link with details and resources of your interactive sessions.

- The **'Assessment Information'** will provide you with details of assessments including deadlines and submission portals.

On Med Learn:

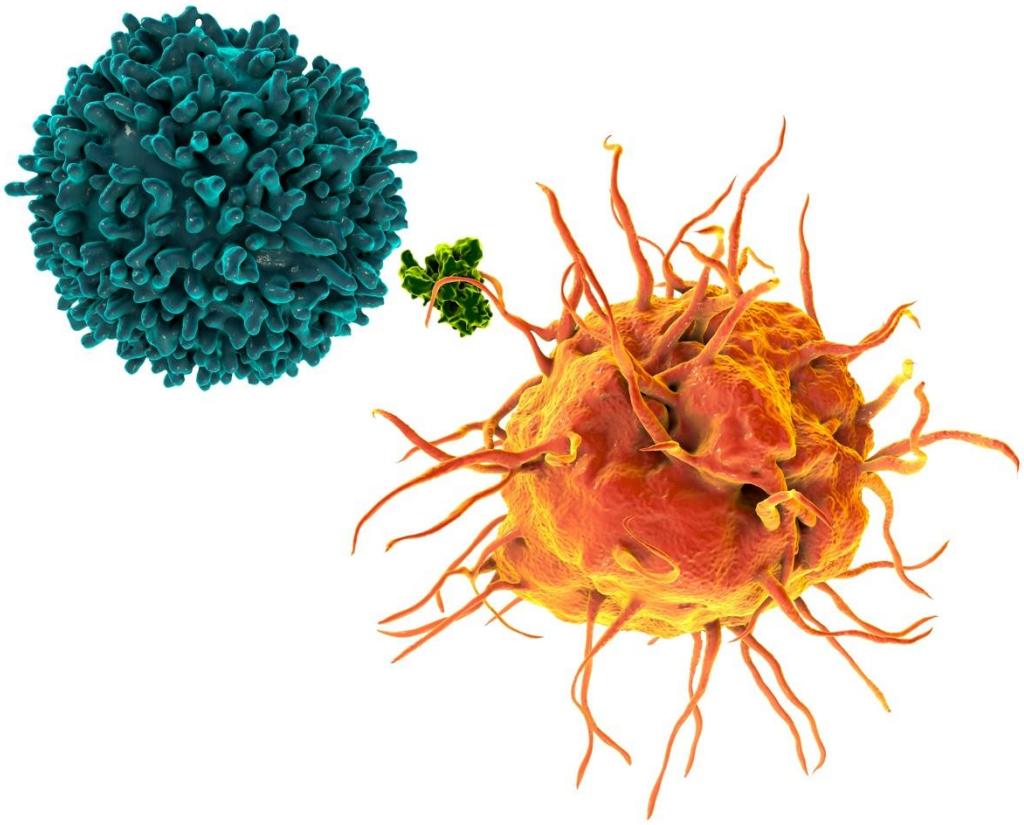
- The 'Key Information' link is where you can find information about BSc structure and assessment, along with the link to apply for mitigating circumstances
- The 'Course Material' link will take you to the course-specific page within MedLearn.
- Upcoming ICA deadlines will be listed on your MedLearn 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.

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

Absence: If you need to take absence, this MUST be reported via the 'Absence and Leave' link on Insendi/MedLearn. This 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 is allowed in the year. A medical certificate is required after 7 calendar day's sickness.

Registers will be taken in all teaching sessions and un-reported absences will be followed up.



Locations

Your teaching will take place at three of our main campuses, Hammersmith, St Mary's and South Kensington

Your Mini Research Project in November will take place at our Hammersmith Campus.

