

# ADVANCED TOPICS IN MOLECULAR AND CELLULAR IMMUNOLOGY - 2024/5

Module code: BMS3102

## Module Overview

This module builds on your knowledge gained in year 2 of the immune system (BMS2045) to explore a series of interlinked themes in molecular and cellular immunology providing in-depth knowledge of fundamental immune processes and covering the most current topics and state-of-the-art technology. The themes will be lead and delivered by experts in each area and therefore will provide a sense of the frontier of immunology research.

Tutorials and course work will aid your understanding of the theory, and enable development of employability skills including communication, critical appraisal and analytic skills.

### Module provider

School of Biosciences

### Module Leader

RIDDELL Natalie (Biosciences)

Number of Credits: 15

ECTS Credits: 7.5

Framework: FHEQ Level 6

Module cap (Maximum number of students): N/A

## Overall student workload

Workshop Hours: 4

Independent Learning Hours: 64

Lecture Hours: 20

Seminar Hours: 3

Tutorial Hours: 9

Guided Learning: 30

Captured Content: 20

## Module Availability

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Semester 1

## Prerequisites / Co-requisites

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BMS2045: Introduction to immunology

## Module content

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Indicative topics to be covered:

- Key signalling pathways that underpin immunological mechanisms
- Regulation of cytokines and other inflammatory mediators
- Vaccine development
- Immunometabolism
- The power of single cell immune profiling
- Repertoire usage in health and disease
- Macrophages in health and disease
- Inflammation and cancer
- Immunological ageing

## Assessment pattern

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Assessment type	Unit of assessment	Weighting
Project (Group/Individual/Dissertation)	Group portfolio project	40
Examination Online	Online exam (2.5 Hours)	60

## Alternative Assessment

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Group portfolio project: Separate individual portfolio

## Assessment Strategy

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The assessment strategy is designed to provide students with the opportunity to demonstrate:

- Their knowledge and understanding of the course content
- Their understanding of the principals of the latest technological advances in immunology
- Their ability to read and critically review research papers on current immunological topics
- Their teamwork and leadership capabilities
- Their capacity to use digital platforms
- Their ability to present their work and opinion on a topic
- Their ability to self-reflect

Thus, the summative assessment for this module consists of:

- Group portfolio consisting of the group presentation, slides and the individual self-reflection. Groups will critically review and present an immunological research article. This assessment will test learning outcomes 1-5.
- End of semester online/ open book exam. This assessment will test learning outcomes 1-4.

Formative assessment and feedback:

- Group will submit a plan of the critical review/ presentations which will receive feedback from peers with additional written feedback from lecturers. Students will receive guidance on how to critique and provide constructive written feedback to their peers.
- Formative verbal feedback will be received by each group on the slide preparation/content/ presentation from lecturers
- Further individual formative feedback will be received on their presentation style
- Immediate formative verbal feedback will be provided as part of the tutorials.

The formative assessment nature of the planning and preparing for the group presentation enables key skills (e.g. critical review, presenting)

to be developed in a supportive context, which can be applied to the future (summative) assessments in this and other modules. The opportunity for peer-assessment contributes to the development of these skills and develops students as independent learners.

Through this strategy of combined formative and summative feedback, this module empowers students to build self-evaluation into assessment process and creates space for students to reflect on own performance whilst reviewing feedback.

## Module aims

- To provide students with expert content delivery on a range of topical Immunological research
- To engage students in critical analysis of topical immunological research
- To engage students in self-reflection

## Learning outcomes

		Attributes Developed
001	Demonstrate an in-depth understanding of fundamental immunological concepts and their application to research	KPT
002	Demonstrate critical appreciation of the breadth of cutting edge Immunology research advances	CPT
003	Demonstrate critical evaluation/analysis of Immunology research	CKPT
004	Undertake personal reflection	T
005	Work productively both independently and collaboratively as a team	CPT

### Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

## Methods of Teaching / Learning

Each week will consist of lectures (live or pre-recorded), with specific discussion points provided to direct the students independent reading. The lecture content and discussion points will then be explored further in weekly 1 hour live face-to-face interactive tutorials.

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

## Reading list

<https://readinglists.surrey.ac.uk>

Upon accessing the reading list, please search for the module using the module code: **BMS3102**

# Other information

The School of Biosciences and Medicine is committed to developing graduates with strengths in Employability, Digital Capabilities, Global and Cultural Capabilities, Sustainability, and Resourcefulness and Resilience. This module is designed to allow students to develop knowledge, skills, and capabilities in the following areas:

## Resourcefulness and resilience

Self-directed flipped learning supported by active learning tutorials. Team work for course work. Opportunity to submit anonymous plan of course work presentation for formative peer assessment, and to engage in providing guided formative feedback to peers. This peer feedback will then feed forward into formative small group tutoring on presentation, which will again feed forward to final course work presentation. Assessment of coursework will include a self-evaluation process, including reflection on own performance and team performance.

The critical appraisal and presentation of an original article to provide variety in course work task and aimed at challenging and stretching students. Ability to critical review literature will feed forward into dissertation.

## Global and cultural capabilities

Research examples from a range of countries, cultures and environments: e.g. lesson learned from Buruli ulcer/ Mycobacterium ulcerans; researcher insight/ perspective of working on a disease limited to certain areas in the world (Sub-Saharan Africa and Australia). Vaccinology of tropical diseases and/or in low and middle income countries (LMIC). Population and social determinants in variation of immune responses.

## Sustainability

In line with OneHealth approach the module works towards relevant Sustainable Development Goals (SDGs) like SDG3 (health) Reducing cost of disease burden across the life course by understanding molecular and cellular immunological processes in health and disease, leading to interventions to promote health and prevent or treat disease.

## Digital capabilities

Use of various programmes such as Zoom, Surreylearn and Panopto for online interaction and review of content. Online access to latest version of Kuby’s Immunology Book. High content of digital external resources to support lectures such as Journal articles and videos. Groups of students use software such as MS Teams and MS Planner to collaborate and develop their ideas and outputs. Use of powerpoint for coursework. Discussion on how technology is changing the discipline; how this is impacting current practices and skills required e.g. use of single cell analysis and omics, and high dimension data analysis (tSNE, R, python).

## Employability

The module will enhance employability through knowledge of subject area, problem solving and critical analysis skills, teamwork for coursework and communication skills in coursework powerpoint presentation - key to employment and success in the professional workplace.

# Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
<a href="#">Biochemistry BSc (Hons)</a>	1	Optional	A weighted aggregate mark of 40% is required to pass the module

Programme	Semester	Classification	Qualifying conditions
<a href="#">Biochemistry MSci (Hons).</a>	1	Optional	A weighted aggregate mark of 40% is required to pass the module
<a href="#">Biological Sciences (Cellular and Molecular Sciences) BSc (Hons).</a>	1	Optional	A weighted aggregate mark of 40% is required to pass the module
<a href="#">Biological Sciences (Infection and Immunity) BSc (Hons).</a>	1	Compulsory	A weighted aggregate mark of 40% is required to pass the module
<a href="#">Biological Sciences BSc (Hons).</a>	1	Optional	A weighted aggregate mark of 40% is required to pass the module

Please note that the information detailed within this record is accurate at the time of publishing and may be subject to change. This record contains information for the most up to date version of the programme / module for the 2024/5 academic year.