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*IM4307- Honours Immunology Option 2*

*Course Handbook 2023-2024*



*Undergraduate Medical Sciences*

*School of Medicine, Medical Sciences & Nutrition*

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Honours Immunology Option 2:

# Molecular events that shape immunity and immunotherapy

# Course Summary

The aim of this course is to provide an in-depth understanding of how the immune system acts to protect us at a molecular level, and how in the future we could manipulate it to generate novel immunotherapies. Main Learning Outcomes include understanding the molecular mechanisms that allow the immune system to respond to the many challenges it faces. These include drawing out functional insights from recent studies that identify novel signalling pathways and molecular interactions affecting disease susceptibility and resistance. It also covers recent progress of how early interactions with infection through the innate immune system can shape and tailor immune responses, for example, by altering macrophage and dendritic cell activities to provide crucial information to the adaptive immune response.

# Course Aims & Learning Outcomes

The subject-specific learning outcomes are such that, at the end of the course you will be able to apply your understanding of the following topics, and be able to evaluate and critically assess research findings, review articles and opinion on these topics;

;

* the complex cellular and molecular processes underlying the co-ordinated series of events linking the innate and adaptive immune response to infection including Pattern Recognition Receptors and Fc receptors
* the role of phage display technologies in elucidating immuno-genetic repertoires and understand the contribution of MHC structure to its function in T cell recognition
* the interaction of cells cytokines, chemokines and other immune mediators that regulate leucocyte trafficking and migration during inflammation
* the differentiation and roles of different T cell subsets in disease
* the role of activation induced cytidine deaminase (AID) in antibody function
* how these molecular mechanisms can be harnessed to develop immunotherapy and vaccination strategies

# Course Teaching Staff

Course Co-ordinator(s):

Dr Frank Ward ([f.j.ward@abdn.ac.uk](mailto:f.j.ward@abdn.ac.uk))

Other Staff:

Dr Patrick Cao ([h.cao@abdn.ac.uk](mailto:h.cao@abdn.ac.uk))

Dr Isabel Crane ([i.j.crane@abdn.ac.uk](mailto:i.j.crane@abdn.ac.uk))

Prof Heather Wilson ([h.m.wilson@abdn.ac.uk](mailto:h.m.wilson@abdn.ac.uk))

**In-person lectures**

# The live in-person lectures will have full recordings which have captions and powerpoint files, so that you can go over them later as well at your leisure. These will have been recorded in advance and may be in shorter sections and may include questions and additional material which aim to help you consider the material in more depth. At level 4 independent learning and critical thinking is important. Because the full captioned, recorded lectures have been prepared in advance for you, the in-person sessions may not be identical and may focus on certain aspects of the lectures to help with understanding but use the online recordings as the definitive version for revision.

# Assessments & Examinations

This course is assessed via a written examination (worth 70% of the overall course grade) in the May exam diet and one piece of continuous assessment (worth 30% of the overall course grade).

The continuous assessment associated with this course is detailed below, with three other pieces of work being associated with your other “Option” course and the “Core” course.

It is vital that the deadlines for your continuous assessments are adhered to. Submit an incomplete piece of work rather than miss a deadline. Work not submitted on time will not be accepted unless accompanied by either a medical certificate or a written explanation justifying this.

A complete submission of your work consists of:

* uploading an electronic copy of the work via MyAberdeen before 12 NOON on the deadline date.

The deadlines for all four pieces of work are:

* Core course (IM4005) *Research Perspective*: 12 NOON, Monday 9th October.
* Option 1 course Research Tutorial Spotlight: 12 NOON, Monday 6th November.
* **Option 2 course Essay: 12 NOON, Monday 27th November**
* Core course (IM4005) *Advanced Molecular Techniques*: Ongoing assessment Monday 20st Nov - Monday 4th Dec (this will be explained in more detail at the introductory session for this module).

# Research Essay

The essay topics are given below. You should select one title from the list.

1. Discuss the use of immune checkpoints as targets for immunotherapy.
2. Discuss why spatial organisation of lymphoid organs is important for generating an immune response and how this can be evaluated.

You are welcome to use subheadings to structure the essay as you see fit, but the following should be included on a title page.