Campus maps are available here:

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

Room Directions:

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)

Imperial College London

2024-25 BSc Dates

Autumn Term (Monday 23 September – Friday 13 December 2024)

BSc Induction
Monday 23 September (AM)

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

Consolidation Weeks:

- Monday 14 October – Friday 18 October
- Monday 11 November – Friday 15 November
- Monday 9 December – Friday 13 December

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

Spring Term (Thursday 2 January – Friday 21 March 2025)

Module 2 – Self Directed Learning
Literature Review | Writing up Science in Context: Thursday 2 January – Friday 31st January (5 weeks)

Module 3 – BSc Project
Monday 3 February – Friday 16 May (14 weeks)

BSc Project Guidance Session: Monday 3 February (09:00 – 11:00) Brian Drewe Lecture Theatre, Charing Cross

Easter Break: Students are entitled to a 2-week Easter break between Spring and Summer terms. This should be arranged in consultation with the Project Supervisors and must include the College closure dates: Thursday 27 March – Tuesday 1 April (inclusive). The two weeks must be taken consecutively.

Summer Term (Wednesday 2 April – Friday 23 May 2025)

BSc Project continued: Wednesday 2 April - Friday 2 May (4 weeks, 3 days)

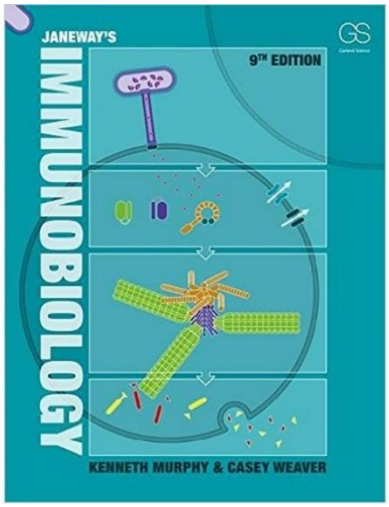
Project write-up: Monday 5 May – Friday 16 May (2 weeks)

Oral presentation of the Project: Monday 19 - Wednesday 21 May

(Presentations are usually held over 2 days within the dates above. They may be held as early as Thursday 15 May)

Project submission deadline: Friday 23 May (13.00)

Wider reading



The recommended course textbook is **Janeway's Immunobiology** (9th Edition): ISBN: 9780815345510 (paperback). Copies are available via the library.

Other recommended journals are;
Nature Immunology; Nature Reviews in Immunology; Nature Reviews in Microbiology; Nature Medicine; Nature Microbiology; Current Opinions in Immunology; Trends in Immunology; Immunity; Cell Host & Microbe; Lancet Infectious Diseases; Immunological Reviews; Annual Reviews in Immunology

See Leganto for suggested further reading.