* *Title* (do not modify the title from above)
* *Name*
* *Student ID*
* *Word Count*

Word limit for your Research Essay is 2,000 words and you can use as many appropriate figures/tables as you wish. The word limit does not include text in tables, figure legends, or references.

# Scientific Writing

Writing is an important scientific skill. Its function in the Honours courses is to provide you with training in finding, reading, analysing and communicating scientific ideas. Although it is usually necessary to start your reading from reviews that provide an expert overview of a topic, it is critical to your development that you read a significant number of original papers that describe the experiments underpinning key scientific advances. Central to these skills is the development of the ability to judge the important points made in a paper and what are the central pieces of evidence that support those points. Finally, it is important for all graduates to have a working knowledge of the key experimental procedures and techniques that generate the data that we use to test hypotheses.

Word Limit: Adhering to a word limit (excluding figure legends, tables and the reference list) requires you to be disciplined in the preparation of the piece of work; being able to write to a required length is a very useful skill, so we expect you to stay within the limit set. Your computer will give you a word count; this must be included at the end of the work submitted. We reserve the right to return work exceeding the word count for shortening. Submissions returned for shortening must be re-submitted within 24 h. Having to resubmit your work again will delay marking and subsequent feedback.

Assessment: The continuous assessment for Honours will be assessed by two members of staff, using criteria that will be published in MyAberdeen alongside the submission links for each piece of work. This assessment is not open to negotiation, although if asked, the markers will clarify any points of constructive criticism. Please use the assessment criteria as a guide and read them with care; the notes on scientific writing also give you guidance on what we judge to be important in a well-written piece of work. If you have particular doubts about your ability to write scientifically, either in terms of organising material or in the mechanics of good scientific writing, seek help from a member of staff or the Honours Coordinators during the first term. Do not wait until your first assignment is causing you anxiety.

All submissions should make reference to the latest literature on the subject you have chosen. While you may be guided through an unfamiliar subject area by reference to a review, your work should specifically not paraphrase the review article, but should be a synthesis of your own views of the subject, written in your own words arrived at by reading of the original research papers from resources such as Web of Science/Medline/PubMed/Google Scholar. This will give insight into *how* information is derived (one criterion assessed) as well as helping in preparation for the Data Analysis exam at the end of the year, where understanding of a research paper is tested.

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Avoiding Plagiarism

The definition of Plagiarism is the use, without adequate acknowledgement, of the intellectual work of another person in work submitted for assessment.  A student cannot be found to have committed plagiarism where it can be shown that the student has taken all reasonable care to avoid representing the work of others as his or her own.

The instruction given above to write assignments in your own words and not to copy whole sentences from articles is crucially important to avoid plagiarism.

The University views this offence extremely seriously indeed; it can have dire consequences, including the awarding of no higher than a pass degree.

Continuous assessment assignments and your thesis are all submitted as electronic copies via MyAberdeen so they can be checked for originality. The programme will detect passages of text copied from other sources, and also if sentences from various text sources were used throughout the text, both indicators of plagiarism. MyAberdeen accepts most common formats, but it is advised that you submit your work as PDF files to avoid problems with re-formatting of figures and/or text during the submission process. Any evidence of copying from other sources that is detected in your final submissions will be brought to the attention of the Head of School, who will investigate and determine whether cheating has occurred and take the appropriate action.

Feedback

As for all elements of continuous assessment, you will be given feedback on the Honours classification your work has attained, with the grading on the University Common Grading Scale (CGS). Feedback is normally given within 3 weeks of submission.

Guide to Writing

Students should refer to "A Guide to Scientific Writing" by David Lindsay (Longman Cheshire) for more general guidance on writing. What follows is not a substitute for reading this book but gives general guidance on writing and on how we assess your work.

PLANNING YOUR WRITING

Think

* What do I know already?
* Where will I find the information needed to develop my views on this issue?
* Where can I find more information?
* What are the best examples to illustrate the points that I want to make?
* How many words do I devote to each example?

Prepare

* Read a mix of reviews and use these to identify the major original scientific papers that have resulted in our current understanding of the topic.
* Read these papers and make notes on: research strategy use to analyse the problem, key experimental procedures that generate the data and critical controls that validate the data.
* Devise a set of themes and ideas for your work using the core information from above.
* Organise evidence under the theme headings: remember that arguments pro and contra are equally important.
* Select illustrations (diagrams/schemes) that reflect the themes and ideas.

Plan

* Place themes in a logical order, and have a clear, and planned, introduction and conclusion.
* Start simply and develop towards more complex arguments.
* Do not hop from one theme to another and then back again.
* Identify the links between themes as a mechanism of ensuring continuity.

Execute

* Write short sentences and keep clauses simple.
* Use appropriate tenses.
* Be consistent in the organisation of sections.
* Have diagrams in front of you when writing about them.
* Support statements with evidence, usually a citation; ensure your citation style is consistent

Complete

* Read over what you have written - can you read it out loud without stumbling?
* Have you answered the question?
* Have you done what you said you would do at the start of the assignment?
* Have you checked it carefully for typographical errors?

Assessment of Written Work

Every piece of work in your Honours year will be assessed using a standardised assessment form. The assessment forms ensure that you get useful feedback on your written work. The Continuous Assessment form covers the following criteria.

#### **Content and Presentation**

Each piece of work will be judged on content and also on style of presentation. More marks are given for the content of the work than are given for the presentation. Look at the structure of the feedback form to see what the priorities are in giving marks. However, remember also that a written piece of work must always be more than a collection of facts and ideas. Good presentation is central to clear communication.

Knowledge: It is expected that any piece of work will contain a substantial body of facts gleaned from appropriate original literature, which should be cited within the text (Citations). The length of the work and its intended audience will dictate how many facts can be given in support of a given statement.

Analysis: Students are expected to develop their analytical skills. This is most readily demonstrated by use of carefully selected examples, which should show a good understanding of the material. Remember that examples may either support or undermine an argument.

Understanding: Students are expected to display a clear grasp of fundamental concepts in the context of the work and their discipline. This is sometimes illustrated by the lack of mistakes about fundamentals of the cell and cellular processes, but it is also expected a student will develop, through their reading, an understanding of the subject area and display this by writing logically about it.

Techniques: Scientific information is derived from experimentation. It is important to understand how information is derived. For example, what technique was used, how was the experiment conducted etc.

Figures: An argument can often be supported by Figures or Tables that present information more effectively than text alone. Figures and Tables should not be an add-on but must be an integral feature of the text and must be described and discussed. A poor or inappropriate figure or table will usually detract from the work. Appropriate figures prepared by hand or using a drawing programme are preferred to reproductions of complex diagrams from other people's work (if used, make sure you acknowledge the source).

Citations: Papers and reviews used as source material should be cited in the text. Direct quotes should be indicated by quotation marks, although their use should be kept to a minimum, and they must be referenced (see University Web page on plagiarism). Use of the Harvard style of citation is essential, and a list of citations should be presented at the end of the work (referencing of EMBO Journal articles is a good example). The reference list does not have to be included in your word count.

In the text a reference should be cited by author and date; e.g. 'Water is known to boil at 100°C (Jones and Brown, 1872; Brown *et al*, 1873) and freeze at…'. Not more than two authors may be cited per reference; if there are more than two authors use *et* *al*. References should be listed alphabetically according to the initial letter of the surname of the first author. Where the same authors have published more than one paper, list them in the order in which their papers appeared. If necessary, use a and b, e.g. 1990a., with the authors' surnames and initials inverted.

References should include, in the following order:

authors' names; year; article or chapter title; editors (books only); journal or book title; name and address of publisher (books only); volume number and inclusive page numbers.

The name of each journal should be abbreviated according to the World List of Scientific Periodicals (see an EMBO J. paper for reference) and italicised. References should therefore be listed as follows:

Tugendreich, S., Bassett, D.E., Jr, McKusick,V.A., Boguski, M.S. and

Hieter, P. (1994) Genes conserved in yeast and humans*. Hum. Mol.*

*Genet*., 3, 1509-1517.

Gehring, W. (1994) A history of the homeobox. In Duboule, D.

(ed.), Guidebook to the Homeobox Genes. Oxford University Press,

Oxford, UK, pp. 1-10.

Lewin, B. (1994) Genes V. Oxford University Press, Oxford, UK.