Course Learning Outcomes

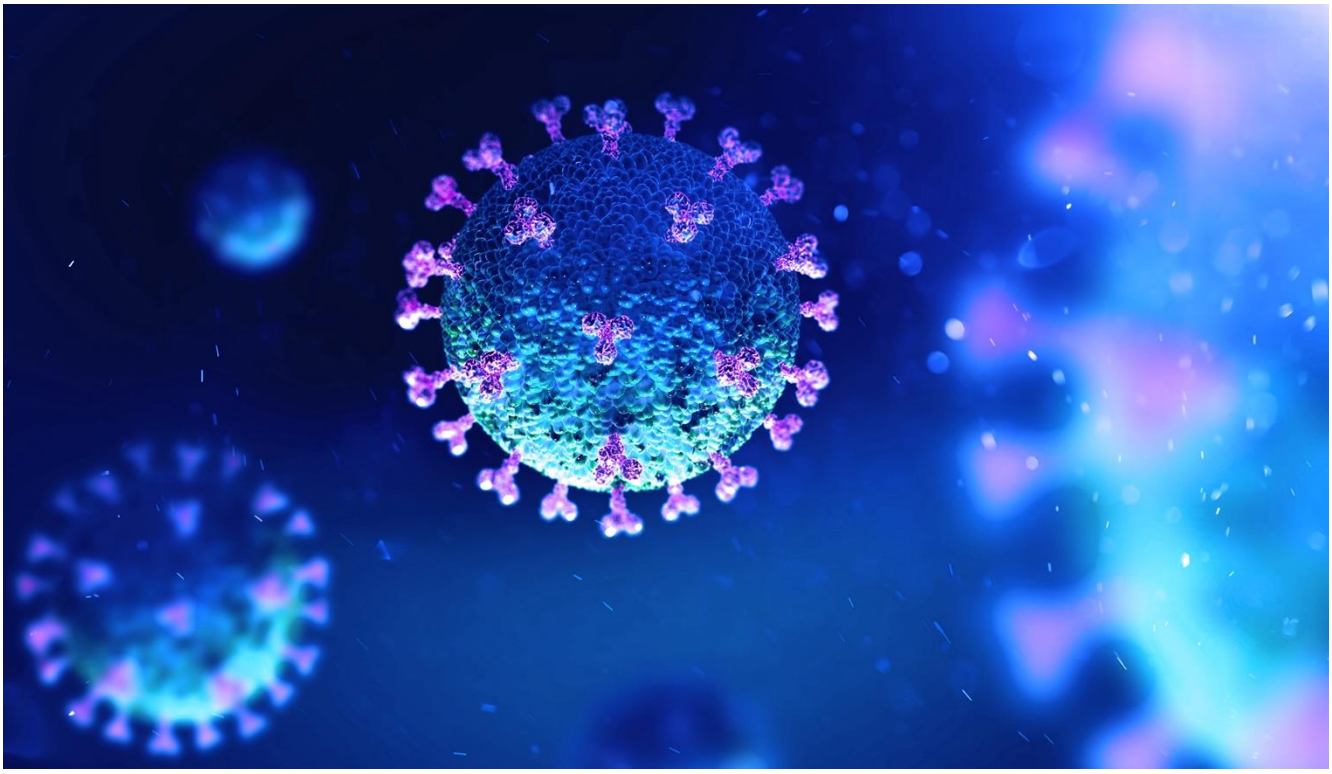
In addition to subject-specific learning, this course emphasises the acquisition of key skills such as the ability to read scientific literature, critically analyse data, present complex concepts in both written and oral forms and team working.

Subject specific areas include:

- The major components of the immune system, their functions and the mechanisms by which they are activated and regulated.
- Innate and adaptive immunity, self/non-self-discrimination, tolerance, immune regulation, immune-evasion and immunopathology in the context of infection, allergy, autoimmunity, cancer and transplantation.
- How microorganisms interact with the host and cause disease, and the mechanisms by which we diagnose, treat and prevent infections and how microbes resist antimicrobial drugs.
- 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. The course will also cover 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. In Module 1, you will carry out a mini-research project using key immunological techniques, and evaluate different experimental approaches used in immunology. This will prepare you for the 17-week research project in Module 3, which will be carried out in an Imperial laboratory.



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).

Block 1	Block 2	Block 3
Week 1 Course introduction Innate immunity Science communication	**Week 5** Vaccines and immunotherapeutics Student presentations (formative)	**Week 9** Global infectious diseases
Week 2 Adaptive immunity Science communication	**Week 6** Experimental immunity	**Week 10** Challenges in infectious diseases
Week 3 Immunology in Health and disease	**Week 7** Mini research project	**Week 11** Research seminars – COVID-19 Assessment: Presentations
Week 4: Consolidation E-learning, masterclasses and formative work	**Week 8**: Consolidation Assessment: Data analysis MRP report	**Week 12**: Consolidation Assessment: Written commentary article

You will learn through:

Mini 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.

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.

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.

Module 2

A4. Assessment of group work and appraisal of literature and evidence base -15%

A5. Science in Context (SiC) – Poster and oral presentation of a Clinical Case Study - 10%

Module 3

A6. Assessment of Project work - Research Paper -35%

A7. Assessment of Project work - Oral Presentation – 10%