Structure: A good piece of writing will be clearly structured by division into appropriate sections, including an introduction, which provides a clear and concise statement of the issue to be discussed, and a conclusion, which briefly sums up the issues discussed.

Introduction: a clear and brief introduction of the topic of the work that describes the specific areas questions or issues that the reader should focus on.

Viewpoint: Students should form a view on the subject about which they are writing and should be able to support their views with balanced use of appropriate examples. A balanced piece of work will consider the relative strengths of the arguments for and against a particular point of view.

Conclusions: this section is used to pull the main themes of the work together and to briefly state the principal outcome of the analysis that you have performed. It should leave the reader with a clear impression of what you think about the subject matter presented.

Sentence construction, spelling, grammar: Students are expected to spell correctly and to follow the basic rules of grammar. Short, clear sentences are preferable to complex, tortuous, rambling constructions. You should be able to pick up the eight-clear grammatical, punctuation and spelling errors in the sentence that follows. If you can’t, then revise your grammar/spelling rules. “It’s clear to the company that there commercial targeted young people of the same age as Johns friends who were clearly able to receive its message.”

Organisation: A written assignment is easier to read if it is attractively set out on the page (wide margins, double spaced, font size ³12) with a logical progression and structure.

Specific comments: This section is provided for the staff to make comments that amplify the box assessments in the top half of the form.

Note that computer failure is not accepted as a reason for late submission - it is good practice to maintain at least two copies of computer files.

# Assessment/Feedback MyAberdeen Rubric

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# Class Representatives

We value students’ opinions in regard to enhancing the quality of teaching and its delivery; therefore, in conjunction with the Students’ Association we support the Class Representative system.

In the School of Medicine, Medical Sciences & Nutrition we operate a system of course representatives, who are elected from within each course. Any student registered within a course that wishes to represent a given group of students can stand for election as a class representative. You will be informed when the elections for class representative will take place.

What will it involve?

It will involve speaking to your fellow students about the course you represent. This can include any comments that they may have. You will attend a Staff-Student Liaison Committee and you should represent the views and concerns of the students within this meeting. As a representative, you will also be able to contribute to the agenda. You will then feedback to the students after this meeting with any actions that are being taken.

Training

Training for class representatives will be run by the Students Association. Training will take place within each half-session. For more information about the Class representative system visit [www.ausa.org.uk](http://www.ausa.org.uk) or email the VP Education & Employability [vped@abdn.ac.uk](mailto:vped@abdn.ac.uk) . Class representatives are also eligible to undertake the STAR (Students Taking Active Roles) Award with further information about this co-curricular award being available at: [www.abdn.ac.uk/careers](http://www.abdn.ac.uk/careers).

Problems with Coursework

If students have difficulties with any part of the course that they cannot cope with, alone they should notify the course coordinator immediately. If the problem relates to the subject matter general, advice would be to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact the medical sciences office, ([medsci@abdn.ac.uk](mailto:medsci@abdn.ac.uk)) (based in the Polwarth Building, Foresterhill) to ensure that the appropriate facilities have been made available. Otherwise, you are strongly encouraged to contact any of the following as you see appropriate:

* Course student representatives
* Course co-ordinator
* Convenor of the Medical Sciences Staff/Student Liaison Committee (Professor Gordon McEwan)
* Personal Tutor
* Medical Sciences Disabilities Co-ordinator (Dr Derryck Shewan)

All staff are based at Foresterhill and we strongly encourage the use of email or telephone the Medical Sciences Office. You may have a wasted journey travelling to Foresterhill only to find staff unavailable.

If a course has been completed and students are no longer on campus (i.e. work from second half session during the summer vacation), coursework will be kept until the end of Fresher’s Week, during the new academic year. After that point, unclaimed student work will be securely destroyed.

Course Reading List

As this is a level 4 course you are expected to read the primary research literature. Some will be suggested and mentioned throughout the course, but you should also get used to accessing this for yourself, to follow up on a topic, via databases such as PubMed and Web of Science. However, your previous texts from third year will be useful for revising basic and fundamental knowledge and as a starting point for some topics e.g. Cellular and Molecular Immunology, 9th Edition, Abbas, Lichtman, Pillai. There is now a 10th Edition but we don’t expect you to buy this if you already have the 9th Edition. The 9th Edition is available online via MyAberdeen.

Lecture Synopsis

The aim of this module is to focus on recent discoveries that have shaped our understanding of how molecular events shape the immune response. It aims to provide an in-depth understanding of how the immune system acts to protect us at a molecular level, and how in the future we could manipulate it to generate novel immunotherapies. The initial lectures will focus on how the innate immune system can shape and tailor immune responses, for example, by altering macrophage and dendritic cell activities to provide crucial information to the adaptive immune response.

T-cells are of fundamental importance to the adaptive immune system and require interaction with polymorphic major histocompatibility molecules (MHC). The genomic organisation and molecular composition of MHC, and their significance in autoimmune disease, will be explored.

The adaptive immune system (mainly comprised of B and T lymphocytes) discriminates and functions at a molecular level. A second theme summarises the decision-making processes that permit T-cells and B cells to generate an appropriate response after antigen encounter. Naïve and memory T-cell activation, effector cell differentiation, and the molecular signalling mechanisms behind them are reviewed. The cytokines, chemokines and other immune mediators that regulate leucocyte migration are also discussed. Vaccine development is considered.

Material for the course will be drawn from a wide range of sources and in particular, cutting edge publications will be covered in lectures.

Tutorial Work

IMMUNOLOGY RESEARCH TUTORIAL

Your Preparation for the Research Tutorial:

1. It is important that you read the key papers.
2. Prepare a written summary of the key papers with bullet points on the main findings.
3. Pay attention to the rationale and objectives of the work, the methodologies used and importantly the results and their interpretation.
4. Try to identify areas of the paper which could be strengthened or followed up with additional experiments.
5. Come prepared to discuss all the papers during the tutorial.
6. Importantly, have questions ready and also be prepared to debate points and offer answers to the other students.

New perspectives on T cell function

Tutor: Dr Frank Ward (mmd475@abdn.ac.uk)

Th17 T cell responses – beneficial or detrimental in cancer?

Introduction

One of the fundamental questions regarding the Th17 T cell subset is whether tumour associated Th17 cells are functional effector T cells with any protective role against cancer. This reflects other observations, especially in mucocutaneous Th17 T cell responses, which demonstrate a clear dichotomy dependent on precise environmental cues received by naïve T cells during Th17 T cell priming. It is clear that we need to understand these subtle differences in Th17 T cell function if we are to exploit this important T cell subset in therapy.

This tutorial will examine a number of papers that provide evidence for or against Th17 T cell responses being an important component in anti-tumour immune responses. We will then decide on the overall importance of Th17 T cell anti-tumour responses. Would you develop a therapy to increase Th17 T cells in the tumour environment?

Background reviews:

* Stockinger, B. & Omenetti, S. The dichotomous nature of T helper 17 cells. *Nat. Rev. Immunol.* <http://dx.doi.org/10.1038/nri.2017.50> (2017).

**Key papers:**

* Sfanos, K. S. *et al*. Phenotypic analysis of prostate-infiltrating lymphocytes reveals TH17 and Treg skewing. *Clin. Cancer Res.* 14, 3254–3261 (2008).
* Hinrichs, C. S. *et al*. Type 17 CD8+ T cells display enhanced antitumor immunity. *Blood* 114, 596–599 (2009).
* Kulig, P. *et al*. IL17A-mediated endothelial breach promotes metastasis formation. *Cancer Immunol. Res.* 4, 26–32 (2016).
* He, D. *et al*. IL-17 promotes tumor development through the induction of tumor promoting microenvironments at tumor sites and myeloid-derived suppressor cells. *J. Immunol.* 184, 2281–2288 (2010).

University Policies

Students are asked to make themselves familiar with the information on key education policies, available [here](https://www.abdn.ac.uk/staffnet/teaching/key-education-policies-for-students-11809.php). These policies are relevant to all students and will be useful to you throughout your studies.  They contain important information and address issues such as what to do if you are absent, how to raise an appeal or a complaint and how the University will calculate your degree outcome.

These University wide education policies should be read in conjunction with this programme and/or course handbook, in which School specific policies are detailed. These policies are effective immediately, for the 2023/24 academic year. Further information can be found on the [University’s Infohub webpage](https://www.abdn.ac.uk/students/) or by visiting the Infohub.

The information included in the institutional area for 2023-24 includes the following:

* Assessment
* Feedback
* Academic Integrity
* Absence
* Student Monitoring/ Class Certificates
* Late Submission of Work
* Student Discipline
* The co-curriculum
* Student Learning Service (SLS)
* Professional and Academic Development
* Graduate Attributes
* Email Use
* MyAberdeen
* Appeals and Complaints

Where to Find the Following Information:

C6/C7- University of Aberdeen Homepage > Students > Academic Life > Monitoring and Progress > Student Monitoriung (C6 & C7)

https://www.abdn.ac.uk/students/academic-life/student-monitoring.php#panel5179

Absences- To report absences you should use the absence reporting system tool on Student Hub. Once you have successfully completed and sent the absence form you will get an email that your absence request has been accepted. The link below can be used to log onto the Student Hub Website and from there you can record any absences you may have.

[Log In - Student Hub (ahttps://www.abdn.ac.uk/studenthub/loginbdn.ac.uk)](https://www.abdn.ac.uk/studenthub/login)

Submitting an Appeal- University of Aberdeen Homepage > Students > Academic Life > Appeals and Complaints

https://www.abdn.ac.uk/students/academic-life/appeals-complaints-3380.php#panel2109

Academic Language & Skills support

For students whose first language is not English, the Language Centre offers support with Academic Writing and Communication Skills.

Academic Writing

* Responding to a writing task: Focusing on the question
* Organising your writing: within & between paragraphs
* Using sources to support your writing (including writing in your own words, and

citing & referencing conventions)

* Using academic language
* Critical Thinking
* Proofreading & Editing

Academic Communication Skills

* Developing skills for effective communication in an academic context
* Promoting critical thinking and evaluation
* Giving opportunities to develop confidence in communicating in English
* Developing interactive competence: contributing and responding to seminar discussions
* Useful vocabulary and expressions for taking part in discussions

More information and how to book a place can be found here

Medical Sciences Common Grading Scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Grade | Grade Point | % Mark | Category | Honours Class | Description |
| A1 | 22 | 90-100 | Excellent | First | • Outstanding ability and critical thought • Evidence of extensive reading • Superior understanding •The best performance that can be expected from a student at this level |
|  |
| A2 | 21 | 85-89 |  |
|  |
| A3 | 20 | 80-84 |  |
|  |
| A4 | 19 | 75-79 |  |
|  |
| A5 | 18 | 70-74 |  |
|  |
| B1 | 17 | 67-69 | Very Good | Upper Second | • Able to argue logically and organise answers well  • Shows a thorough grasp of concepts  • Good use of examples to illustrate points and justify arguments  • Evidence of reading and wide appreciation of subject |  |
|  |
| B2 | 16 | 64-66 |  |
|  |
| B3 | 15 | 60-63 |  |
|  |
| C1 | 14 | 57-59 | Good | Lower Second | • Repetition of lecture notes without evidence of further appreciation of subject • Lacking illustrative examples and originality • Basic level of understanding |  |
|  |
| C2 | 13 | 54-56 |  |
|  |
| C3 | 12 | 50-53 |  |
|  |
| D1 | 11 | 47-49 | Pass | Third | • Limited ability to argue logically and organise answers • Failure to develop or illustrate points • The minimum level of performance required for a student to be awarded a pass |  |
|  |
| D2 | 10 | 44-46 |  |
|  |
| D3 | 9 | 40-43 |  |
|  |
| E1 | 8 | 37-39 | Fail | Fail | • Weak presentation • Tendency to irrelevance • Some attempt at an answer but seriously lacking in content and/or ability to organise thoughts |  |
|  |
| E2 | 7 | 34-36 |  |
|  |
| E3 | 6 | 30-33 |  |
|  |
| F1 | 5 | 26-29 | Clear Fail | Not used for Honours | • Contains major errors or misconceptions • Poor presentation |  |
|  |
| F2 | 4 | 21-25 |  |
|  |
| F3 | 3 | 16-20 |  |
|  |
| G1 | 2 | 11-15 | Clear Fail/Abysmal |  | • Token or no submission |  |
|  |
| G2 | 1 | 1-10 |  |
|  |
| G3 | 0 | 0 |  |
|  |

IM4307 Course Timetable: 2023-2024

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Time | Place | Subject | Session | Staff |
| Week 13 | | | | | |
|  |  |  | REGULATING THE INNATE IMMUNE RESPONSE |  |  |
| Mon 23 Oct | 13:00-14:00 | 1M:001 | Introduction to the course; structure, assessment etc | Tutorial | Dr F Ward |
| 14:00-15:00 | 1:032/033 | Pattern recognition and "danger signals" | Lecture | Prof H Wilson |
| Tue 24 Oct | 11:00-12:00 | 1:032/033 | Macrophage activation and polarisation - implications for disease | Lecture | Prof H Wilson |
| 12:00-13:00 | 1:032/033 | Inflammasomes and autoinflammation | Lecture | Dr P Cao |
| Wed 25 Oct |  |  |  |  |  |
| Thu 26 Oct |  |  |  |  |  |
| Fri 27 Oct |  |  |  |  |  |
| Week 14 | | | | | |
| Mon 30 Oct | 13:00-15:00 | 1:032/033 | The Emerging role of Fc receptors in protective immunity | Lecture | Dr F Ward |
| Tue 31 Oct | 13:00-15:00 | 2:054 | Data analysis tutorial on macrophage polarization in RA 1 | Tutorial | Dr P Cao |
| Wed 1 Nov |  |  |  |  |  |
| Thu 2 Nov | 14:00-15:00 | 1:032/033 | Data analysis tutorial on macrophage polarization in RA 2 | Tutorial | Dr P Cao |
| Fri 3 Nov |  |  |  |  |  |
| Week 15 | | | | | |
|  |  |  | CONTROLLING THE ADAPTIVE IMMUNE RESPONSE |  |  |
| Mon 6 Nov | 13:00-15:00 | 1:032/033 | Regulating movement of naïve and effector T and B cells | Lecture | Dr I Crane |
| Tue 7 Nov | 14:00-15:00 | 1M:001 | MHC molecules and their association with transplantation | Lecture | Dr F Ward |
| 15:00-16:00 | 1M:001 | Antigen processing and presentation | Lecture | Dr F Ward |
| Wed 8 Nov |  |  |  |  |  |
| Thu 9 Nov |  |  |  |  |  |
| Fri 10 Nov |  |  |  |  |  |
| Week 16 | | | | | |
| Mon 13 Nov | 13:00-14:00 | 1:032/033 | T Cell Polarisation - tailored immunity for a broad range of pathogens | Lecture | Dr F Ward |
| 14:00-15:00 | 1:032/033 | Tfh cells and their role | Lecture | Dr P Cao |
| Tue 14 Nov | 13:00-14:00 | 1:032/033 | Memory T and B cells | Lecture | Dr P Cao |
| 14:00-15:00 | 1:032/033 | Cytokines and cytokine receptors - targets for treatment of disease | Lecture | Prof H Wilson |
| Wed 15 Nov |  |  |  |  |  |
| Thu 16 Nov |  |  |  |  |  |
| Fri 17 Nov |  |  |  |  |  |
| Week 17 | | | | | |
| Mon 20 Nov | 14:00-15:00 | 1:032/033 | Fast track evolution in B cells? The role of activation induced cytidine deaminase (AID) in antibody function | Lecture | Dr F Ward |
| 15:00-16:00 | 1:032/033 | Novel Vaccine development | Lecture | Dr F Ward |
| Tue 21 Nov | 13:00-15:00 | 1M:001 | Research Tutorial - Understanding Th17 plasticity in cancer  Course wrap-up | Tutorial | Dr F Ward |
| Wed 22 Nov |  |  |  |  |  |
| Thu 23 Nov |  |  |  |  |  |
| Fri 24 Nov |  |  |  |  |  |
| Week 18 | | | | | |
| Mon 27 Nov |  |  | *Essay*: Deadline | Assessed |  |

Green – material which is online only for you to study in your own time.

Yellow – assessment deadline

Venues

All venues are in Polwarth, Foresterhill.

Campus Maps - Foresterhill



Polwarth Floor Plans

Diagram, schematic

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated